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The Status of Mathematics Teachers in Nebraska High Schools, 1946-1947

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THE STATUS OF MATHEMATICS TEACHERS
IN NEBRASKA HIGH SCHOOLS, 1946-1947

by

Dorothy D. Eddy

A THESIS

Presented to the Faculty of
The Graduate College in the University of Nebraska
In Partial Fulfillment of the Requirements
For the Degree of Master of Arts
Department of Secondary Education

Under the Supervision of Professor Galen Saylor

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D. D. E.

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CHAPTER I

INTRODUCTION

THE TEACHER SITUATION IN HIGH SCHOOL

The teaching profession has a constantly shifting personnel. Every year many new teachers enter the profession, there is a rapid turnover of experienced teachers changing from one position to another, and many are leaving the field to be married, or to enter other occupations. A casual observation of current educational magazines and, of more recent months, news stand magazines, acquaints the reader with the fact that the problem is serious concerning teacher shortages and resulting inadequate preparation of those in service. The vast number of articles dealing with this subject indicates the universal concern.

A report of a six-months survey of schools conducted recently by the New York Times is summarized in an article by Fine:

1. Three hundred fifty thousand teachers have left the american public schools since 1940.
2. One hundred twenty-five thousand (one out of seven) in the profession, are serving on an emergency or substandard certificate.
3. Seventy thousand teaching positions are unfilled because of inability to get necessary teachers.
4. Sixty thousand teachers in the United States have a high school education or less.

5. Twenty per cent of all teachers, or one hundred seventy-five thousand, are new to their jobs each year - twice the turnover that existed before the war.

6. Classroom teachers get an average of thirty-seven dollars a week; two hundred thousand get less than twenty-five dollars a week.

7. Fewer students are entering the teaching profession than in the past; in 1920 - twenty-two per cent of all college students entered teacher's colleges - today - seven per cent.

8. Veterans do not want to prepare to teach. Only twenty thousand out of one million are in teacher's colleges.

9. Two million will suffer a major impairment in their schooling because of poor teachers.

10. Five million will secure an inferior education because of the inadequate supply of teachers.

11. Only fifty per cent of the teachers employed in 1940-1941 are still teaching today.

12. The average teacher in the United States today has had one year less education than she had in 1939.

13. Fifty thousand men have left the teaching profession since 1940 and are not coming back. Only fifteen per cent of all elementary and high school teachers are men.¹

Fuller predicted a definite shortage for the future in elementary and secondary school teachers.² Williams in *School and Society* uses a self-explanatory title, "Shortage of Teachers For the Next Five to Ten Years",

1. Benjamin Fine, "Six Months Survey of Schools, New York Times Education Survey", The School Executive, 66, No. 9, 28 (May, 1947).

2. Helen Fuller, "Teacher Shortages and Low Salaries", Progressive Education, 22:9 (November, 1944).

to highlight the situation.³ Bagley in the article, "Mounting Evidence Points To a Serious Shortage of Teachers 1946-1947," gives results of two studies on this problem. One study of Indiana schools shows "the estimated number of teaching positions for which regularly qualified and properly licensed teaching personnel will not be available beginning with 1946-1947 school year is two thousand three hundred ninety-eight". The University of Minnesota study carried out by Archer, also reviewed in this article by Bagley, gives data to show the serious lack of qualified teachers and reports a situation "which may well be viewed with alarm."⁴

Reeve in November, 1946, states that according to recent figures:

"Five hundred thousand teachers have left the teaching profession.

Sixty thousand jobs are unfilled.

One in ten teachers is teaching on an emergency certificate".⁵

He concludes that the number of well-qualified teachers is "dangerously low".

3. L. W. Williams, "Shortage of Teachers Predicted For the Next Five to Ten Years", School and Society, 63:60 (January 26, 1946).

4. W. C. Bagley, "Mounting Evidence Points to a Serious Shortage of Shortages, 1946-1947", School and Society, 63:92 (February 9, 1946).

5. W. D. Reeve, "Shortage of Teachers", Mathematics Teacher, 39: 340 (November, 1946).

The situation in the field of mathematics seems no brighter. Schorling queries:

"Who is going to teach science and mathematics in our high schools in the years just ahead?.....Many teachers of experience are leaving the classrooms.....Young persons are rejecting teaching as a career.....The total number of students qualifying for teaching certificates this year in all institutions of teacher training will be a small fraction of the two hundred thousand well qualified new teachers that we should have next fall..... There is convincing evidence that men teachers are now disappearing from our high school."⁶

Other similar articles give an equally dark picture of the problem of teacher shortage and possible resulting inadequate preparation. This justifies the present status study of mathematics teachers of Nebraska high schools.

6. Ralph Schorling, "Crisis in Science and Mathematics Teaching," School Science and Mathematics, 47: 413-420 (May, 1947).

RELATED STUDIES

Some studies have been made on the status of mathematics in Nebraska secondary schools. One study, made by Schafer in 1926, gives the college hours of mathematics taken by mathematics teachers and compares these with the hours of preparation in the subject field taught by the teachers of other fields to the disadvantage of the mathematics teacher. He also shows the degrees held by mathematics teachers, the salaries of mathematics teachers, and mathematic courses offered in Nebraska secondary schools.⁷

Walker made a status study of mathematics for the school year 1936-1937.⁸ She presents data regarding the mathematics offered in accredited secondary schools of Nebraska and compares these findings with previous

7. Marvin Schafer, "Present Status of Mathematics in Nebraska Secondary Schools", Unpublished thesis, University of Nebraska, 1926.

8. Jennie Christene Walker, "The Status of Mathematics In Accredited Secondary Schools of Nebraska in the Year 1936-1937", Unpublished thesis, University of Nebraska, 1937.

studies made by Johnson⁹ and Epler¹⁰ on mathematics offerings in Nebraska high schools. Walker also tabulated data on degrees and graduate hours of preparation by mathematics teacher; years of experience of mathematics teachers; combination of subjects taught by teachers of mathematics.

Another status study of the mathematics program in selected secondary schools of Nebraska was made in 1939 by Bragg. This study traced the mathematics offerings in these secondary schools at two year intervals from the school year 1928-1929 to the school year 1938-1939.¹¹

Theses dealing with the status of the teacher of the secondary school of Nebraska in general include one

9. Alvin W. Johnson, 'The Program of Studies for the Secondary Schools of Nebraska, 1900-1935.'

10. Stephen Edward Epler, "Educational Trends in Nebraska, 1929-1932, As Revealed to the State Superintendent of Public Instruction", Unpublished thesis, University of Nebraska, 1933.

11. Earl Edward Bragg, "The Present Status and Recent Trends in the Mathematics Program in Selected Secondary Schools of Nebraska", Unpublished thesis, University of Nebraska, 1939.

by Webb in 1928. This study included the experience, training, and certification of teachers.¹² Other general status studies are those by Reed¹³ and Bogar,¹⁴ both in 1938, and both dealing with turnover among Nebraska public school teachers. Reed also gives salary data. Another thesis dealing with teacher tenure in Nebraska secondary schools is that of Schroeder¹⁵ in 1936.

Theses dealing with the status of teachers in Nebraska secondary schools in specific subject-matter fields include one by Nicholls¹⁶ in 1940, which deals with the science teacher. Another thesis is that of

12. Orie L. Webb, "The Status of High Schools Teachers in Nebraska As Shown By Experience, Training and Certification", Unpublished thesis, University of Nebraska, 1928.

13. Calvin H. Reed, "Salaries and Turnover of Educational Workers in Nebraska Public High Schools", Unpublished thesis, University of Nebraska, 1938.

14. William B. Bogar, "Turnover Among Nebraska Public School Teachers", Unpublished thesis, University of Nebraska, 1938.

15. Howard F. Schroeder, "Some Trends in Teacher Tenure in Nebraska", Unpublished thesis, University of Nebraska, 1936.

16. Wayne Harold Nicholls, "The Status of Science Teachers in Nebraska Public High Schools", Unpublished thesis, University of Nebraska, 1940.

Danskin¹⁷ in 1944, giving data on the business education teacher. Another more recent thesis is that of Crown¹⁸ on the teacher of English. Some comparisons will be made later with these findings.

17. Donald R. Danskin, "The Status of Business Education Teachers in Nebraska Public High Schools, 1943-1944", Unpublished thesis, University of Nebraska, 1944.

18. Mary Julia Crown, "The Teacher of English in Nebraska High Schools", Unpublished thesis, University of Nebraska, 1948.

THE PROBLEM OF THE THESIS

Some studies of the status of mathematics teachers and of the teaching profession in Nebraska have been made, particularly during the war period. None of these give an adequate picture of the status of the mathematics teacher at present, in this post-war period. Some of the questions that arise concerning the mathematics teacher are: What is his present salary? How long has he taught? How long has he been in his present position? What other subjects does he teach, or activities does he supervise? How much educational preparation has he had? Is the teacher of the smaller high school as well qualified for his position as in the larger schools? The purpose of this study is to answer these and other questions regarding the status of mathematics teachers of Nebraska.

The problem of the thesis is to determine the status of mathematics teachers in Nebraska high schools for the school year 1946-1947 in terms of:

1. Position held by mathematics teacher
2. Sex
3. Salary
4. Experience

5. Tenure
6. Teaching load
7. Combination of other subjects with mathematics
8. Activities sponsored
9. Preparation for teaching

PROCEDURE AND SOURCES OF DATA

The reports of Nebraska high school teachers and administrators to the office of the Registrar of the University of Nebraska for the school year 1946-1947, and also those to the Nebraska Department of Public Instruction, were used to compile the data for this study on teacher status.

Form C (1946-1947)* was used to find the class schedule of each high school teacher of mathematics. Each teacher in Nebraska was expected to make this report. Any teacher having one or more class in mathematics was included in the tabulation. From these teachers, the following information was obtained from Form C: title of certificate held; degrees held; colleges from which degrees were earned; the number of college hours and graduate hours earned; number of years in present position; number of years experience in other high schools;

* See Appendix for a copy of this form.

number of mathematics classes taught and the number of pupils in these classes; number of classes taught in other subject-matter fields and the number of pupils in these classes; activities sponsored and type of activity; educational preparation in mathematics, in education, and in other teaching fields.

Additional information was obtained from Form A*. The following data was obtained from these reports: positions held by mathematics teachers, experience, college preparation, certificate held, and yearly salaries.

DEFINITION OF TERMS

For this study, mathematics teacher is defined as any person regardless of position who teaches one or more classes in mathematics in the high school. This decision was made because of a significant number of schools in several classifications where two or more teachers taught one or more mathematics classes in combination with classes in other subject-matter fields.

The field of mathematics includes algebra, geometry, general mathematics, trigonometry, advanced algebra, solid geometry, applied mathematics, business arithmetic, and high school arithmetic.

* See Appendix for a copy of this form.

LIMITATIONS OF THE STUDY

This study is limited to the mathematics teachers of Nebraska high schools whose records were available at the office of the Registrar of the University of Nebraska, and the Nebraska State Department of Public Instruction.

The study includes mathematics teachers of public high schools, parochial high schools, and teacher training institution high schools, as far as information was available. The study was made of the school year 1946-1947. Although some reports were not complete in every detail these reports were included because of the value of other items regarding these particular teachers.

CHAPTER II

CLASSIFICATION AND NUMBER OF MATHEMATICS TEACHERS IN EACH GROUP

To bring out comparisons among schools of various size as well as for convenience in summarizing the data, Nebraska high schools were divided into five class groups. These classifications were determined on the basis of enrollment, as this would tend to group schools together having approximately the same number of teacher per school and nearly the same subjects taught. All schools with an enrollment for the school year of 1946-1947, of 1-50 were placed in Class V; 51-75, Class IV; 76-150, Class III; 151-300, Class II; those with an enrollment of 301 or more, Class I. Table I shows the number of schools and teachers in each class. Throughout the remainder of this study the enrollment figures are omitted and the data are shown in terms of these group classifications.

NUMBER OF SCHOOLS

Table I shows the number of schools included in this study was 465, and in these schools a total of 655 teachers taught one or more classes in mathematics.

There were fewer schools in the larger enrollment group, 29 being included, which was 6.2 per cent of the total number of schools. Class II had slightly more than twice as many with 64 schools, 13.8 per cent of the total. Class III had 117 schools which was 25.2 per cent. Class IV had 100 schools or 21.5 per cent of all schools. Class V was the most numerous with 155 schools, or 33.3 per cent. It is interesting to note here that one-third of the Nebraska high schools have an enrollment of one to fifty pupils (actually seven to fifty, as the lowest enrollment of any high school available for this report was seven pupils).

TOTAL NUMBER OF MATHEMATICS TEACHERS

In these 465 schools there were, as shown in Table I, 655 teachers of mathematics. For Class I schools 92 teachers were included from available information. This was 14.1 per cent of all teacher in this study. Data for this group is meager because the larger enrollment schools have many teachers of long tenure who are not required to submit the reports used as sources for this study. Class II had 110 teachers, or 16.8 per cent of the teachers included in this study. In Class III were

TABLE I
 NUMBER OF MATHEMATICS TEACHERS IN 465 NEBRASKA
 HIGH SCHOOLS, 1946-1947, ACCORDING TO SIZE OF SCHOOL

Enroll- ment	Class	No. of Schools		No. of Math. Teachers		Average No. of Math. Teachers Per School
		No.	%	No.	%	
301-up	I	29	6.2	92	14.1	3.17
151-300	II	64	13.8	110	16.8	1.72
76-150	III	117	25.2	162	24.7	1.38
51-75	IV	100	21.5	122	18.6	1.22
1-50	V	155	33.3	169	25.8	1.09
Totals		465	100.0	655	100.0	1.41

162 teachers, or 24.7 per cent. Class IV had 122 teachers, or 18.6 per cent. Class V was the largest number of any with 169 teachers, which was 25.8 per cent of all the teachers of this study.

Also shown in Table I are the average number of mathematics teachers per school for each class and the average number of teachers per school for the total group. This is of significance only as a means of relative comparison of the classes into which the total number of teachers is divided. In Class V, that of the smaller school, it will be noted that there was approximately one teacher per school. The slight per cent over the whole number one is due to the fact that some schools divided the mathematics classes between two mathematics teachers even when all of the mathematics offerings of that particular school would not constitute a full load for one teacher. Also, in each school of this class some mathematics was taught requiring at least one mathematics teacher per school. In Classes II, III, and IV, more than one mathematics teacher per school is found. In Class III, the average is more than three teachers per school. The largest number of mathematics teachers for any school included in this class was nine teachers.

CHAPTER III
POSITIONS, SEX AND SALARIES OF MATHEMATICS TEACHERS

POSITIONS HELD

The 655 mathematics teachers in Nebraska high schools have been classified according to position held. Table 2 shows the results of this grouping. Of the 92 teachers in Class I, the largest schools, none were superintendents, two were principals, and 90 were classroom teachers. The 110 teachers of Class II were divided as follows: 10 superintendents, 9 principals, and 91 classroom teachers. In Class III, 37 were superintendents, 35 were principals, and 90 were classroom teachers. In Class IV there was a more even division as follows: 40 superintendents, 29 principals, and 53 classroom teachers, a total of 122 teachers. In Class V, the smaller schools, the superintendents outnumbered each of the other groups as follows: 76 superintendents, 49 principals, and 44 classroom teachers, a total of 169 teachers. The total number of superintendents included in this study was 163, 24.9 per cent of the entire group. There were 124 principals, or 18.9 per cent of all, and 368 classroom teachers, which was 56.2 per cent. The classroom

teachers were a little more than half of those included in this study.

SEX OF MATHEMATICS TEACHERS

Classification according to sex is shown in Table 3. Of the 92 teachers in Class I, 38 were men and 54 were women; in Class II 53 were men and 57 were women. In Classes III - V the men outnumber the women. Of the 162 teachers in Class III, 94 were men and 68 were women, which was the largest majority held by the men in any class. In Class IV, of 122 teachers, 71 were men, 51 were women. In Class V, 89 were men and 80 were women, a total of 169 teachers. The total number of men mathematics teachers was 345, or 52.7 per cent of the total. The women numbered 310, or 47.3 per cent. Thus it was found that a little more than half of the mathematics teachers were men.

SALARIES OF MATHEMATICS TEACHERS

Salaries of mathematics teachers are shown in Tables 4, 5, and 6. Table 4 shows the salaries of mathematics teachers according to size of school; Table 5, according to position held; and Table 6, according to sex.

TABLE 2
 NUMBER OF MATHEMATICS TEACHERS IN EACH GROUP
 ACCORDING TO POSITION HELD, 1946-47

Class	Superintendent		Principal		Classroom Teacher		All	
	No.	%	No.	%	No.	%	No.	%
I			2	.3	90	13.8	92	14.1
II	10	1.5	9	1.4	91	13.9	110	16.8
III	37	5.7	35	5.3	90	13.7	162	24.7
IV	40	6.1	29	4.4	53	8.1	122	18.6
V	76	11.6	49	7.5	44	6.7	169	25.8
Totals	163	24.9	124	18.9	368	56.2	655	100.0

TABLE 3
NUMBER OF MATHEMATIC TEACHERS IN EACH GROUP
ACCORDING TO SEX, 1946-47

Class	Men		Women		All	
	No.	%	No.	%	No.	%
I	38	5.8	54	8.2	92	14.0
II	53	8.1	57	8.7	110	16.8
III	94	14.4	68	10.4	162	24.8
IV	71	10.8	51	7.8	122	18.6
V	89	13.6	80	12.2	169	25.8
Totals	345	52.7	310	47.3	655	100.0

The median salary for all mathematics teachers was \$2364.29. Teachers of Class I and Class III schools had higher median salaries than this amount. Class II teachers had nearly \$100 lower than this amount, and approximately the same as Class V teachers. The median salary for Class IV teachers was close to the median salary for all mathematics teachers. The lowest salary of full time employed teachers was paid to one teacher in a Class III school. The highest salary, \$4600, was paid to a mathematics teacher in a Class II school. This teacher also held the position of superintendent in this school.

Salaries of mathematics teachers in Class I schools ranged from \$1550 to \$4200, a difference of \$2650. In Class II there was a variation of \$3546, from \$1054 to \$4600. In Class III, there was a range of \$3350, from \$450 to \$3800. In Class IV, the range was \$3020, from \$480 to \$3500. In Class V, there was a variation of \$2050, from \$1350 to \$3400. These include five part time teachers listed in the reports checked. It will be noted that there is the least variation of salaries of teachers in Class V, the smaller schools. No mathematics teacher in Class I received less than \$1500, and only one teacher of this class received less than \$1800.

TABLE 4
SALARIES OF MATHEMATICS TEACHERS
ACCORDING TO SIZE OF SCHOOL, 1946-47

Salary	I No.	II No.	III No.	IV No.	V No.	All No.	%
Above \$3000	12	11	26	14	6	69	10.5
\$3000	2		10	9	20	41	6.2
\$2900-2999		1	3		2	6	.9
\$2800-2899	17	5	8	7	5	42	6.4
\$2700-2799	3	2	9	4	9	27	4.1
\$2600-2699	5	4	7	3	3	22	3.4
\$2500-2599	3*	5	5	6	9	28	4.3
\$2400-2499	4	7	6*	9	8	34	5.2
\$2300-2399	7	5	5	6*	5	28*	4.3
\$2200-2299	3	10*	15	10	21	59	9.0
\$2100-2199	6	11	8	7	7	39	6.0
\$2000-2099	4	17	18	12	13	64	9.8
\$1900-1999	9	5	8	12	9	43	6.6
\$1800-1899	5		5	4	14	28	4.3
\$1700-1799			3	1	3	7	1.1
\$1600-1699					4	4	.6
\$1500-1599	1			2	4	7	1.1
Below \$1500		2	3	3	3	11	1.7
Not Given	11	25	23	13	24	96	14.7
Totals	92	110	162	122	169	655	
Medians	\$2566.66	\$2280.00	\$2483.33	\$2366.67	\$2276.19	\$2364.29	

* Group in which median falls.

TABLE 5
SALARIES OF MATHEMATICS TEACHERS
ACCORDING TO POSITION HELD, 1946-47

Annual Salary	Superintendent	Principal	Teacher	All	
				No.	%
Above \$3000	52	3	14	69	10.5
\$3000	37*	1	3	41	6.2
\$2900-2999	3	2	1	6	.9
\$2800-2899	11	6	25	42	6.4
\$2700-2799	11	4	12	27	4.1
\$2600-2699	2	6	14	22	3.4
\$2500-2599	6	6	16	28	4.3
\$2400-2499	5	9	20	34	5.2
\$2300-2399	3	5	20	28*	4.3
\$2200-2299	6	24*	29*	59	9.0
\$2100-2199	2	9	28	39	6.0
\$2000-2099	3	15	46	64	9.8
\$1900-1999	1	4	38	43	6.6
\$1800-1899	1	9	18	28	4.3
\$1700-1799	0	2	5	7	1.1
\$1600-1699	2	1	1	4	.6
\$1500-1599	0	2	5	7	1.1
Below \$1500	0	4	7	11	1.7
Not Given	18	12	66	96	14.7
Totals	163	124	368	655	
Median Salaries	\$3000.00	\$2241.67	\$2210.34	\$2364.29	

* Group in which median falls.

TABLE 6
SALARIES OF MATHEMATICS TEACHERS
ACCORDING TO SEX, 1946-1947

Annual Salary	Male	Female	No.	All %
Above \$3000	59	10	69	10.5
\$3000	41	0	41	6.3
\$2900-2999	6	0	6	.9
\$2800-2899	34	8	42	6.4
\$2700-2799	22*	5	27	4.1
\$2600-2699	20	2	22	3.4
\$2500-2599	26	2	28	4.3
\$2400-2499	23	11	34	5.2
\$2300-2399	19	9	28*	4.3
\$2200-2299	25	34	59	9.0
\$2100-2199	9	30	39	6.0
\$2000-2099	14	50*	64	9.8
\$1900-1999	4	39	43	6.6
\$1800-1899	3	25	28	4.3
\$1700-1799	1	6	7	1.1
\$1600-1699	1	3	4	.6
\$1500-1599	0	7	7	1.1
Below \$1500	2	9	11	1.7
Not Given	36	60	96	14.7
Totals	345	310	655	
Median Salaries	\$2736.36	\$2072.00	\$2364.29	

* Group in which median falls.

In Class II there were only two teachers receiving less than \$1500, one of these being a part-time teacher; also it will be noted that these are the only two of this class receiving less than \$1900 salary. In Class III there were three teachers receiving less than \$1500, two of these being part-time teachers. Likewise in Classes IV and V there were three teachers each receiving less than \$1500, one of each persons being a part-time teacher. Thus there were eleven mathematics teachers receiving less than \$1500, but of these five were part-time teachers.

Sixty-nine mathematics teachers received more than \$3000, which was 10.5 per cent of the total. Forty-one teachers received exactly \$3000, or 6.2 per cent of the total. Thus approximately one-sixth of the total number of mathematics teachers received \$3000 or above. In Class I there were 12 mathematics teachers receiving more than \$3000 and 2 received exactly \$3000; 11 in Class II received more than \$3000, none received \$3000; in Class III, 26 teachers received more than \$3000, 10 received exactly \$3000; in Class IV, 14 received more than \$3000, 9 received \$3000; in Class V, 6 received more than \$3000, 20 received \$3000. It will also be noted that of these 110 teachers receiving \$3000 or more salary, 89 are superintendents, 4 are principals, and 17 are classroom

teachers. Of these 110, 100 are men, and only 10 are women.

Table 5 shows the salaries of mathematics teachers according to positions held. From this table we note that the median salary for mathematics teachers who held the superintendency was \$3000; the median salary for principals was \$2241.67; and the median salary for classroom teachers with no administrative duties was \$2210.34. The median salary for superintendents was \$758.33 more than that of the principal; and \$789.66 more than that of the classroom teacher. There was little difference between the median salary of the principal teaching mathematics and the classroom teacher of mathematics only \$31.33. The superintendent's median salary was \$635.71 more than the median salary for the entire group and the classroom teacher's median salary was \$153.95 less than for the entire group.

Table 6 shows that men mathematics teachers received a median salary of \$2736.36 and women teachers, \$2072.00 a year, or \$664.36 less than the men. Exactly 100 men mathematics teachers, or 29 per cent, received \$3000 or more, while only ten women, or 3.2 per cent, received above \$3000. Two men received below \$1500, and nine women received below \$1500. The median salary for men

mathematics teachers was \$372.07 more than the median salary for all mathematics teachers, while the median salary for the women was \$292.29 less than the median salary for all mathematics teachers.

CHAPTER IV

EXPERIENCE AND TENURE OF MATHEMATICS TEACHERS

YEARS OF PREVIOUS TEACHING EXPERIENCE

The previous teaching experience of mathematics teachers of Nebraska high schools is shown in Table 7. This Table includes the previous teaching experience of the teacher in the present position and in other high schools or elementary schools. In this study it was not possible to determine what these teachers have been teaching throughout their teaching careers, whether it has been mathematics all together, or partly, or not at all, prior to the school term being considered in this study.

The grouping shown in Table 7 is not given year-by-year throughout, as it seemed significant to show year-by-year experience only up to the tenth year, and from that point by five or ten year intervals.

The median number of years' previous teaching experience for all mathematics teachers was 13.2 years. The teachers in Class II had the highest median number of previous years' teaching experience with 16.6 years' experience; those in Class I ranked next 15.05 years'

TABLE 7
PREVIOUS TEACHING EXPERIENCE OF MATHEMATICS TEACHERS
ACCORDING TO SIZE OF SCHOOL, 1946-47

No. of Years	Class I	Class II	Class III	Class IV	Class V	All No.	All %
Over 40 yrs.	1	5	1	3	4	14	2.1
31 - 40 yrs.	7	10	8	3	6	34	5.2
21 - 30 yrs.	19	23	37	18	26	123	18.8
16 - 20 yrs.	10	18*	18	19	31	96	14.7
11 - 15 yrs.	9	16	19*	23*	25*	92*	14.0
10 yrs.	2	3	8	4	7	24	3.7
9 yrs.	2	6	6	7	5	26	4.0
8 yrs.	4	3	6	5	7	25	3.8
7 yrs.	2	1	7	1	7	18	2.7
6 yrs.	1	1	5	7	8	22	3.4
5 yrs.	2	2	2	5	8	19	2.9
4 yrs.	6	5	2	2	6	21	3.2
3 yrs.	4	5	8	6	4	27	4.1
2 yrs.	1	2	9	6	5	23	3.5
1 yr.	2	6	9	5	9	31	4.7
None	3	2	16	7	11	39	6.0
Not Given	17	2	1	1	0	21	3.2
Totals	92	110	162	122	169	655	100.0
Medians	15.5 yrs.	16.6 yrs.	11.8 yrs.	12.3 yrs.	12.6 yrs.	13.2 yrs.	

* Group in which median falls

experience; those in Class V were third with 12.6 years' experience; next, the teachers of Class IV had 12.3 years' experience; and those of Class III were lowest with a median number of 11.8 years' experience.

In Class I there were three teachers with no previous teaching experience; in Class II there were only two who had no previous experience; in Classes III, IV, and V, the numbers increase considerably with 16, 7, and 11 respectively, who had no previous teaching experience. This makes a total of 39, or 6 per cent of all the mathematics teachers who had no previous teaching experience. A total of 171 teachers, or 26.1 per cent, of the total number of teachers had more than 20 years' teaching experience. A teacher in a Class II school had the highest number of years' teaching experience, having taught 46 years. It is interesting to note also that of these teachers, 48 had taught more than 30 years, and 14 had taught more than forty years.

Table 8 gives the previous teaching experience of mathematics teachers according to type of position held.

The median number of years' experience of mathematics teachers who also served as superintendents was 14.7 years' experience. For principals the median years' experience was 11.3 years' experience. This was the lowest

TABLE 8
PREVIOUS TEACHING EXPERIENCE OF MATHEMATICS TEACHERS
ACCORDING TO POSITION, 1946-47

No. of Years	Superintendent	Principal	Teacher	All	
				No.	%
Over 40 yrs.	3	1	10	14	2.1
31 - 40 yrs.	11	6	17	34	5.2
21 - 30 yrs.	31	20	72	123	18.8
16 - 20 yrs.	34	20	42	96	14.7
11 - 15 yrs.	34*	16*	42*	92*	14.0
10 yrs.	8	4	12	24	3.7
9 yrs.	9	4	13	26	4.0
8 yrs.	4	8	13	25	3.8
7 yrs.	5	4	9	18	2.7
6 yrs.	6	7	9	22	3.4
5 yrs.	7	2	10	19	2.9
4 yrs.	2	5	14	21	3.2
3 yrs.	1	9	17	27	4.1
2 yrs.	2	4	17	23	3.5
1 yr.	2	9	20	31	4.7
None	4	5	30	39	6.0
Not Given			21	21	3.2
Totals	163	124	368	655	100.0
Median	14.7 yrs.	11.3 yrs.	11.9 yrs.	13.2 yrs.	

* Group in which Median falls.

of the three groups. The median number of years' experience of classroom teachers was 11.9 years. These last two groups were lower than the median number of years' experience for the total group of mathematics teachers, which was 13.2 years' experience.

Four superintendents and five principals had no previous teaching experience, and thirty classroom teachers were in their first year teaching. Eleven superintendents had less than five years' teaching experience; 32 principals had less than five years' experience; and 98 classroom teachers had less than five years' teaching experience. This was a total of 141 mathematics teachers, or 21.5 per cent, having less than five years' experience. Seventy teachers, or 10.7 per cent, were in their first or second year of teaching. Of the mathematics teachers who had taught more than forty years, there were 3 superintendents, 1 principal, and 10 classroom teachers.

Table 9 shows that the median years' experience of the men mathematics teachers was 10.7 years, which is lower than the median years' experience for all mathematics teachers (13.2 years). The women teachers had a median of 16.6 years' experience which was higher than the median for all mathematics teachers. This is significant in considering the effect of the recent war on the

TABLE 9
PREVIOUS TEACHING EXPERIENCE OF MATHEMATICS TEACHERS
ACCORDING TO SEX, 1946-47

No. of Years	Male	Female	All
Over 40 years	4	10	14
31-40 years	16	18	34
21-30 years	46	77	123
16-20 years	46	50*	96
11-15 years	53	39	92*
10 years	11*	13	24
9 years	15	11	26
8 years	13	12	25
7 years	9	9	18
6 years	13	9	22
5 years	9	10	19
4 years	14	7	21
3 years	19	8	27
2 years	11	12	23
1 year	26	5	31
None	31	8	39
Not Given	9	12	21
Totals	345	310	655
Medians	10.7 yrs.	16.6 yrs.	13.2 yrs.

* Group in which median falls.

status of the mathematics teachers. Also significant is the comparison of the number of men mathematics teachers of less than five years' experience with the number of women mathematics teachers with less than five years' teaching experience. Table 9 shows that 101 of the 345 men mathematics teachers had less than five years' experience, while only 40 of the 310 women teachers had less than five years' experience. Hence, of those taking up mathematics teaching as a profession in the last five years, the men outnumber the women in the ratio of 5 to 2. The ratio is even higher considering those who were in their first and second years' experience groups. Thirty-one men had no previous experience compared to 8 women without experience. Of those with one year of previous experience, 26 were men and 5 were women. Combining these two groups, we find that 57 men and only 13 women (a ratio of approximately 4 to 1) had one year or less of experience.

Of those having taught more than forty years, 4 were men and 10 were women. In the 31-40 years' experience group, 16 were men and 18 were women. In the 21-30 years' experience group, 46 were men and 77 were women. Combining these groups, 66 men as compared with 105 women had more than 20 years' experience. Here the ratio of the men to women is roughly, 2 to 3.

TABLE 10
TENURE OF MATHEMATICS TEACHERS
ACCORDING TO SIZE OF SCHOOL, 1946-47

No. of Years in Position Includ- ing Present Year	Class I	Class II	Class III	Class IV	Class V	No.	All %
Over 40 yrs.		1				1	.2
31 - 40 yrs.	1	2			1	4	.6
21 - 30 yrs.	13	3	5	4	1	26	4.0
16 - 20 yrs.	4	4	4	1	3	16	2.4
11 - 15 yrs.	3	4	5	2	2	16	2.4
10 yrs.			1			1	.2
9 yrs.	3	1	6	2		12	1.8
8 yrs.	1	2	6		3	12	1.8
7 yrs.	2		3	2		7	1.1
6 yrs.	2	3	2	2	6	15	2.3
5 yrs.	5	10	10	8	6	39	6.0
4 yrs.	8*	16	14	11	22	71	10.8
3 yrs.	6	14*	15	15	23	73	11.1
2 yrs.	4	17	35*	31*	30*	117*	17.9
1 yr.	23	32	55	44	72	226	34.5
Not Given	17	1	1			19	2.9
Totals	92	110	162	122	169	655	100.0
Medians	3.6yrs.	2.4yrs.	1.7yrs.	1.5yrs.	1.4yrs.	1.8yrs.	

* Group in which median falls.

TENURE IN PRESENT POSITIONS

Table 10 shows the tenure, or the number of years in the present position, of mathematics teachers in Nebraska high schools. The median years' tenure for all mathematics teachers was 1.8 year. Teachers in Class I schools had the longest tenure with 3.6 years, and other classes followed in the same order as their enrollment classification, with teachers in Class II having been in their present positions 2.4 years, in Class III, 1.7 years, in Class IV, 1.5 years, and in Class V, 1.4 years. The median tenure of teachers of Classes I and II were above the median years' tenure for all mathematics teachers. Classes III-V were below the median for all mathematics teachers. There was little variation among these three groups.

The yearly turnover for all mathematics teachers was 226 teachers, which means that 34.5 per cent of all mathematics teachers were new to their positions for the school year 1946-1947. The greatest turnover was found in the smaller enrollment class, it being 42.6 per cent in Class V. The smallest turnover, 25 per cent, was found in Class I. It should be pointed out that teachers for whom data were not available were undoubtedly more experienced

teachers since all teachers new to a system must file the Form C report from which this information was tabulated. Class II had 29.1 per cent of the teachers new in their positions; Class III had 34 per cent; and Class IV had 36.1 per cent.

It is significant to note that a total of 343 teachers, or 52.4 per cent of all mathematics teachers, were either in their first or second years in their respective positions. This indicates the problem which schools face in providing continuity in the program and in developing adequate acquaintanceship with the pupils and the community.

The turnover for a five year period shows a total of 526 teachers, or 80.3 per cent, who have changed positions within a five year period. Class I schools show the lowest per cent of turnover during the five year period, with 50 per cent; Class III schools are next with 79.6 per cent; then Class II schools with 80.9 per cent; Class IV schools with 89.3 per cent; and finally Class V schools which had 90.5 per cent of the teachers new to their positions within a five year period. Only 31 teachers had been in the same positions, almost half of these being in Class I schools.

Table 11 shows the tenure of mathematics teachers according to positions held. The median years' tenure of mathematics teachers who were also superintendents was 2.3 years. The median tenure for principals and classroom teachers was 1.8 years and 1.6 years, respectively. Thus the median years' tenure of superintendents was slightly more, while that of the principals was exactly the same, and that of the classroom teacher was less than the median years' experience for all mathematics teachers.

The yearly turnover for superintendents was 43, 26.4 per cent being new to their positions for the school year 1946-1947. This was less than the annual turnover for all mathematics teachers (34.5 per cent), previously mentioned. The annual turnover for principals was 47, or 37.9 per cent, which is more than the per cent of turnover for all mathematics teachers. The yearly turnover for classroom teachers was 136, or 37.0 per cent, which is also more than the turnover for all mathematics teachers.

The five year turnover for all mathematics teachers who were superintendents was 132 teachers, or 81 per cent who changed positions within the five year period. This was slightly more than the per cent of five year turnover

TABLE 11
TENURE OF MATHEMATICS TEACHERS
ACCORDING TO POSITION, 1946-47

No. of Years in Position Includ- ing Present Year	Superintendent	Principal	Classroom Teacher	All
Over 40 yrs.			1	1
31 - 40 yrs.	1		3	4
21 - 30 yrs.	6	2	18	26
16 - 20 yrs.		5	11	16
11 - 15 yrs.	3	4	9	16
10 yrs.	1			1
9 yrs.	4	1	7	12
8 yrs.	6	2	4	12
7 yrs.	2	1	4	7
6 yrs.	7	2	6	15
5 yrs.	11	10	18	39
4 yrs.	19	20	32	71
3 yrs.	28*	10	35	73
2 yrs.	31	20*	66*	117*
1 yr.	43	47	136	226
Not Given	1		18	19
Totals	163	124	368	655
Medians	2.3 yrs.	1.8 yr.	1.6 yr.	1.8 yr.

* Group in which median falls.

for all mathematics teachers. There were 287 classroom teachers who changed positions in the five year period. This was 78.0 per cent, or a little less than the median five year turnover for all mathematics teachers.

Seven superintendents who taught mathematics, or 4.3 per cent, had been in the same position more than 20 years; two principals, or 1.6 per cent, had been in the same position more than 20 years; and twenty-two classroom teachers, or 6.0 per cent, had been in the same position more than twenty years. A classroom teacher had the longest tenure, having taught 46 years in the same school.

As is shown in Table 12, the median years' tenure for men mathematics teachers was 1.5 years, while for women mathematics teachers, it was 2.2 years. Hence, the turnover among men mathematics teachers was greater than among women mathematics teachers.

The yearly turnover for men was 140 teachers, or 40.6 per cent. This was more than that for all mathematics teachers (34.5 per cent). The yearly turnover for women mathematics teachers was 86, or 27.7 per cent. This is less than the per cent of turnover for all mathematics teachers.

TABLE 12
TENURE OF MATHEMATICS TEACHERS
ACCORDING TO SEX, 1946-47

No. of Years in Position Includ- ing Present Year	Male	Female	No.	All %
Over 40 yrs.		1	1	.2
31 - 40 yrs.	1	3	4	.6
21 - 30 yrs.	10	16	26	4.0
16 - 20 yrs.	4	12	16	2.4
11 - 15 yrs.	3	13	16	2.4
10 yrs.	1		1	.2
9 yrs.	7	5	12	1.8
8 yrs.	8	4	12	1.8
7 yrs.	4	3	7	1.1
6 yrs.	8	7	15	2.3
5 yrs.	21	18	39	6.0
4 yrs.	31	40	71	10.8
3 yrs.	38	35	73	11.1
2 yrs.	64	53	117	17.9
1 yr.	140	86	226	34.5
Not Given	5	14	19	2.9
Totals	345	310	655	100.0
Medians	1.5 yr.	2.2 yr.		1.8 yr.

The five-year turnover for men mathematics teachers was 294, or 85.2 per cent; that of the women was 232, or 74.8 per cent. Hence the men had the higher per cent of turnover for the five year period, than that for all mathematics teachers (80.3 per cent), while the women had a lower per cent of turnover.

Eleven men mathematics teachers, or 3.2 per cent, had remained in their present positions over 20 years, and 20, or 6.5 per cent, of the women mathematics teachers, had remained in the same position more than twenty years. One woman had been in the same teaching position for 46 years.

CHAPTER V
TEACHING LOAD AND TEACHING COMBINATIONS
OF MATHEMATICS TEACHERS, 1946-1947

MATHEMATICS COURSES OFFERED IN NEBRASKA HIGH SCHOOLS

In checking the teaching load of the mathematics teacher in Nebraska high schools, it is interesting to note first of all the various mathematics courses taught in 1946-1947 as this information is of importance in clarifying the status of the mathematics teacher. Form C reports from which data were secured indicated the mathematics courses being taught for the school year 1946-1947. In some cases it was indicated that certain courses were taught on alternating years. Since this system of alternation is merely a device for scheduling the school program more advantageously, these schools were counted in with those actually teaching these particular courses during the school year. Some schools may have omitted the information that certain courses were alternated; if so, the totals given in this section fail to report the true picture to that extent.

Table 13 shows the number of schools of each enrollment classification offering each mathematics course.

TABLE 13
NUMBER OF NEBRASKA HIGH SCHOOLS OFFERING
VARIOUS MATHEMATICS COURSES, 1946-47

SUBJECT	I	II	Class III	IV	V	All No.	%
First Year Algebra	26	64	109	84	134	417	89.7
Geometry	29	64	100	70	114	377	81.1
Algebra III (2nd yr.)	29	64	68	30	41	232	49.9
Applied Mathematics	12	26	45	35	50	168	36.1
General Math. (or Basic Math.)	14	12	13	4	13	56	12.0
High School Arithmetic	11	5	12	7	11	46	9.9
Advanced Math.	18	4	4	2	4	32	6.9
Trigonometry	12	8	10			30	6.5
Solid Geometry	14	7	1	2	3	27	5.8
Bus. or Comm. Mathematics	8	3	3		2	16	3.4
Remedial Arithmetics	4		1			5	1.1

These courses, as far as possible, were listed as shown in the various schedules. This involves some overlapping of courses, particularly in applied mathematics and general mathematics. In some cases these courses may have been very similar, differing very little in content. In other cases the term applied mathematics referred to advanced courses for juniors or seniors. In either case they are both attempts to fit the curriculum to the needs of the student. Second-year algebra is tabulated as a unit due to the fact that schedules for both semesters were not examined.

Algebra was the mathematics subject taught most frequently in Nebraska high schools. It will be shown later in this study that it is losing ground in per cent of schools offering this courses. Some comparisons will be with previous studies of mathematics courses offered in Nebraska high schools for certain years. A total of 417 schools offered Algebra. This was 89.7 per cent of the schools included in this study. Geometry was second highest in frequency of occurrence in the curriculum. Three hundred seventy-seven schools, or 81.1 per cent, offered geometry. All of Class I and Class II schools offered algebra and geometry plus Algebra III with the

exception of three 3-year high schools where algebra was obviously relegated to the junior-high school curriculum.

Second-year algebra was taught in approximately one half of the high schools. The larger schools offered this course more often than the smaller schools. In classes I and II, 100 per cent of the schools of these respective groups taught this subject. Class III schools showed 58.1 per cent offering Second-year algebra. The per cent dropped off for Class IV with 30.0 per cent and in Class V, 26.5 per cent offered the course.

Applied mathematics and general mathematics show definite increases in popularity with schools. Thirty-six and one-tenths of all schools of this study offered applied mathematics, while 12.0 per cent offered general mathematics (or basic mathematics, as it was sometimes termed). A factor influencing this percentage slightly were the few three-year senior high schools in which general mathematics was not included, since it was provided as part of the curriculum of the junior-high school. If the applied mathematics and general mathematics per cents were combined this would show 48.1 per cent of the schools teaching these newer mathematics subjects of a practical nature. High school arithmetic courses were taught in

9.9 per cent of the schools with no significant percentage for any one class.

Courses designated as advanced mathematics were taught in 6.9 per cent of the schools, with the larger schools having more than half of these courses.

Trigonometry and solid geometry both have a low per cent of frequency. Six and five-tenths of the schools taught trigonometry, while 5.8 per cent taught solid geometry. There may have been some instances where either of these subjects may have been alternated with Algebra III, or follow as a second-semester course after the third semester of algebra.

There was a total of 1406 courses taught in the 465 high schools of this study. This is slightly more than 3 courses (3.0 courses) taught per school.

COMBINATIONS OF SUBJECTS TAUGHT BY MATHEMATICS TEACHERS, 1946-1947

There was a variety of combinations of subjects taught with mathematics by the 655 Nebraska high school teachers included in this study. In a previous chapter it was noted that 287 (or 43.8 per cent) of the mathematics teachers served as superintendents or principals. Hence these administrative duties are not considered

here except to list them separately when no other subject matter course was taught by mathematics. In the smaller schools there were of necessity many teachers who taught two, three, or even more different subjects in combination with mathematics. Even in some of the medium enrollment groups there were frequent examples of the division of the mathematics courses among two or more teachers when one mathematics teacher could have handled all the courses in mathematics taught in that particular school. This resulted in more combinations of different subjects with mathematics.

Table 14 shows the tabulation of this analysis. Science leads all other fields in frequency of combination with mathematics. There were 239 instances where mathematics teachers also were teaching science. The next most frequent combination was of mathematics with physical education and/or athletics which showed 180 combinations. Physical education and athletics were combined because only general fields of subject matter were considered for this phase of the study. Social science and English were next in frequency in the order mentioned. The number of combinations are noted in Table 14. Commercial courses follow English as a combination course with mathematics.

TABLE 14

NUMBER OF MATHEMATICS TEACHERS WHO TAUGHT

VARIOUS COMBINATIONS OF HIGH SCHOOL SUBJECTS, 1946-1947

Combinations with Mathematics	Class					All Schools
	I	II	III	IV	V	
Science	9	30	67	55	78	239
Phys. Ed. or Athletics	6	19	39	41	75	180
Social Science	7	14	32	36	62	161
English	4	5	23	22	50	104
Commercial	7	1	15	17	52	92
Mathematics Only	44	34	11	1	1	91
Industrial Arts	4	4	13	14	20	55
Language	5	6	10	7	12	40
Music	2	2	12	10	14	40
Home Economics		1	7	4	9	21
Normal Training		3	5	6	5	19
Superintendent Only		6	8	4		18
Office Practice		2	3	5	7	17
Principal Only	2	5	5		1	13
Agriculture			5	2	5	12
Guidance or Vocations		2		4	6	12
Religion or Ethics	1	4	4		2	11
Art or Photography		2	2		2	6
Aeronautics	2	2			1	5
Work Exper.				3		3

There were in all 91 mathematics teachers, or 13.9 per cent of the total, who taught mathematics exclusively. The largest percentage of these were in Class I and II, and a small group in Class III. Only one teacher in each of Groups IV and V taught mathematics exclusively.

Other subjects combined with mathematics are indicated in Table 14 in order of frequency of occurrence. A total of twenty subject-matter fields were combined with mathematics as this would have involved too many possible combinations to be feasible.

ACTIVITIES SPONSORED BY MATHEMATICS TEACHERS

In determining the total number of activities sponsored by mathematics teachers there was an obvious lack of reports in this area. Some teachers in filling out these Form C reports did not complete the section on activities. In some cases, of course, they did not sponsor any activity but it could not be determined whether the blank report meant no activity sponsored, or whether the section was not completed.

Table 15 shows the activities sponsored by various mathematics teachers as far as data were available. It was difficult in a few instances to determine whether

TABLE 15
NUMBER OF MATHEMATICS TEACHERS
SPONSORING VARIOUS ACTIVITIES, 1946-1947

Activity	I	II	Class III	IV	V	All Schools
Study Hall						
Supervision	13	27	47	53	61	201
Athletics and						
Physical Ed.	6	19	39	41	75	180
Home Room	26	19	34	13	12	104
Class Plays						
or Dramatics	2	1	29	19	51	102
Class Sponsor	5	19	33	24	19	100
Student Council	2	6	12	9	14	43
Pep Club	2	3	9	7	21	42
Music	2	2	12	10	14	40
Library	2	6	7	4	2	21
Subject-Matter						
Club		4	7	2	8	21
Guidance	3	3	4	4	4	18
Girls Reserves	2	3	4	4	1	14
Journalism or						
School Paper			2	3	6	11
Girl or Boy						
Scouts	2	1	2	4	2	11
Hi-Y or Tri-						
Hi-Y	1	3	4	1	1	10
School Annual		1	2	2	1	6
L-H Club			1	1	4	6
Extension Course						
Supervisor			1	3	2	6
Honor Society	1	1		1	1	4

certain duties should be classified as teaching subject-matter courses or as directing activities. The criteria for determining whether the item involved teaching in a subject-matter field were: definite scheduled time was set aside in the curriculum; preparation of lesson material was necessary; and class marks were given. An activity on the other hand was considered as having a more or less indefinite schedule, little or no assigned lesson material, and marks. The two items most difficult to classify were Athletics (or Physical Education) and Music. Hence these are listed in both subject-matter fields and activities. Guidance was included in the activity table list only when no definite time was assigned for this duty. It is included in Table 14 when it had a definite time in the school schedule as a vocational guidance course.

Study hall supervision heads the list of activities sponsored by teachers, with 201, or 30.7 per cent, taking part. Athletics, or physical education, was next in frequency with 180 teachers of the total supervising this activity. Classes III to V teachers had a larger percentage of these activities. Apparently, larger schools had special teachers for these duties, or had other procedures.

Home room supervision ranked next with 104 teachers taking part in this activity. Teachers in the larger schools engaged in more of this activity than was true in the smaller schools. Class play supervision ranked next in activities. One half of the 102 teachers taking part in this activity were in Class V schools. The larger schools usually had special teachers for this activity. One hundred teachers were class sponsors, the fewest of these were in Class I schools. Other activities sponsored by mathematics teachers and their frequency of occurrence are noted in Table 15. There were a total of 940 activities sponsored, which gives an average of 1.4 activities per teacher.

TEACHING LOAD OF MATHEMATICS TEACHERS

The teaching load of mathematics teachers is shown in Tables 16 to 21, inclusive, in terms of the total number of pupils taught, number of mathematics pupils taught, non-mathematics pupils, then the total number of classes taught, the mathematics classes taught, and the non-mathematics classes taught by each teacher. It is well to keep in mind in regard to this phase of the study that a high percentage (43.8 per cent) of these mathematics teachers

had administrative duties, which necessitated a less than average load of teaching duties. Also there was a number of these teachers (180, or 27.5 per cent) who also taught Athletics and Physical Education and 40, or 6.1 per cent, who taught Music. These required individual instruction and time outside the regular school day schedule, and were in consequence probably given a lighter teaching load than those who did not have these duties.

Another factor involved in compiling these tables was the variation in lengths of classes. Since these classes varied from 45 minutes to 60 minutes it was impossible to make allowances for all lengths of classes. There seemed to be a trend, however, toward the longer 60 minute periods with supervised study, and directed activity under supervision.

Table 16 shows by groups the number of pupils taught by mathematics teachers for each enrollment classification. This indicates a successive decrease in number of pupils taught per mathematics teacher for each class from the larger enrollment group schools down to the smaller schools. The median for Class I schools falls in the group of 126-150 pupils while that for Class V schools falls in the upper end of the 26-50 pupils group. The median number of pupils taught by all mathematics teachers falls in the 76-100 group, or at 82.6 pupils. Thirty-six (5.5 per cent)

TABLE 16
 NUMBER OF MATHEMATICS TEACHERS IN EACH SIZE GROUP
 TEACHING VARIOUS NUMBERS OF PUPILS

No. of Pupils	I	II	Class III	IV	V	All Schools
Over 150	19	11	6			36
126-150	30*	21	28			79
101-125	22	35*	32	9		98
76-100	13	25	66*	43	17	164*
51-75	5	8	23	53*	63	152
26-50	3	4	6	17	87*	117
1-25		6	1		2	9
Totals	92	110	162	122	169	655

* Group in which median falls.

Median - 82.6 pupils

TABLE 17
 NUMBER OF MATHEMATICS TEACHERS IN EACH SIZE GROUP
 TEACHING VARIOUS NUMBERS OF MATHEMATICS PUPILS

No. of Pupils	I	II	Class III	IV	V	All Schools
Over 150	18	5				23
126-150	17	8	1			26
101-125	11*	19	4			34
76-100	11	12	19	2		44
51-75	16	23*	42	11	2	94
26-50	16	23	66*	69*	40	214*
1-25	3	20	30	40	127*	220
Totals	92	110	162	122	169	655

* Group in which median falls.

Median - 37.6 pupils

teachers taught over 150 pupils per day.

Tables 17 and 18 give information regarding the distribution of total numbers of mathematics teachers teaching different numbers of mathematics and non-mathematics pupils. In regard to mathematics pupils taught by mathematics teachers the larger schools have the greater number of mathematics students in the same order as was noted for total number of pupils taught. Hence the reverse is true regarding non-mathematics students taught by mathematics teachers, i.e. the larger the school, the less non-mathematics students taught by the mathematics teacher. For all mathematics teachers the median number of mathematics pupils taught falls in the group 26.50 (37.6 pupils). In comparing Tables 17 and 18 it will be noted that in Class I mathematics teachers teach mostly mathematics pupils. Nearly half of these mathematics teachers do not teach any other pupils and the total of non-mathematics pupils taught by this group of teachers is not significant considering the entire group. In Class II mathematics pupils constitute the major portion of the mathematics teacher's teaching responsibility. In Classes III and IV approximately half of the pupils are mathematics pupils and half non-mathematics

TABLE 18
 NUMBER OF MATHEMATICS TEACHERS IN EACH CLASS GROUP TEACHING
 VARIOUS NUMBERS OF NON-MATHEMATICS PUPILS

No. of Non-Math. Pupils	I	II	Class III	IV	V	All Schools
Over 100	1	5	4			10
76-100	5	19	28	5		57
51-75	21	19	46	29	16	131
26-50	11	17*	54*	62*	108*	252*
1-25	9*	4	10	20	43	86
None	45	46	20	6	2	119
Totals	92	110	162	122	169	655

* Group in which median falls.

TABLE 19
NUMBER OF MATHEMATICS TEACHERS TEACHING
VARIOUS NUMBERS OF CLASSES

No. of Classes	I	II	Class III	IV	V	All Schools
8	1	1				2
7		2	3	5	5	15
6	14	20	20	7	29	90
5	43*	47*	60*	42	49*	241*
4	19	22	49	49*	62	201
3	8	9	21	14	20	72
2	5	2	6	5	4	22
1	2	7	3			12
Totals	92	110	162	122	169	655

* Group in which median falls.

Median - 4.1 classes

pupils. In the smallest schools (Class V) the mathematics teacher teaches a few mathematics pupils with a majority of non-mathematics pupils. There were 119 teachers or 16.6 per cent who taught only mathematics.

Tables 19 to 21, respectively, show the total number of classes taught by mathematics teachers, the total number of mathematics classes, and the total number of non-mathematics classes, in terms of enrollment classification. The same distribution will be noted as was observed for the pupils taught by mathematics teachers. The median number of classes taught by mathematics teachers is 4.1 classes. The median number of mathematics classes for all teachers was 2, and the median number of non-mathematics classes was 2.

TABLE 20
 NUMBER OF MATHEMATICS TEACHERS TEACHING
 VARIOUS NUMBERS OF MATHEMATICS CLASSES

No. of Math. Classes	I	II	Class III	IV	V	All Schools
6	9	9				18
5	33	17	5			55
4	6*	18	13	1	1	39
3	12	14*	41	34	18	119
2	20	24	48*	53*	74*	219*
1	12	28	55	34	76	205
Totals	92	110	162	122	169	655

* Group in which median falls.

TABLE 21
NUMBER OF MATHEMATICS TEACHERS TEACHING VARIOUS
NUMBERS OF NON-MATHEMATICS CLASSES

No. of Non-Math. Classes	I	II	Class III	IV	V	All Schools
7		1				1
6		1	1	3	4	9
5	3	4	4	4	12	27
4	3	13	27	18	30	91
3	9	15	41	24	59*	148
2	16	15	41*	43*	48	163*
1	16*	15*	28	23	15	97
None	45	46	20	7	1	119
Totals	92	110	162	122	169	655

* Group in which median falls.

CHAPTER VI

SUBJECT MATTER PREPARATION OF MATHEMATICS TEACHERS

Although there are many factors which influence teaching success, the North Central Association Committee has taken the position that "the quality of teaching will be definitely related to the subject matter preparation which the teacher has received for the actual teaching assignments given him."¹ The purpose of this chapter is to present data dealing with of Nebraska high schools in 1946-1947.

DEGREES OF MATHEMATICS TEACHERS

Table 22 shows the numbers of mathematics teachers having no degrees, those holding a Bachelor of Arts or Bachelor of Science, or the equivalent, and the teachers having Masters degrees or above. The data is classified according to the enrollment grouping used throughout this study.

¹ Report of a North Central Association Committee, "Inadequacies In the Subject Matter Preparation of Secondary School Teachers and Suggestions for Their Correction", North Central Association Quarterly, April, 1938.

TABLE 22
NUMBER OF MATHEMATICS TEACHERS HOLDING
VARIOUS DEGREES, 1946-1947

Degree	I	II	Class III	IV	V	No.	All %
None		4	9	11	27	51	8.1
B.A. or B.Sc. or Equivalent	46	79	110	91	107	433	68.4
Masters or Better	29	25	41	20	34	149	23.5
Not Given	17	2	2		1	22	
Totals	92	110	162	122	169	655	

Available data shows that 51, or 8.1 per cent, of 633 teachers had no college degree. More than half of these were in smallest enrollment school group. Class I schools had no teachers without degrees. There were 4 in Class II schools, and 9 and 11, respectively, in Classes III and IV.

Sixty-eight and four-tenths per cent of the teachers for whom data was available held Bachelor's degrees as their highest degrees. There were 433 teachers in this group, the division between schools of various enrollments is shown in Table 22. This group includes the majority of the mathematics teachers as might be expected.

There were 149, or 23.5 per cent, of the 633 mathematics teachers who had earned Master's degrees or above. Of these, five held Doctor's degrees. One factor influencing these results was the large percentage of the mathematics teachers who held administrative duties in the schools (43.8 per cent). It is probable that in general more of these principals and superintendents have Master's or advanced degrees than the classroom teachers.

MATHEMATICS TEACHERS PREPARATION ON THE GRADUATE LEVEL

In Table 23 a tabulation has been made of the hours earned by mathematics teachers above those required for

TABLE 23
NUMBER OF MATHEMATICS TEACHERS IN EACH CLASSIFICATION
GROUP HAVING VARIOUS NUMBER OF GRADUATE HOURS

No. of Graduate Hours	I	II	Class III	IV	V	All Schools
Over 50	7	3	11	4	9	34
41-50	8	3	5	6	11	33
31-40	14	15	22	11	20	82
21-30	10	22	15	13	19	79
11-20	14	17	17	15	24	87*
1-10	8	21	24	20	20	93
None	16	26	61	52	65	220
Not Given	15	3	7	1	1	27
Totals	92	110	162	122	169	655

* Median 11.1 hours.

graduation. This table was tabulated by ten-hour intervals as this seemed to be the best means of preparation. Thirty-four teachers were noted as having over fifty hours of credit on a graduate level. In many cases teachers had more than 125 hours of under-graduate credit, but no attempt was made to evaluate or tabulate these. In this group of teachers having over fifty hours of graduate credit, a large number proportionally are noted in Classes III and V. Many of these were administrators, or classroom teachers who had been in the teaching profession for a relatively long period of time.

For all mathematics teachers the median number of hours of graduate credit was 11.1. There were, however, 220 teachers who had no graduate credit. This was approximately one-third of the total, and necessarily included those previously mentioned who had no degree (51 teachers). The great majority of teachers who have no graduate work were in Classes III-V enrollment schools.

MATHEMATICS PREPARATION OF MATHEMATICS TEACHERS

Of particular significance in the study of the status of the mathematics teacher is the amount of the mathematics courses studied by the mathematics teachers.

Table 24 gives the data on the number of hours earned by mathematics teachers by ten-hour groupings in each enrollment class of school. Twelve teachers had over 50 hours of undergraduate (or graduate) hours in mathematics courses. Classes II and V schools had four each of these teachers. Nine teachers had from 41 to 50 hours of mathematics work; 44 had from 31-40 hours; and 158 teachers had from 21-30 hours of mathematics credit. The largest group was those who had 11 to 20 hours of mathematics. There were 193 teachers in this group. The median for all mathematics teachers fell in this group. It was 17.9 hours, which is barely equivalent to a major in the field of mathematics. Thus it must be concluded that slightly more than half the mathematics teachers have less than a major in their teaching field. The median for Class I and V schools decreases in the same order as their respective enrollments. A total of 138 teachers had from 1 to 10 hours of mathematics. There were 27 mathematics teachers (4.7 per cent) who had taken no mathematics courses in college.

TABLE 24

NUMBER OF MATHEMATICS TEACHERS IN EACH CLASSIFICATION GROUP
EARNING VARIOUS HOURS OF CREDIT IN MATHEMATICS

Hours (Undergraduate or Graduate)	I	II	Class III	IV	V	All Schools
Over 50	2	4	1	1	4	12
41-50	1	3	2	1	2	9
31-40	9	16	5	11	3	44
21-30	33*	33*	40	26	26	158
11-20	13	33	65*	33*	49*	193*
1-10	6	10	31	37	54	138
None	1		5	5	16	27
Not Given	27	11	13	8	15	74
Totals	92	110	162	122	169	655
Medians	24.9	23.1	17.0	15.5	12.4	

* Median 17.9 hours.

COLLEGE MATHEMATICS COURSES
TAKEN BY MATHEMATICS TEACHERS

Table 25 shows the distribution of number of teachers in each class group having each particular subject as part of their preparation. No attempt was made to tabulate the variation in amount of hours of credit in each course taken. Hence this table will serve only as an indication of kind of mathematics preparation rather than the amount of preparation.

In considering the mathematics courses listed by mathematics teachers as part of their preparation it was noted that college algebra occurred most often in the tabulation. Next in order of occurrence was geometry, trigonometry, calculus, and general mathematics, in that order.

Four hundred-eight mathematics teachers had college credit in algebra courses. Credit in geometry courses had been earned by 311 mathematics teachers. Two hundred fifty-two teachers had credit in trigonometry courses, 137 in calculus, and 137 in general mathematics courses.

Mathematics teaching methods was listed here because of its frequent mention in reports examined. However, there is a probability that this data does not

TABLE 25

NUMBER OF MATHEMATICS TEACHERS IN EACH CLASSIFICATION GROUP
WITH CREDIT IN VARIOUS COLLEGE MATHEMATICS COURSES

Mathematic Courses	I	II	Class III	IV	V	All Schools
Algebra	38	76	113	83	98	408
Geometry	34	63	87	58	69	311
Trigonometry	28	47	80	46	51	252
Calculus	17	31	40	29	20	137
General Mathematics	10	25	30	26	43	134
Mathematics Methods	5	9	13	6	14	47
History of Mathematics			1	1	2	4
Others	19	38	35	22	28	142
None	1		5	5	16	27
Not Given	49	23	32	29	32	165

give an adequate account of the total number of mathematics teachers having methods courses in the teaching of mathematics as these are often listed as Education courses. It would also have been interesting to note the number of mathematics teacher having had actual practice-teaching experience in mathematics in teacher-training institutions if information had been available. This had been indirectly accounted for in teachers' certificates issued since practice-teaching is a part of the requirements for teachers certificates.

Only four of the teachers listed the History of Mathematics as a part of their course work in mathematics. Unless this course was included in "Other Courses", or was a part of Education courses studied, there seems to be a definite lack in this phase of preparation.

Other courses not itemized were indicated by 142 mathematics teachers. Many of these were undoubtedly advanced courses of technical nature. Also included in this table are the 27 teachers who indicated that no preparation was made in the field of mathematics.

SEMESTER HOURS IN EDUCATION COURSES

EARNED BY MATHEMATICS TEACHERS

Table 26 shows the semester hours in education

TABLE 26
 NUMBER OF MATHEMATICS TEACHERS IN EACH CLASSIFICATION GROUP
 HAVING VARIOUS HOURS IN EDUCATION

No. of Hours in Education	I	II	Class III	IV	V	All Schools
Over 50	12	7	20	14	12	65
41-50	7	15	13	8	13	56
31-40	16*	12	24	15	25	92
21-30	17	34*	56*	49*	57*	213*
11-20	11	23	20	12	29	95
1-10		5	6	6	5	22
None		1	6	7	9	23
Not Given	29	13	17	11	19	89
Totals	92	110	162	122	169	655
Medians	32.9	26.9	28.3	27.3	23.5	27.7

* Group in which median falls.

courses earned by mathematics teachers. This table was arranged by grouping all teachers who had more than 50 hours of credit in one group, and then by ten hour periods and a final group of those having no hours of credit in education courses. There were 65 mathematics teachers who had over 50 hours of education. The distribution of teachers having various numbers of hours of education courses is compiled in Table 26 according to enrollment groups.

Data tabulated for preparation of mathematics teachers in the field of education shows a relative high median (27.7 hours) in education courses taken.

Then median for Class I schools was 32.9 hours of education courses. Class III has a median number of hours (28.3) above that of the median for the entire group, the medians of other classes are below 27.7 hours. The smaller schools had the lowest median (23.5 hours) with Class II next to lowest with 26.9 hours. Twenty-three teachers were noted as having no courses in education. Most of these were in the smaller schools.

MAJORS OR MINORS OTHER THAN MATHEMATICS

EARNED BY MATHEMATICS TEACHERS

It was of importance to note other subject matter preparation of mathematics teachers than mathematics

and education courses. In Table 27 data is given for other majors and minors of mathematics teachers. Eighteen hours or more of credit in any course was considered a minor (or major) for this tabulation.

It will be noted that science heads the list arranged according to the frequency of occurrence. Two hundred twenty-four teachers had studied science as a major or minor field. For these 224 mathematics teachers having science as a major or minor, the median number of hours earned in science courses was 28.7. As indicated in an earlier part of this study science was the subject most commonly taught in combination with mathematics, 239 mathematics teachers teaching both science and mathematics.

Social science courses were next in frequency in major or minor fields pursued by mathematics teachers. There were 182 teachers in this group. This likewise follows the order of subject-matter courses taught most frequently in combination with mathematics. English was the third choice of teachers of mathematics in choosing major and minor fields, 155 mathematics teachers having English as a major or minor. This also follows the sequence of subject-matter courses most often taught in combination with mathematics.

TABLE 27
DISTRIBUTION OF MAJORS AND MINORS
OTHER THAN MATHEMATICS

College Subject	No. of Teachers Having a Major or Minor in This Field	Median Hours Earned By Mathematics Teachers Having These Majors or Minors
Science	224	28.7
Social Science	182	28.7
English	155	24.7
Language	87	30.8
Commercial	25	24.5
Industrial Arts	20	24.5
Physical Education	14	25.5
Music	9	38.0
Home Economics	5	33.0
Agriculture	5	35.0

Language is fourth in frequency of preparation, but commercial and industrial arts are more often taught by the mathematics teacher than languages. The number of mathematics teachers specializing in physical education is relatively small as compared with those who supervise or teach this field. Data may not be complete in this area. A few mathematics teachers had majored in Music, Home Economics, and Agriculture, respectively, and judging from the relatively high median for hours of preparation in each of these, it would seem that many of these are actually specialists in music, home economics, and agriculture, respectively, who taught some mathematics.

TEACHING CERTIFICATES OF MATHEMATICS TEACHERS

Table 28 shows the tabulation of data concerning teaching certificates of mathematics teachers. These were grouped in three distinctive groups, the first being those that do not require renewal but are in force for life. The next group includes those not qualified for a regular certificate but have been given an emergency certificate not renewable. These are for special subjects for that year only and are issued only if no other duly qualified teacher is available for the

TABLE 28
TEACHING CERTIFICATES OF
MATHEMATICS TEACHERS

Type of Certificate	I	II	Class III	IV	V	No.	All %
Life Certificate	50	66	76	73	84	349	53.3
Temporary (Emergency Certificates)		6	16	13	37	77	11.8
Others	23	35	65	29	44	197	30.1
Not Given	19	3	4	2	4	32	4.9
Totals	92	110	162	122	169	655	100.1

position. The third group include initial secondary certificates or those which expire unless renewed by further education. The majority of mathematics teachers, 349, or 53.3 per cent, had life certificates. Seventy-seven teachers, or 11.8 per cent, held emergency certificates. Nearly half of these emergency certificate holders were in the small schools. Class I schools had none. Class II schools had 6 teachers with emergency certificates and Classes III and IV had 16 and 18 respectively. One hundred ninety-seven mathematics teachers, or 30.1 per cent, held regular renewable certificates.

CHAPTER VII

SOME COMPARISONS WITH RELATED STUDIES

Previous mention was made of related studies in Chapter I of this study. A few comparisons are made here in tenure, experience, salaries, and preparation of teachers with some of the findings of those reports. Not too much reliance should be placed on these comparisons, since each author studied different groups of teachers, and such factors as size of schools included, number of schools studied, subject-matter field of teachers, and method of selection of schools, might have had some influence on the data.

Table 29 gives some of the significant comparisons with related studies. Nicholls¹ found in a study of science teachers in 1940 the average tenure of science teachers at that time was 3.54 years. This study of mathematics teachers showed a median tenure of 1.8 years. The average experience of science teachers according to

1 Wayne Harold Nicholls, "The Status of Science Teachers in Nebraska Public High Schools", Master's thesis, University of Nebraska, 1940.

TABLE 29
COMPARISONS WITH OTHER STUDIES

	Report	Kind	Year	Data
Tenure	Nicholls	Science Tchr.	1940	3.54 yrs.-Average Tenure
	This Study	Math. Tchr.	1946-'47	1.80 yrs.-Median Tenure
Experience	Webb	Science Tchr.	1927-'28	7.96 yrs.-Average Experience
	Walker	Math. Tchr.	1936-'37	40% of Math. Tchrs. Had 5 or Fewer yrs. Experience
	Nicholls	Science Tchr.	1940	6.86 yrs.-Average
	This Study	Math. Tchr.	1946-'47	13.2 yrs.-Median
Salaries	Schafer	Math. Tchr.	1926	\$1528.28-Average
	Webb	Science Tchr.	1927-'28	\$1487.00-Average
	Nicholls	Science Tchr.	1940	\$1145.59-Average
	North Central	Science Tchr.	1940	\$1323.63-Average
	This Study	Math. Tchr.	1946-'47	\$2364.29-Median
Degrees	Schafer	Math. Tchr.	1926-'27	41.1%-No Degrees
	Walker	Math. Tchr.	1936-'37	3.5%-No Degrees
	This Study	Math. Tchr.	1946-'47	8.1% No Degrees
Graduate Hours	Walker	Math. Tchr.	1936-'37	58.9% Had No Graduate Hours Experience
	This Study	Math. Tchr.	1946-'47	33.6% Had No Graduate Hours Experience
Mathematics Preparation	Walker	Math. Tchr.	1936-'37	Central Tendency of Preparation 20-25 Hours Nebraska Central Tendency of Preparation 13-18 Hours
	This Study	Math. Tchr.	1946-'47	17.9 Hours-Median Mathematics Preparation

Webb² who made a study of science teachers in 1927-28 was 7.96 years. Walker³ found in 1936-37 that 40 per cent of the mathematics teachers had 5 or fewer years of experience. Nicholls⁴ found in 1940 that science teachers had an average experience of 6.86 years. This report found that the mathematics teachers in 1946-47 had a median of 13.2 years of experience.

The salaries of teachers are compared in Table 29. It must be kept in mind the economics conditions of each period that influence the salaries. Schafer⁵ in a study of mathematics teachers in 1926 shows the average salary then to have been \$1528.28; Webb⁶ in his study of science teachers, 1927-28, shows the average salary to have been \$1487.00; Nicholls⁷ in 1940 lists

2 Orie L. Webb, "The Status of High School Teachers in Nebraska As Shown By Experience, Training, and Certification", Master's thesis; University of Nebraska, 1928.

3 Jennie Christene Walker, "The Status of Mathematics In Accredited Secondary Schools of Nebraska in the Year 1936-1937", Unpublished thesis; University of Nebraska, 1937.

4 Wayne Harold Nicholls, op. cit.

5 Marvin Schafer, "Present Status of Mathematics in Nebraska Secondary Schools", Unpublished thesis; University of Nebraska, 1926.

6 Orie L. Webb, op. cit.

7 Wayne Harold Nicholls, op. cit.

\$1145.59 as the average salary of science teachers. He also listed in the same reports \$1323.63 as the average salary in North Central Association Schools. This report shows that mathematics teachers in 1946-47 received a median salary of \$2364.29.

Regarding preparation of teachers, Table 29 shows the comparison of the number of teachers having no degrees. In a 1926-27 study of mathematics teachers, Schafer⁸ found 41.1 per cent had no degrees. In 1936-37, Walker⁹ found that of the mathematics teachers studied, 3.5 per cent had no degrees. This report shows 8.1 per cent of the mathematics teachers had no degrees in 1946-47. In graduate hours of preparation, Walker¹⁰ showed that 58.9 per cent of mathematics teachers in 1936-37 had no graduate hours of preparation. In this report (1946-47) there were 33.6 per cent who had no graduate hours of college work. Regarding mathematics preparation, Walker¹¹ showed that the average amount of college preparation was from 13-18 hours. This study showed 17.9 hours median preparation.

8 Marvin Schafer, op. cit.

9 Jennie Christene Walker, op. cit.

10 Ibid.

11 Ibid.

TABLE 30

COMPARISON OF MATHEMATICS COURSES TAUGHT IN 1936-1937 and 1946-1947

PERCENT OF SCHOOLS OFFERING VARIOUS MATHEMATICS COURSES		
Mathematics Courses	Walker Study 1936-1937	This Study 1946-1947
Algebra I And II	97.8%	89.7%
Plane Geometry	94.0%	81.1%
Algebra III	62.4%	50.8%
Higher Arithmetic	44.9%	9.9%
Solid Geometry	7.1%	5.8%
General Mathematics	5.2%	12.0%
Trigonometry	2.4%	6.5%
Applied Mathematics		36.1%
Advanced Mathematics		6.9%

Table 30 shows a comparison of mathematics courses taught in 1936-37 and those of 1946-47, as shown in the data of the Walker report and this study. This table shows the decline of traditional subjects and the increasing popularity of the newer subjects such as general mathematics and applied mathematics. Allowances must be made for the differences in sampling of schools for data presented. In 1936-37, the Walker report shows 97.8 per cent of schools teaching algebra. This report, ten years later, found 89.7 per cent of schools offering this subject. The decline in Geometry was from 94 per cent to 81.1 per cent. Algebra III declined from 62.4 per cent to 50.8 per cent. Higher arithmetic shows a decline from 44.9 per cent to 9.9 per cent; however, applied mathematics or advanced mathematics may include higher arithmetic to some extent. The Walker report showed 5.2 per cent of the schools teaching general mathematics, while this report shows 12.0 per cent of schools teaching this subject in 1946-47. Applied mathematics was not shown as having been taught in 1936-37 while this report showed 36.1 per cent of schools teaching this subject.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

SUMMARY

The Problem

The problem of this study was to determine the status of the mathematics teachers in Nebraska high schools for the school year 1946-1947. Data were gathered regarding the positions held by mathematics teachers, the sex of mathematics teachers, the salary, experience, tenure, teaching load, combinations of mathematics with other subject-matter fields, activities sponsored, and the preparation for teaching of mathematics teachers. It was considered of importance to determine the status of the teacher in terms of size of school enrollment.

Procedures

Data were collected from the reports of teachers and administrators to the Registrars office, University of Nebraska, and also to the Nebraska Department of Public Instruction. The forms 'A' and 'C' were examined for mathematics teachers of all Nebraska high schools. Data obtained from all available forms were compiled in tables which give information on various phases of this problem.

As a means of analyzing data more significantly, five classifications of schools according to size of enrollment were arbitrarily established. Class I schools were those of 301 and up; Class II, 151-300; Class III, 76-150; Class IV, 51-75; Class V, 1-50.

Findings

1. A total of 655 mathematics teachers teaching in 465 high schools were included in the study. They were distributed as follows: Class I, 92 teachers (an average of 3.2 teachers per school); Class II, 110 teachers (an average of 1.7 teachers per school); Class III, 162 (an average of 1.4 teachers per school); Class IV, 122 (an average of 1.2 teachers per school); and Class V, 169 (an average of 1.1 teachers per school.

2. Forty-three and eight-tenths per cent of the mathematics teachers were also administrators (principal or superintendent). Few of these are in the larger schools, while in the smaller schools the majority are administrators.

3. Fifty-two and seven-tenths per cent of the mathematics teachers were men and 47.3 per cent were women. In Class I schools, the ratio of women to men is approximately 3 to 2; in Class II the ratio is nearly equal; in the other classes the men outnumber the women.

4. The median salary for all mathematics teachers was \$2364.29 (\$2736.36 for the men, \$2072.00 for the women).

5. The median number of years' previous teaching experience for all mathematics teachers was 13.2 years (10.7 years for the men and 16.6 years for the women). Six and no-tenths per cent of the total had no previous teaching experience, while on the other hand, 26.1 per cent of mathematics teachers had taught more than 20 years.

6. Twenty-one and five-tenths per cent of the mathematics teachers had taught less than five years. Of this group the ratio of men to women is approximately 5 to 2 (101-40).

7. The median tenure for all mathematics teachers was 1.8 years. The larger schools had highest median tenure and successively lower for each class group. Thirty-four and five-tenths of all mathematics teachers were new to their positions for the school year 1946-47. Fifty-two and four-tenths were in their first or second year in their positions.

8. Eighty and three-tenths per cent of teachers had changed their positions within the five-year period preceeding this study. The turnover for men was higher

(85.2 per cent) than that for the women (74.8 per cent) for the five year period.

9. Algebra was the subject most frequently taught in Nebraska high schools-89.7 per cent offering this course. Geometry was taught in 81.1 per cent of the schools; Second-year Algebra in 58.1 per cent; Applied Mathematics in 36.1 per cent; General Mathematics in 12.0 per cent; high school arithmetic in 9.9 per cent of the schools; advanced mathematics in 6.5 per cent; and solid geometry in 5.8 per cent. There were 1406 courses taught in 465 schools, an average of 3.0 courses per school.

10. Science was the subject most frequently combined with mathematics as a teaching combination. Next in order were physical education or athletics, social sciences, English, and commercial courses in the order mentioned. Ninety-one teachers taught mathematics entirely with no other teaching combination.

11. Study hall supervision was the activity most frequently directed by mathematics teachers. Home room supervision, class play direction, and class sponsorship ranked next in frequency. These two latter activities were most frequent in the smaller schools. The average was 1.4 activities per teacher.

12. The number of pupils taught by mathematics teachers varied directly with the size of enrollment of the school. The median number of pupils taught by all mathematics teachers was 82.6. Thirty-six (5.5 per cent) of all mathematics teachers taught over 150 pupils per day.

13. The number of mathematics pupils taught by mathematics teachers also varied directly with the enrollment size of the school, while the proportionate number of non-mathematics pupils varies indirectly with the enrollment size of the school.

14. The median number of classes taught by mathematics teachers was 4.1, almost evenly divided between mathematics and non-mathematics classes.

15. Eight and one-tenths per cent of the 633 mathematics teachers had no college degree. More than half of these were in the smallest enrollment schools. Ninety-one and nine-tenths of the mathematics teachers had bachelor's degrees, and of these 23.5 per cent had in addition earned master's degrees or above (5 held doctors degrees).

16. For all mathematics teachers the median preparation beyond college graduation was 11.1 hours of college work. Two hundred twenty teachers (approximately one-third) had no graduate credit. Most of these were in the

three smaller class schools.

17. The median number of hours of preparation by mathematics teachers in mathematics courses in college was 17.9, hence slightly more than half the mathematics teachers have less than a major in mathematics. Teachers in larger schools had a higher median of mathematics preparation than those in the smaller schools. Twenty-seven (4.7 per cent) of the mathematics teachers had no mathematics preparation in college.

18. College mathematics courses taken by mathematics teachers include Algebra, 408 cases; Geometry, 311; Trigonometry, 252; Calculus, 137; general mathematics, 137; and others, such as mathematics teaching methods and history of mathematics.

19. The median in education courses taken by mathematics teachers was 27.7 hours. Class I schools had the highest median-32.9 hours. Other class schools were lower in the order of size of enrollment with the exception of Class II schools which were next to the lowest. Twenty-three mathematics teachers had no courses in Education. Most of these were in the smaller schools.

20. Subjects studied by mathematics teachers as majors or minors in addition to mathematics in order of frequency were as follows: science, social science, English, languages, commercial, and industrial arts.

21. Seventy-seven teachers, or 11.8 per cent had only emergency certificates; 349, or 53.3 per cent had life certificates, and the remainder 197 teachers, or 30.1 per cent had qualified certificates other than life. Nearly half of the emergency certificate holders were teachers in the smallest schools.

CONCLUSIONS

1. It would seem that in view of the evidence presented, some redistricting and elimination of some smaller schools would improve the weaker points of the school program, as it is the smaller schools that have the relatively greater deficiencies in preparation and qualifications of teachers.

2. More attention should be placed on concentrating all the mathematics teaching of one school under a minimum of teachers thus securing more adequately prepared teachers for this subject.

3. Prospective mathematics teachers should be urged to prepare to teach additional subjects to be well qualified for a variety of positions combining mathematics with other subject fields.

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Information to be Supplied by Each High School Teacher

(Over)

HIGH SCHOOL TEACHER REPORT TO THE NEBRASKA STATE DEPARTMENT OF PUBLIC INSTRUCTION
AND THE UNIVERSITY OF NEBRASKA

Name.....
Last First Middle (Maiden)

School.....

Address Where Mail Will Always Reach You.....

NEBRASKA CERTIFICATE

Exact Title of Certificate.....

Date of Issuance..... Date of Expiration.....
Month Year Month Year

PREPARATION FOR TEACHING

High School

Name of School..... Year of Graduation.....

Major Subjects..... Minor Subjects.....

Activities.....

College

Institution(s) Attended	Semester Hours Undergraduate Credit	Semester Hours Graduate Credit	Degrees		Major Subjects	Minor Subjects	Major Activities
			Kind	Date Issued			

TEACHING EXPERIENCE

Years in Present Position Including This Year.....

Years in Other Schools: High Schools..... Elementary Schools..... Rural Schools..... Total.....

Place of Teaching Position Before Present Location..... Academic Year 19..... to 19.....

CLASS SCHEDULE

Period	Class or Activity	Grade(s)	Number in Group	Periods per week	
				Number	Length
1					
2					
3					
4					
5					
6					
7					
8					

DAILY PROGRAM

Nebraska

Semester, 19

[illegible]

BUDGET 1945-46

INFORMATION FROM PUBLIC SCHOOLS ONLY

ESTIMATED RECEIPTS

ESTIMATED EXPENDITURES

	Dollars	Cents		Dollars	Cents
1. Money in District Treasury (as given in last annual report)			GENERAL CONTROL		
			1. School board salaries and their office expense.....\$		
2. Received from district mill tax.....			INSTRUCTIONAL SERVICE		
			2. Salary of teachers.....		
3. Received from state apportionment including school land funds			3. Tuition		
			4. Text books		
4. Received from state appropriation (aid to weak districts)			5. School supplies		
			OPERATION		
5. Tuition received from other districts.....			6. Janitor and other employees.....		
			7. Fuel, light, water, power, etc.....		
6. Received from other sources (fines, licenses, gifts, rents, interest, tuition from patrons only, dividends from failed banks)			8. Janitor's supplies		
			MAINTENANCE		
7. Received from loans, warrants and sale of bonds.....			9. Repair of building and upkeep of grounds.....		
			10. Repair and replacement of equip. (including furniture)		
8. Received from sale of property.....			AUXILIARY AGENCIES		
			11. Library books		
9. Received from insurance.....			12. Health examinations		
			13. Transportation of pupils.....		
TOTAL RECEIPTS \$			14. Lunch and playground equipment.....		
			FIXED CHARGES		
			15. Rent		
			16. Insurance		
			CAPITAL OUTLAY		
			17. New buildings and grounds.....		
			18. Alteration of old buildings.....		
			19. New equipment (not replacement).....		
			DEBT SERVICE		
			20. Interest		
			TOTAL EXPENDITURES \$		

JOINT REPORT TO THE NEBRASKA DEPARTMENT OF PUBLIC INSTRUCTION AND
THE UNIVERSITY OF NEBRASKA

Wayne O. Reed
Superintendent of
Public Instruction

G. W. Rosenlof
University Examiner

High School Teachers and Supervisors
(Including Special Teachers and Supervisors in High School)

High School at County of Sept. 1946

No.	NAMES (Teachers Who Teach Any High School Classes, Grades 9-12)	Years of Experience		College Preparation				Nebraska Certificate ¹		Yearly Salary ²
		Previous to This Year	In Present Position Including This Year	Sem. Hrs. Under- graduate Credit	Sem. Hrs. Graduate Credit	Degree (s)	From what Institution (s)	Kind (State exact title of certificate)	Expires Mo. Yr.	
1	Superintendent									
2	Principal									
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										

¹ Report only Nebraska certificate. If Temporary Certificate, indicate subjects for which issued.
² Report of salaries requested for research purposes only. It is essential, however, that this report be made.

Section 2

Personnel and Statistical Data

	Grades	High School	School Census								
			Valuation of District						Dist. No.		
Teachers (Total No.)			Debt:			Bonded \$			Floating \$		
Average Yearly Salary. (Do not include Supt. or Prin. who teaches less than half time)			Mills Levied:			Gen. Fund			All other		
Enrollment Last Year			ENROLLMENT								
Average Daily Attendance Last Year				Res.	Non-Res.		Res.	Non-Res.		Res.	Non-Res.
Graduates Last Year			Kind'g'tn			5th			9th		
			1st			6th			10th		
			2nd			7th			11th		
			3rd			8th			12th		
Number of Units Required for Graduation			4th			Total Gr.			P. Grad.		
Type of Organization (8-4, 6-6, 6-3-3, etc.)									Total H.S.		

Circle the Article (Revised Statutes, 1943) Under Which School Is Organized: Art. III, Art. VI, Art. VIII, Art. X, Art. XXIV, Art. XXV, Art. XXVI, Art. XXVII.

Signed Secretary, Board of Education
Signed Superintendent

ELEMENTARY TEACHERS AND SUPERVISORS

(List each school separately, including Ward Principals.)

No.	Names (Give Maiden as well as Married Name)	Grades Being Taught	No. of Pupils Being Taught	Years of Experience		College Preparation		Nebraska Certificate ¹			Yearly Salary	
				Previous to This Year	In Present Position Including This Year	Sem. Hrs. Undergraduate Credit	Institution(s) Attended	Kind (State exact title of certificate)	Expires			
										Mo.	Yr.	
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												

¹ Report here Nebraska certificates only. If Temporary Certificate, indicate grade(s) for which issued.

Section 4

CURRICULUM DATA

For First-Semester, Full-Year, and Alternate Courses and Activities.

SUBJECT OR ACTIVITY ¹	(1) No. Pupils Participating	(2) Teacher's Number Section 1	(3) Grade(s)	(4) Weeks in Course or Activity	(5) Periods per Week	(6) Length of Periods ²	SUBJECT OR ACTIVITY ¹	(1) No. Pupils Participating	(2) Teacher's Number Section 1	(3) Grade(s)	(4) Weeks in Course or Activity	(5) Periods per Week	(6) Length of Periods
ACTIVITIES							ENGLISH						
Hi-Y							First Year						
Girl Reserves							Second Year						
4-H Club							Third Year						
Future Farmers							Fourth Year						
Future Teachers													
Future Homemakers													
Class Plays							FINE ARTS						
Student Council							Music—Vocal						
Other:							Instrumental						
							ART						
							INDUSTRIAL ARTS						
							General Shop—						
							First Year						
							Second Year						

CURRICULUM DATA—Continued

SUBJECT OR ACTIVITY ¹	(1) No. Pupils Participating	(2) Teacher's Number Section 1	(3) Grade(s)	(4) Weeks in Course or Activity	(5) Periods per Week	(6) Length of Periods ²	SUBJECT OR ACTIVITY ¹	(1) No. Pupils Participating	(2) Teacher's Number Section 1	(3) Grade(s)	(4) Weeks in Course or Activity	(5) Periods per Week	(6) Length of Periods ²
							COMMERCIAL TRAINING						
							Typewriting—						
							First Year						
							Shorthand						
							General Office						
							Practice						
							Bookkeeping						
							NORMAL TRAINING						
							Prof. Training						
							Junior Reviews						
							Senior Reviews						
							Agri. and Geog.						
							of Nebraska						
							Public School Music						
							VOCATIONAL TRAINING ³						
							Agriculture—First Year						
							Second Year						
							Third Year						
							Homemaking—						
							First Year						
							Second Year						
							Third Year						
							Trades and Industries						
							First Year						
							Second Year						
							Diversified Occupa-						
							tions—First Year						
							Second Year						
							Distributive Education						
							First Year						
							Second Year						
							Special Supervised						
							Work Experience ⁴						

- ¹ Fill in columns 3, 4, 5, and 6 in red for subjects which will alternate next year with subjects now being offered.
² Periods of one hour per day are recommended particularly for all courses which make use of demonstration and laboratory equipment.
³ If the Vocational Training courses offered are not subsidized in part by federal funds, write the word "local" before the course.
⁴ Report here only special supervised work experiences not otherwise indicated.

Section 5

INSTRUCTIONAL MATERIALS AND EQUIPMENT, OTHER THAN REFERENCE SETS AND LIBRARY BOOKS, Purchased Since Last Report

(In space provided list in so far as possible such items as slides, film strips, films, maps, charts, globes, apparatus, equipment, and supplementary books).

Areas of Instruction	Textbooks and Supplementary Books	Cost	Audio-Visual Aids and Apparatus and Equipment	Cost
ENGLISH				
SOCIAL STUDIES				
SCIENCES				
MATHEMATICS				
LANGUAGES				
COMMERCIAL TRAINING				
NORMAL TRAINING				
INDUSTRIAL ARTS				
FINE ARTS				
VOCATIONAL TRAINING				
PHYSICAL EDUCATION				

Section 6

LIBRARY REFERENCES FOR GENERAL SCHOOL USE OBTAINED SINCE LAST REPORT

General Reference Sets—Names and Copyright Dates.....	(1)	
(2)	(3)	
Number of Volumes. (1) Fiction	(2) Biography	
(3) History and Travel	(4) Others	
Magazines—Names. (1)	(2)	
(3)	(4)	(5)
Newspapers—Names. (1)	(2)	(3)
Total Expenditures for All Library Materials for the Year		