

A STUDY OF THE COLLEGE SUCCESS OF GRADUATES  
OF KANSAS HIGH SCHOOLS

A THESIS

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## CHAPTER I

### INTRODUCTION

For a great many years our high schools have eagerly sought to obtain the recognition of certain accrediting institutions. To get the school's name placed upon the coveted list of some high accrediting association has been one of the principal aims of school authorities. Every movement to improve the condition and quality of school work is indeed laudable and should be encouraged, but there may be a danger of making accrediting and recognition by accrediting organizations an end in themselves rather than a means to an end.

Does it pay a student to be a graduate of an accredited school? Should the student when selecting a school to attend take this matter into consideration? If accrediting and recognition by accrediting bodies mean anything, then it must mean better equipment, better teachers, better courses, extensive curricula, and better educational opportunity. It is our belief that many values are attached to the diploma from the accredited institution. In this study, however, an attempt is made to investigate just one of these values. Does the graduate of an accredited or recognized high school have greater chances for scholastic success in college than a graduate of a high school without such recognition? Is his training such in the accredited institution that he can better profit from higher education? This study is made in an attempt to answer this question.

#### Related Studies

There have been a great number of studies made on scholastic success of college students. In a great number of cases the honor or failing students have been the basis of the study. A few studies

have been made concerning the size of the high school attended and scholastic success in college; but few, if any, have the complete college record as the basis of the study. A few studies have been made concerning the relation of size of the high school attended and scholastic success in college, and concerning North Central Association of Secondary Schools and College accrediting and scholastic success in college. No published studies have been found, however, using state classification, type of school organization, size of school, and North Central Association of Secondary Schools and Colleges accrediting as the basis of comparison. Most related studies vary greatly in scope and technique and are confined, for the most part, to honor students and failures.

The term "related studies" refers to those studies which deal primarily with college achievement of students. These related studies may be divided into two rather distinct classes, although there is considerable overlapping in a great many of them. The more significant and more pertinent of the studies will be reviewed. The reviewed studies are, for the most part, concerning (1) the causes of success and failure among college students and (2) the comparison of scholastic success of college students from large and small high schools.

Terrill<sup>1</sup>, in his study of the college success of students from different sizes and classes of high schools, found that graduates of Colorado high schools with enrollments of 250 to 749 did slightly better work in the University of Colorado than did graduates of any other size Colorado high school. Students of Colorado high schools having enrollments

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<sup>1</sup>Terrill, Marshall Trimble, The Efficiency of Various Types of High Schools in Colorado as Measured by the Scholarship of Their Students in the University of Colorado, unpublished master's thesis, 1931, University of Colorado, Boulder, Colorado.



of 50 to 99 ranked second, those having enrollments of 750 or more ranked third, graduates of high schools of enrollments from 100 to 249 ranked fourth, and those from high schools with enrollments below 50 ranked fifth.

Terrill<sup>2</sup> also made a study of the college success of graduates of Colorado high schools accredited by the North Central Association of Secondary Schools and Colleges, the graduates of high schools accredited by the University of Colorado, and those of high schools not accredited by either of those accrediting bodies. His conclusions were: students from Colorado high schools accredited by the North Central Association of Secondary Schools and Colleges ranked first, those from high schools accredited by the University of Colorado only ranked second, and those not accredited by either of these accrediting bodies ranked third.

Gilbert<sup>3</sup> made a study of the scholastic success of students at the Agricultural and Mechanical College, Monticello, Arkansas. He compared the scholastic success of the graduates of the class A, B, and C high schools. His conclusions were that the graduates of the class B schools ranked highest in scholastic work in college, and that the class C graduates ranked higher than class A graduates. The differences were not great, but he concluded that the class A group had no more chance for college success than students from class B and class C schools.

Gilbert<sup>4</sup> also made a study of the college success of graduates of schools accredited by the North Central Association and those not accredited by that body. The following is a quotation from his conclusions in this

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<sup>2</sup>op. cit.

<sup>3</sup>Gilbert, H. Nelson, "A Comparative Study of the First Year College Grades Made by Graduates of Different Class High Schools" in JOURNAL OF EDUCATIONAL ADMINISTRATION AND SUPERVISION, 18:229-32, March, 1932.

<sup>4</sup>ibid.

study.

"In the first place there is practically no difference in the mental ability of these two groups as measured by the Otis Self-Administering Test.

"We might say that while the graduates of high schools accredited by the North Central Association of Secondary Schools and Colleges seem to have some slight advantage in acquiring higher scholastic standing during the first year at college this advantage is not very certain. There is no significant difference between the mean grade scores of the two groups for either semester."

Boe<sup>5</sup>, in his study concerning the size of high school attended and success in college, investigated the failing and honor students attending the University of Illinois from September, 1924, to June, 1929. The following is a summary of his findings. Attendance in an Illinois high school whose enrollment is less than 100 decreases the student's chances for scholastic success in college. Attendance in a high school of 101 to 250 shows greater chances for success and a corresponding greater chance for failure. Graduates of high schools with enrollments from 251 to 600 do about average in scholarship in college. Students from high schools of 601 to 1000 enrollment do slightly below average, and the graduates of high schools with enrollments above 1000 do slightly above average. The summary of Boe's study shows a slight advantage for the 101 to 250 enrollment group. This advantage is slight and may or may not be of much significance. No statistical data were included to show the reliability of the measures.

#### The Problem

The primary purpose of this study is to throw light on and attempt

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<sup>5</sup>Boe, Oliver Gerald, The Relation Between the Size of High School Attended and Success in College, unpublished master's thesis, 1930, University of Illinois, Urbana, Illinois.

to answer the following questions. Which one of the four classes of Kansas high schools, A, B, C, or D, produces the most successful college students? Which one of the six types of Kansas high schools, first-class city, second-class city, third-class city, rural high school, consolidated high school, or community high school, produce the most successful college students? Do the Kansas high schools accredited by the North Central Association of Secondary schools and colleges or those not accredited by that body produce the most successful college students? Which size of Kansas high school is producing the most successful college students? This study is too limited in scope to answer the above questions decisively, but it is an indication and may well form the basis for further studies.

#### Scope of the Study

This study is based primarily on the complete college record of 2,085 of the students who entered and completed college work at the Kansas State Teachers College of Emporia during the five-year period from September, 1928, to June, 1933.

#### Procedure

The complete college record of each student included in the study was first tabulated. All college courses offering credit except physical education are included. All data were taken from their original source, the records from the office of the registrar of the college.

Three distinct comparisons were made in each part of the study. One comparison included all college courses taken, another all electives, and another included all required courses. For this study, required courses are defined as those courses which are required of all students and do not include major and minor requirements of the various departments.

Eleven distinct groups of cases were studied. One group includes

all cases in the study; the other ten include the decile rankings. Decile ranking or decile groups are defined as the cases between the limits of the deciles, i. e., the tenth decile includes the upper ten per cent, or the cases between the ninetieth and the hundredth percentile; the first decile includes the cases below the tenth percentile; and so on.

All entering students at the Teachers College are placed in decile groups according to scores made on an entrance examination. This examination consists of a battery of tests including a college entrance test, an English test, a vocabulary test, a reading test, a spelling test, and a mathematics test. The purpose of the examination is for classification and guidance. No students are refused admittance on the basis of scores made on the examination, as all graduates of accredited high schools in the state are admitted to college standing. The major emphasis of the tests is placed on the type and quantity of English courses in which the student is permitted to enroll the first year.

The Kansas Educational Directory<sup>6</sup> for 1930-31, the mid year of the five-year period of this study, was taken as the basis for classification of the high schools in the study. This directory, which is published annually by the State Superintendent of Public Instruction, includes the classification of each Kansas public school, the type of each school organization, the size of enrollment of each school, and a list of schools in Kansas accredited by the North Central Association of Secondary Schools and Colleges.

Teachers' marks, or grades, are the basis for determining the varied degrees of scholastic success in this study. The study by Schrammel and

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<sup>6</sup>Allen, George Jr., Kansas Educational Directory, 1930-31, Topeka, Kansas, 65 pp.

Wood, "Success and Failure of College Students"<sup>7</sup>, shows, among other things, that the distribution of teachers' marks over a five-year period at the Teachers College did not deviate far from the median for all departments. Its findings tend to substantiate the reliability of teachers' marks as a criterion of scholastic success in college.

#### The Control of the Study

Many factors must be controlled to insure reliability. The control measures used in the study were decile ranking of the cases in the study and equating the groups as to sex, age, and experience. The placing of the groups in decile rankings has been discussed. The same ratio of each are placed in each group in the study. The enrollment at the Teachers College is predominately of the female sex; hence there is included a larger proportion of that sex in the study. Age is an important factor in scholarship; therefore, each group was equated as to age. Most students entered the Teachers College between the ages of eighteen and twenty-one, and each age is placed proportionally in each group. Where excessive cases of under-age or over-age students could not be equated, they were excluded from the study. Experience is another factor in scholastic achievement of college students. Not all college entrants have completed their high school work the previous year. In many cases students leave school at high school graduation to enter gainful occupations, returning later to college. Such cases were equated in the groups in the study; all cases of excessive deviation in experience were also excluded in order to eliminate unreliability on this score.

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<sup>7</sup>Schramm, H. E., and Wood, E. R., Success and Failure of College Students, Bulletin of the Graduate Division, Kansas State Teachers College, Emporia, Kansas, 1931.

### Definition of Terms

For clarity, certain terms used in the study will be defined. The meaning, use, and method of computing the mark index and critical ratio are discussed in Chapter II. The term "decile groups" was previously discussed and explained in this chapter. For comparison, the medians of the groups were used as a measure of central tendency throughout the study. The P. E. of the median is the measure of reliability used in all cases. All values for P. E. were found from Q, or quartile deviation.

Chapter II reveals the results of a comparative study of the scholastic success in college of graduates of the various classes of Kansas high schools as measured by their college records at the Emporia Teachers College. The study continues in Chapter III with a comparison of the scholastic success in college of the graduates of the various types of Kansas high schools as measured by the college records at the same institution. In Chapter IV a comparison is made of the scholastic success of graduates of Kansas high schools accredited by the North Central Association of Secondary Schools and Colleges and that of graduates of Kansas high schools not accredited by that accrediting body. Scholastic success in college of graduates of the different sizes of Kansas high schools is the basis for the comparison in Chapter V. The results of the study are summarized in Chapter VI. The appendix contains a bibliography of all pertinent material found in the literature pertaining to high school attended and college success.

## CHAPTER III

THE SCHOLASTIC SUCCESS OF THE GRADUATES OF THE  
VARIOUS CLASSES OF KANSAS HIGH SCHOOLS

The secondary schools of Kansas, both three year senior high schools and four year high schools, are classified by the State Department of Education<sup>1</sup> under one of the following categories, class A, B, C, or D. The approved and private high schools of the state are not included in this study because of the limited number of such cases.

The accrediting and classification<sup>2</sup> of Kansas high schools centers around the condition and type of equipment, number of teachers, extent of curriculum, and length of school term. Quoting from the "Twenty-seventh Biennial Report of the State Superintendent of Public Instruction"<sup>3</sup>,

"It is not expected that all schools will be able to measure up fully to the foregoing standards, and therefore accredited high schools will be rated A, B, C, or D according to the completeness with which these standards are met, with the following added conditions:

- A. (1) At least five teachers exclusive of the superintendent, devoting full time to high school work. If the school is not a part of the graded school system, there must be at least five teachers exclusive of the principal.
- (2) At least six teachers in the grades, where there are grades in connection.
- (3) A school year of at least nine months in the grades.
- (4) Maintain at least three courses of study, each having, in addition to the five and one-half units required for graduation from an accredited high school, at least four units

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<sup>1</sup>Allen, George Jr., Twenty-seventh Biennial Report of the State Superintendent of Public Instruction, 1929-30

<sup>2</sup>Allen, George Jr., Required Standards for the Accrediting, Approving, and Recognizing of High Schools, Topeka, Kansas, 12 pp.

<sup>3</sup>Allen, George Jr., op. cit.

distinctive of the course in which they are offered.

- (5) For the department for which a teacher instructs a preparation must be shown of at least twenty semester hours college credit, toward which a maximum of ten hours of high school may be substituted at the rate of five hours per high school unit.
- B. (1) At least four teachers in the high school including the principal or superintendent.
- (2) At least four teachers in the grades, where grades are in connection.
- (3) A school year of at least nine months in the grades.
- C. (1) At least three teachers in the high school including the principal or superintendent.
- (2) At least three teachers in the grades, where grades are in connection.
- (3) A school year of at least nine months in the grades.
- D. (1) At least two teachers giving full time to high school work.
- (2) At least three teachers in the grades, where grades are in connection.

It will be observed that the sole requirement for teacher preparation in subjects taught is included in the requirements for class A high schools, where twenty semester hours of college credit are required in the department of which the teacher instructs. However, high school credit, at the rate of five semester hours per high school unit, may be substituted to a maximum of ten semester hours. In other words, a teacher may qualify to teach any subject in a department in a class A high school with two units of high school work in the department plus ten semester hours of college credit in the same department. This is the only requirement, in addition to a valid certificate, to teach in any secondary school in the state, mentioned in the standards for accrediting, approving, and recognizing Kansas high schools.



As preparation for college is one of the functions of the secondary schools, the efficiency of the schools may be measured in part by the scholastic records of the high school graduates in college.

In this chapter an analysis is made of the scholastic success of the students of the Kansas State Teachers College of Emporia according to the classification of the high school from which they graduated. From the data obtained, comparisons were made based on the median marks for each class. In order to do this it was first necessary to convert all marks of each student in the study into numerical values, or a mark index. The letter system of marking at the Teachers College is as follows: A, superior; B, good; C, average; D, poor; and F, failing. The marks which the students had obtained were given the following point values: A, one point; B, two points; C, three points; D, four points; and F, five points. To find the mark index the point value of each mark was multiplied by the total semester hours of credit of that mark. These products were then added and the sum divided by the total semester hours of credit earned by the student. This quotient is called the mark index. The highest possible index is 1.00, and the lowest possible index is 5.00.

An illustration will clarify how the mark index was computed for each student. For example, suppose a given student has the following scholastic record: 20 hours of A's; 25 hours of B's; 60 hours of C's; 15 hours of D's; 5 hours of F's--a total of 120 semester hours credit. The 20 hours of A's equal 20 points; 25 hours of B's equal 50 points; 60 hours of C's equal 180 points; 15 hours of D's equal 60 points; 5 hours of F's equal 25 points; total, 340 points. The total number of points, 340, is then divided by the total number of semester hours credit, 120. This yields a mark index of 2.83. The same procedure was followed for each student in the study.

TABLE I

DISTRIBUTION OF CASES IN THE DECILE GROUPS  
FOR EACH CLASS HIGH SCHOOL

Decile No.	No. of Cases	Class A		Class B		Class C		Class D	
		No.	%	No.	%	No.	%	No.	%
All	2085	1462	70 <sup>?</sup>	432	20	142	7	51	3
X	218	144	66	61	28	11	5	2	1
IX	219	161	72	39	18	15	7	4	2
VIII	203	152	76	33	15	13	6	5	3
VII	211	145	67	45	22	14	7	7	4
VI	204	141	64	49	24	10	5	4	2
V	201	144	71	38	19	16	8	3	2
IV	216	144	64	46	23	16	8	10	5
III	207	133	63	50	25	18	9	6	3
II	204	136	70	35	17	19	11	4	2
I	202	150	74	36	18	10	5	6	3
Range		27	11	28	11	9	8	8	3

Read table thus: in decile group A there were 144 cases, or 70%, from class A schools; 61 cases, or 28%, from class B; 11 cases, or 5%, from class C; 2 cases, or 1% from class D.

In Table I are listed the number and per cent of students from each class high school who ranked in each decile on the college entrance tests. From this table it will be observed that all four classes of high schools were represented uniformly in all decile groups. The percentage of class A graduates range from 63% in decile group III to 76% in decile group VIII. The per cent of class A graduates for all decile groups combined is 70. The percentage of class B graduates range from 17% in decile group II to 28% in decile group X. The percentage of class B graduates in all decile groups combined is 20. The percentage of class C graduates range from 5 in decile groups I, VI, and X, to 11 in decile group II. The percentage of class D graduates range from 1 in decile group X to 5 in decile group IV. With such small ranges in percentages of the different class school graduates in each decile group, it is safe to conclude that the achievement of the college entrants from the different class schools was distributed uniformly, and that no class profited materially by having an excessive proportion in the higher preparation groups as measured by the college entrance tests.

#### Scholastic Success in all College Courses

In Table II is listed the median mark index for all students of each class high school for each decile group and for all decile groups combined. From this table it will be observed that the graduates of class B high schools ranked first with a mark index of 2.98, graduates of class C high schools ranked second with an index of 3.00, graduates of class D high schools ranked third with an index of 3.03, and graduates of class A high schools ranked fourth with an index of 3.07. While the P. E.'s of the medians in each decile group were large because of the limited number of cases in each group, there is a persistence in the ranking for the

TABLE II

MEDIAN MARK INDEX OF GRADUATES OF EACH CLASS HIGH  
SCHOOL IN ALL COURSES

Group No.	No. of Cases	Class A	Class B	Class C	Class D
All	2085	3.07 ±.02	2.98 ±.02	3.00 ±.05	3.03 ±.09
X	218	2.36 ±.05	2.25 ±.05	2.45 *	2.38 *
IX	219	2.55 ±.05	2.67 ±.05	2.70	2.39
VIII	203	2.88 ±.04	2.93 ±.05	2.39	2.94
VII	211	2.38 ±.04	2.70 ±.08	2.84	2.90
VI	204	3.06 ±.04	2.94 ±.05	2.72	2.60
V	201	3.16 ±.03	2.98 ±.06	3.07	3.36
IV	216	3.15 ±.04	3.13 ±.06	3.22	3.38
III	207	3.26 ±.04	3.18 ±.07	3.35	3.78
II	204	3.54 ±.04	3.34 ±.06	3.49	3.33
I	202	3.77 ±.05	3.63 ±.09	3.50	3.71

\*Number of cases in this column too small to insure statistical reliability.

Read table thus: in all groups combined, class B exceeds class A, C, and D with a quotient of 2.98.

individual decile groups of the four classes of high schools. In these division groups, class B high school graduates rank first in five of the ten decile groups, second in two, third in three, and fourth in none. Class C high school graduates rank first in two groups, second in three, third in three, and fourth in three. Class D high school graduates rank first in three groups, second in none, third in two, and fourth in five. Class A high school graduates rank second in five groups, third in two, and fourth in three. It will be observed that class A school graduates did not rank first in any one of the ten decile groups. The difference between class B and the other classes is most significant.

In order to be able to evaluate more concretely the differences in the scholastic success of the graduates from the several classes of high schools, critical ratio values were computed. These are listed in Table III.

TABLE III

COMPARISON OF THE SCHOLASTIC SUCCESS OF GRADUATES  
OF THE CLASSES OF HIGH SCHOOLS IN TERMS OF  
CRITICAL RATIO VALUES

Classes	All courses	Electives	Required
A and B	-3.1*	-2.7	-2.9
A and C	-1.2	-0.8	2.3
A and D	-0.4	-0.9	2.4
B and C	0.5	1.0	3.7
B and D	0.6	0.8	3.3
C and D	0.3	-0.3	0.7

\*A critical ratio preceded by a minus sign denotes that the second-named class exceeds the first-named class. No sign denotes that the first named class ranks first.

Read table thus: In all courses combined, class B exceeds class A with a critical ratio of 3.1; and class C exceeds class A with a critical ratio of 1.2.

The critical ratio is a ratio of the obtained difference between the median mark index of the two classes of schools compared and the P. E. of

the difference of the medians. A ratio of 4.0 or higher shows complete reliability of the difference between the measures compared. That is, it signifies that there are 100 chances in 100 that a true difference exists. Ratios of less than 4.0 show reliabilities from 50 chances to 100, or a mere chance difference, to 99 chances in 100. Thus, a critical ratio of 3.0 signifies a reliability of 98 chances in 100 of a true difference; one of 2.0, 91 chances in 100; and one of 1.0, 75 chances in 100.

The data in Table III may be interpreted thus: class B ranked higher than class A with a critical ratio of 3.1, or a reliability of 98 chances in 100; class C ranked higher than class A with a critical ratio of 1.2, or a reliability of 79 chances in 100; class D ranked higher than class A with a critical ratio of 0.4, or a reliability of 61 chances in 100. Class B ranked higher than class C with a critical ratio of 0.5, or a reliability of 63 chances in 100. Class B ranked higher than class D with a critical ratio of 0.6, or a reliability of 66 chances in 100. Class C ranked higher than class D, with a critical ratio of 0.3, or a reliability of 58 chances in 100. The comparison of class A and class B is most significant. The critical ratio values for all other comparisons on this part of the study are small, although they are an indication that a true difference may exist.

#### Scholastic Success in Elective Courses

A further inquiry deals with the scholastic success of graduates of the four classes of high schools in those college courses which are elective. The median mark index for each class school for each decile group, and also for all decile groups combined, is shown in Table IV.

A comparison of the scholastic success of the cases in this part of the study shows a uniformly higher standing in electives than in all courses combined. This is to be expected as students tend to do better

work in the things they choose to do. Again the cases in each decile group are too limited for reliability and are included for general suggestiveness only. Significant comparisons may be based only on the medians of all decile groups combined.

From Table IV it will be observed that the four classes of schools in elective courses ranked as follows: class B first with a mark index of 2.85, class D second with a mark index of 2.89, class C third with a mark index of 2.91, and class A fourth with a mark index of 2.95. Again class A schools failed to rank first in any one of the ten decile groups; they ranked second or tied for second in four groups, ranked third or tied for third in four groups, and ranked fourth in two groups. Class B high school graduates ranked first in five groups, second or tied for second in two groups, and third or tied for third in three groups. Class C high school graduates ranked first or tied for first in three groups, second in two groups, third or tied for third in three groups, and fourth in two groups. Class D high school graduates ranked first or tied for first in two groups, second in two groups, third in two groups, and fourth in three groups. Although the P. E. 's of the medians are too large for reliable comparisons in each of the ten decile groups, there is a persistence of ranking of the classes of high schools in the groups to point to a superiority of certain classes and to substantiate the ranking when all groups are combined.

Critical ratio values form the most concrete means of comparison of the differences between the medians of the grade indices. In column three of Table II are listed the critical ratio values for elective courses in this part of the study. From this table it will be observed that Class B

TABLE IV

MEDIAN MARK INDEX OF GRADUATES OF EACH CLASS HIGH  
SCHOOL IN ELECTIVE COURSES

Group No.	No. of Cases	Class A	Class B	Class C	Class D
All	2085	2.95 ± .02	2.85 ± .03	2.19 ± .05	2.29 ± .06
X	218	2.35 ± .05	2.16 ± .06	2.34 *	2.26 *
IX	219	2.60 ± .05	2.60 ± .08	2.59	2.30
VIII	203	2.81 ± .05	2.81 ± .06	2.29	2.91
VII	211	2.80 ± .05	2.65 ± .03	2.37	2.79
VI	204	2.97 ± .05	2.84 ± .06	2.65	2.65
V	201	3.00 ± .03	2.83 ± .04	2.92	3.16
IV	216	2.97 ± .05	2.87 ± .06	3.07	3.03
III	207	3.09 ± .04	3.01 ± .08	3.18	3.60
II	204	3.48 ± .05	3.18 ± .06	3.41	2.83
I	202	3.50 ± .05	3.56 ± .11	3.33	3.63
Total Cases	2084	1462	432	142	51

\*Number of cases in this column too small to insure statistical reliability.

Read table thus: the 2085 cases in the study show superiority in the case of the graduates of the class B schools with a grade quotient of  $2.85 \pm .03$ .



excelled class A with a critical ratio of 2.7, or a reliability of 96 chances in 100; class C excelled class A with a critical ratio of 0.8, or a reliability of 71 chances in 100; class D excelled class A with a critical ratio of 0.9, or a reliability of 73 chances in 100. Class B excelled class C with a critical ratio of 1.0, or a reliability of 75 chances in 100; class B exceeds class D with a critical ratio of 0.8, or a reliability of 71 chances in 100. Class D exceeds class C with a critical ratio of 0.3, or a reliability of 58 chances in 100. It will be observed that all four classes except classes C and D had the same relative ranking in all courses and in electives. Class C ranked second and class D, third in all courses; whereas class D ranked second and class C, third in elective courses.

#### Scholastic Success in Required Courses

The data for scholastic success of graduates of the four classes of high schools pertaining to required courses only are shown in Table V. All four classes ranked uniformly lower in scholastic success in required courses than in all courses or in elective courses. This is to be expected, as students do not, as a rule, take so great an interest in required courses as they do in electives.

In required courses class B schools ranked first with a mark index of 3.06; class A schools, second with a mark index of 3.17; class C schools, third with a mark index of 3.32; and class D schools, fourth with a mark index of 3.39. Again the class B schools ranked first, as in the cases of all courses and of electives. Class A schools ranked second in required courses, whereas they ranked fourth in all courses and fourth in electives.

In the ten decile groups is found the following persistence of ranking. Class B schools ranked first in six groups, second in two

TABLE V

MEDIAN MARK INDEX OF GRADUATES OF EACH CLASS HIGH  
SCHOOL IN REQUIRED COURSES

Group No.	No. of Cases	Class A	Class B	Class C	Class D
All	2085	3.17 ± .02	3.06 ± .03	3.32 ± .06	3.39 ± .09
I	218	2.45 ± .05	2.36 ± .06	2.51 *	2.60 *
IX	219	2.71 ± .04	2.66 ± .07	2.82	2.95
VIII	203	2.95 ± .04	2.86 ± .06	2.45	3.22
VII	211	2.93 ± .04	2.75 ± .06	2.89	2.99
VI	204	3.07 ± .04	3.00 ± .06	2.78	2.60
V	201	3.26 ± .03	3.04 ± .06	3.23	3.47
IV	216	3.38 ± .04	3.31 ± .07	3.39	3.79
III	307	3.39 ± .04	3.54 ± .08	3.49	3.99
II	204	3.65 ± .04	3.62 ± .09	3.64	3.78
I	202	3.90 ± .05	3.83 ± .07	3.65	3.92
Total Cases	2085	1462	432	142	51

\*Insufficient number of cases for reliability.

Read table thus: graduates of class B high schools rank first with a grade quotient of  $3.06 \pm .03$ . Class A graduates rank second; class C, third; and Class D, fourth.

groups, and third in two groups. Class A schools ranked first in one group, second in three groups, third in five groups, and fourth in one group. Class C ranked first in two groups, second in five groups, and third in three groups. Class D schools ranked first in one group and fourth in nine groups.

The critical ratios for this part of the study are found in column 4 of Table II. The reliabilities of the comparisons of the classes of high schools in required courses as shown in Table II are as follows. Class B excelled class A with a critical ratio of 2.9, or a reliability of 97 chances in 100. Class A excelled class C with a critical ratio of 2.3, or a reliability of 94 chances in 100. Class A excelled class D with a critical ratio of 2.4, or a reliability of 95 chances in 100. Class B excelled class C with a critical ratio of 3.7, or a reliability of 99 chances in 100. Class B excelled class D with a critical ratio of 3.3, or a reliability of 99 chances in 100. Class C excelled class D with a critical ratio of 0.7, or a reliability of 68 chances in 100. It will be noted that rather high reliability, ranging from 94 to 99 chances in 100 is found in each comparison of the four classes except that between class C and class D.

#### Summary and Conclusions

1. All classes of high schools ranked higher in scholastic achievement in elective courses than in all courses or in required courses. This is probably due to the fact that students in college apply themselves more wholeheartedly to tasks of their own choice than to those imposed upon them. The factor of selection of courses in fields where students have special interests or abilities is, however, also important.

2. The rankings of the four classes of schools were as follows. In all courses class B schools ranked first; class C, second; class D, third; and class A, fourth. In elective courses class B schools ranked first; class D, second; class C, third; and class A, fourth. In required courses class B ranked first; class A, second; class C, third; and class D, fourth. The outstanding result is the consistent low ranking of the class A high schools and an equally consistent high ranking of the class B high schools. This may be due, in part, to the fact that the class B high schools are, as a rule, smaller in total enrollment than are class A schools, which, with modern extended curricula, results in smaller classes. It may be that the small classes, coupled with a much closer personal association of pupils with teachers in the smaller schools, are fundamental factors in the high ranking of class B schools.

3. While not all comparisons are highly reliable, there is an indication that certain classes of schools persist in high ranking. The critical ratios of this part of the study range from 0.3, or a very low reliability, to 3.7, or a very high reliability. The P. E.'s of the medians in most cases in the decile groups exceed the differences between the medians. Comparisons of the groups, therefore, have very little, if any, significance. Significant comparisons were made with all groups combined.

4. There is a uniform distribution of cases from the four classes of high schools in the ten decile groups. This shows that in respect to preparation, as measured by the college entrance tests, the groups of students from the different class schools were on a basis of equality.

CHAPTER III  
THE SCHOLASTIC SUCCESS OF THE GRADUATES OF THE  
VARIOUS TYPES OF KANSAS HIGH SCHOOLS

The Kansas high schools have six distinct types of organization. Each public high school in Kansas may be segregated under one of the following types: first-class city systems maintaining a high school or high schools, second-class city systems maintaining a high school, third-class city systems maintaining a high school, rural high school, consolidated schools maintaining a high school, and community high school.

The essential differences in these types<sup>1</sup> of high school organizations are centered around the following points: size of the municipality, number of members of the board of education, method and time for the election of members of the board of education, organization of the school district, and the taxing system for the support of the schools.

There is considerable overlapping in the types and classes of Kansas high schools. Without exception, all first and second-class city systems in this study maintain class A high schools. The third-class city systems are made up of all four classes of high schools, as are the rural high schools and consolidated schools. All except two community high schools in this study are class A schools.

In Table VI are listed the number and per cent of students from each type high school which ranked in each decile on the college entrance tests. From this table it will be observed that all six types of high

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<sup>1</sup>Allen, George Jr., Kansas School Laws Revised, 1931, Topeka, Kansas, 314 pp.

TABLE VI

DISTRIBUTION OF CASES IN THE DECILE GROUPS  
FOR EACH TYPE HIGH SCHOOL

Decile	No.	First Class City		Second Class City		Third Class City		Rural High School		Cons. High School		Comm. High School	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All	2085	161	7.7	304	38.4	449	21.6	547	26	61	4.5	43	2.1
X	218	10	5	96	44	50	23	51	23	5	2	6	3
IX	219	17	8	81	38	56	25	52	23	8	4	5	2
VIII	203	14	7	90	45	44	22	39	20	9	4	7	3
VII	211	11	5	90	45	42	21	53	26	15	7	0	0
VI	204	13	9	80	40	38	19	58	29	6	4	4	2
V	201	13	9	68	34	53	27	51	25	4	2	6	3
IV	216	18	9	74	37	48	24	61	30	10	5	5	2
III	207	8	4	76	38	39	19	74	37	6	3	4	2
II	204	23	11	71	35	45	22	54	27	9	4	2	1
I	202	24	12	78	39	33	16	54	27	9	4	4	2
Range	18	16	8	28	11	23	11	35	17	11	5	7	3

schools are represented quite uniformly in all decile groups. The percentage of first-class city high school graduates range from 4 in decile group III to 12 in decile group I. The percentage for all groups combined is 7.7. Seventy, or 44%, of the 161 cases from first-class city high schools fell in the upper five decile groups. The percentage of second-class city high school graduates ranged from 34 in decile group V to 45 in decile groups VII and VIII. The percentage for all groups combined is 38.4. Four hundred thirty-seven, or 54%, of the 804 cases from second-class city high schools fell in the upper five decile groups. The percentage of third-class city high school graduates ranged from 16 in decile group I to 27 in decile group V. The percentage for all deciles was 21.8. Two hundred thirty, or 51%, of the 449 cases from third-class city high schools were in the upper five deciles. The percentage of rural high school graduates ranged from 20 in decile group VIII to 37 in decile group III. The percentage for all decile groups combined is 26. Two hundred fifty-three, or 46%, of the cases from rural high schools fell in the upper five decile groups. The percentage of consolidated high school graduates ranged from 2 in decile groups V and X to 7 in decile group VII. The percentage of all decile groups combined is 4. Forty-three, or 53%, of the 81 cases from consolidated high schools fell in the five upper decile groups. The five upper decile groups include 22, or 51%, of the 43 cases from community high schools.

#### Scholastic Success in All Courses

In Table VII is listed the median mark index for all students of each type high school for each decile group and for all decile groups combined. From this table it will be observed that the third-class city high schools and the community high schools ranked equally in all college

TABLE VII

MEDIAN MARK INDEX OF GRADUATES OF EACH TYPE  
HIGH SCHOOL IN ALL COURSES

Decile Group No.	No. of Cases	First Class City	Second Class City	Third Class City	Rural High School	Cons. High School	Comm. High School
All	2085	3.24 ± .05	3.06 ± .02	2.98 ± .03	3.03 ± .02	3.06 ± .90	2.78 ± .10
X	218	1.95 *	2.47 ± .03	2.24 ± .04	2.28 ± .06	1.93 *	2.98 *
IX	219	2.28	2.61 ± .03	2.59 ± .05	2.66 ± .05	2.60	2.91
VIII	203	2.93	2.68 ± .05	2.76 ± .06	2.71 ± .06	3.03	3.36
VII	211	2.82	2.92 ± .07	2.84 ± .06	2.68 ± .06	2.83	**
VI	204	3.18	3.09 ± .05	2.91 ± .05	2.90 ± .05	3.02	2.94
V	201	3.23	3.10 ± .04	3.12 ± .04	3.00 ± .04	2.82	3.33
IV	216	3.39	3.24 ± .03	3.18 ± .04	3.11 ± .05	3.23	3.09
III	207	3.27	3.29 ± .05	3.37 ± .05	3.28 ± .06	3.18	3.06
II	204	3.44	3.44 ± .07	3.47 ± .06	3.37 ± .05	3.79	4.04
I	202	3.89	3.76 ± .06	3.68 ± .07	3.51 ± .07	3.81	4.03
Total Cases	2085	161	604	449	547	81	43

\*Cases in this column too limited for reliability.

\*\*No cases from community high schools in this decile group.



courses with a mark index of 2.98. The third-class city high schools, however, have been placed first because of the differences in the P. E.'s of the medians of the two groups, which were  $\pm 0.026$  for the third-class city high schools and  $\pm 0.1$  for the community high schools. Rural high schools ranked third with a mark index of 3.03. There is equality in the mark indices of second-class city high schools and consolidated high schools. In this case, the second-class city high schools have been placed fourth and the consolidated high schools, fifth because of the difference of their P. E.'s which are  $\pm 0.012$  and  $\pm 0.09$ , respectively. The first-class city high schools ranked sixth with a mark index of 3.24. Although the P. E.'s of the medians in the decile groups are large and, in a great number of instances, larger than the differences between the medians; they are an indication of superiority of certain groups. The most reliable comparisons which may be made are, of course, where all groups were combined.

A further study of Table VII shows certain persistence in ranking of certain types of high schools in the ten decile groups. First-class city high schools ranked second, or tied for second, in three groups; third in one group; fourth in one group fifth in three groups; and sixth in two groups. Second-class city high schools tied for second in one group, ranked third in four, fourth in none, fifth in five, and sixth in none. Third-class city high schools ranked first in one group, second in three, third in two, fourth in three, fifth in none, and sixth in one. Consolidated high schools ranked first in two groups, second in two, third in one, fourth in three, fifth in two, and sixth in none. Community high schools ranked first in two groups, third in one, and sixth in six. There were only nine rankings for the community high schools as there were no cases from them in the seventh decile group. It would seem that the

rural high schools would rank first in all groups combined from their ranking in each decile group, but the distribution of cases when thrown into one group had an abnormal effect on the median. In order to make more concrete comparisons of the scholastic success of students from the types of high schools, critical ratios were computed. These critical ratios for this part of the study are listed in Table VIII. In this table it will be observed that the critical ratios for the comparison of the types of high schools ranged from rather high reliability to those of little or no reliability. In column two of the table it may be seen that the second-class city high schools excelled the first-class city high schools with a critical ratio of 2.4, or a reliability of 95 chances in 100 of a true difference. Third-class city high schools excelled first-class city schools with a critical ratio of 3.3, or complete reliability. Rural high schools excelled first-class city high schools with a critical ratio of 3.6, or a reliability of 99 chances in 100. Community high schools excelled first-class city high schools with a critical ratio of 3.2, or a reliability of 98 chances in 100. The remainder of the comparisons show critical ratios ranging from zero to 1.4, or reliability of 50 to 83 chances in 100. While some of the larger values of this group, those ranging from 0.9 to 1.04, are significant, they are too small for accurate and reliable comparison. The most significant point of this part of the study is the persistent low ranking of the first-class city high schools.

#### Scholastic Success in Elective Courses

A further study deals with the scholastic success of graduates of the six types of high schools in those college courses which are elective. The median mark index for each type school for each decile group, and also for all decile groups combined, for elective courses is shown

Table VIII

COMPARISON OF THE SCHOLASTIC SUCCESS OF GRADUATES OF THE TYPES  
OF HIGH SCHOOLS IN TERMS OF CRITICAL RATIO VALUES

	All Courses	Elective Courses	Required Courses
First and second-class cities	-2.4*	-4.7	-3.8
First and third-class cities	-4.4	-4.9	-5.5
First-class cities and rural high schools	-3.6	-3.2	-4.8
First-class cities and consolidated schools	-0.8	-3.1	-3.6
First-class cities and community high schools	-3.2	-1.1	-2.9
Second and third-class cities	-1.3	-0.9	-4.6
Second-class cities and rural high schools	-0.3	-1.7	-2.3
Second-class cities and consolidated schools	0.3	0.01	-1.8
Second-class cities and community high schools	-0.8	-0.01	-1.4
Third-class cities and rural high schools	1.4	-0.7	0.4
Third-class cities and consolidated schools	0.1	0.65	-0.9
Third-class cities and community high schools	0.0	0.2	-0.6
Rural high schools and consolidated schools	0.5	1.2	-1.0
Rural high schools and community high schools	-0.5	0.4	-0.8
Consolidated schools and community high schools	-0.4	-0.2	-0.1

\*A critical ratio preceded by a minus sign denotes that the second-named class exceeds the first named class. No sign denotes that the first-named class ranks first.

in Table IX.

Again, as in the comparison of the four classes of high schools, it will be seen that all types of high schools ranked uniformly higher in electives than in all college courses combined. It will also be noted that reliable comparisons cannot be made for each decile group as the P. E.'s of most medians exceed the differences between the medians. The reason for this is that the number of cases in each decile group is limited. Significant comparisons may, however, be based on the median differences for all groups combined.

From Table IX it will be observed that the types of high schools ranked as follows. Rural high schools ranked first with a mark index of 2.87. Third-class city high schools ranked second with a mark index of 2.92. Second-class city high schools ranked fourth with a mark index of 2.93. Consolidated high schools ranked fifth with a mark index of 2.94. First-class city high schools ranked sixth with a mark index of 3.16. There is a slight shifting in rankings between the comparison of the types of high schools in all college courses and in electives.

The first-class city high schools ranked first, second, or third in two of the ten decile groups; second-class city high schools, in six; third-class city high schools, in six; rural high schools, in ten; consolidated high schools, in four; and community high schools, in two. It will be observed that rural high schools ranked no lower than third in any one of the ten decile groups, whereas first-class city high schools and community high schools ranked lower than third in all except two of the groups.

In column three of Table VIII are listed the critical ratio values for scholastic success of the types of high schools in elective courses.

TABLE IX

MEDIAN MARK INDEX OF GRADUATES OF EACH TYPE  
HIGH SCHOOL IN ELECTIVE COURSES

Decile Group No.	No. of Cases	First Class City	Second Class City	Third Class City	Rural High School	Cons. High School	Comm. High School
All	2085	3.16 ± .04	2.93 ± .02	2.90 ± .03	2.87 ± .03	2.94 ± .06	2.92 ± .11
X	218	1.89	2.43 ± .03	2.25 ± .04	2.22 ± .04	2.12 *	2.12 *
IX	219	2.88	2.57 ± .05	2.52 ± .05	2.62 ± .06	2.74	2.86
VIII	203	3.01	2.80 ± .06	2.68 ± .06	2.69 ± .06	2.93	3.34
VII	211	2.82	2.81 ± .08	2.78 ± .07	2.69 ± .06	2.99	**
VI	204	3.01	2.99 ± .06	2.79 ± .05	2.81 ± .04	3.02	2.71
V	201	3.26	2.99 ± .05	3.00 ± .06	2.86 ± .06	2.82	3.36
IV	216	3.26	3.03 ± .04	3.02 ± .04	2.88 ± .05	2.93	3.14
III	207	3.13	3.12 ± .04	3.20 ± .05	3.08 ± .04	3.00	2.83
II	204	3.16	3.25 ± .06	3.35 ± .07	3.16 ± .07	3.60	3.98
I	202	3.87	3.31 ± .05	3.52 ± .06	3.40 ± .07	3.72	3.96
Total Cases	2085	161	804	449	547	81	43

\*Cases in this column too limited for reliability.

\*\*No cases from community high schools in this decile group.

It will be observed that these values range from 0.01, or mere chance difference, to 9.2, or complete reliability. For a more objective comparison, a further analysis of the table shows that second-class city high schools excelled first-class city high schools with a critical ratio of 4.7, or complete reliability. Third-class city high schools excelled first-class city high schools with a critical ratio of 4.9, or complete reliability. Rural high schools excelled first-class city high schools with a critical ratio of 9.2, or complete reliability. Consolidated high schools excelled first-class city high schools with a critical ratio of 5.1, or a reliability of 98 chances in 100. Community high schools excelled first-class city high schools with a critical ratio of 1.1 or a reliability of 77 chances in 100. The large difference between first-class city high schools and the other five types is significant, as is the high ranking of the rural high schools. While the differences between second and third-class city high schools, community high schools, and consolidated high schools are rather small, a high degree of reliability was obtained.

#### Scholastic Success in Required Courses

The data dealing with the scholastic success in college of graduates of the types of high schools in required courses are shown in Table X. In this table will be found the median mark index of each type high school in each decile group and in all groups combined.

From the table it will be observed that all types of high schools ranked uniformly lower in required courses than in electives. This was true also of the comparisons in Chapter II. Since the P. E.'s of the medians of the separate decile groups are so large, all comparisons are made of all groups combined. In required courses community high schools

TABLE I

MEDIAN MARK INDEX OF GRADUATES OF EACH TYPE  
HIGH SCHOOL IN REQUIRED COURSES

Decile Group No.	No. of Cases	First Class City	Second Class City	Third Class City	Rural High School	Cons. High School	Comm. High School
All	2085	3.36 ± .05	3.17 ± .05	3.09 ± .03	3.10 ± .02	3.02 ± .06	3.01 ± .11
I	218	2.01	2.54 ± .04	2.28 ± .03	2.40 ± .06	2.30	1.97
II	219	2.86	2.72 ± .07	2.75 ± .04	2.69 ± .05	2.52	2.77
III	203	2.88	2.92 ± .06	2.76 ± .04	2.78 ± .05	3.11	3.56
IV	211	2.98	2.94 ± .04	2.91 ± .05	2.84 ± .05	2.91	**
V	204	3.01	3.20 ± .05	2.88 ± .04	2.96 ± .06	2.99	3.33
VI	201	3.32	3.29 ± .04	3.22 ± .05	3.05 ± .07	2.84	3.40
VII	216	3.59	3.43 ± .08	3.24 ± .04	3.28 ± .03	3.38	3.29
VIII	207	3.55	3.31 ± .04	3.57 ± .06	3.51 ± .04	3.50	3.37
IX	204	3.61	3.37 ± .03	3.46 ± .04	3.65 ± .05	3.96	4.27
X	202	4.01	3.84 ± .02	3.90 ± .03	3.74 ± .06	4.01	4.22
Total Cases	2085	161	804	449	547	61	43

\*Cases too limited in this column for reliability.

\*\*No cases from community high schools in this decile group.

ranked first with a mark index of 3.01; consolidated high schools ranked second with an index of 3.02; third-class city high schools ranked third with an index of 3.09; rural high schools, fourth with an index of 3.10; second-class city high schools, fifth with an index of 3.17; and first-class city high schools, sixth with an index of 3.36. The small differences in the mark indices of third-class city, rural, consolidated, and community high schools will be observed. Also, the low ranking of first-class and second-class city high schools is outstanding.

A further interpretation of the data shown in Table X reveals the fact that the first-class city high schools ranked third or higher in three of the ten decile groups. Second-class city high schools were third or higher in four groups; third-class city high schools, third or higher in eight; rural high schools, third or higher in seven; consolidated high schools, third or higher in five; and community high schools, third or higher in four. There was a persistency in high ranking in the case of third-class city, rural, consolidated, and community high schools, and a corresponding tendency toward low ranking in the case of first and second-class city high schools.

In column four of Table VIII will be found the critical ratio values for required courses. It will be observed that these values ranged from 0.4, or rather low reliability, to 5.5, or complete reliability. Further analysis of the data in the table reveals that second-class city high schools excelled first-class city high schools with a critical ratio of 3.8, or a reliability of 99 chances in 100. Third-class city high schools excelled first-class city high schools with a critical ratio of 5.5, or complete reliability. Rural high schools excelled first-class city high schools with a critical ratio of 4.8, or complete reliability.



Consolidated high schools excelled first-class city high schools with a critical ratio of 3.6, or a reliability of 89 chances in 100. Community high schools excelled first-class city high schools with a critical ratio of 2.9, or a reliability of 97 chances in 100. The chances are 83 to 100 in 100 that third-class city, rural, consolidated, and community high schools excelled first-class city high schools. The remainder of the critical ratio values were too small for reliable comparisons among the other types of high schools.

#### Summary and Conclusions

1. First-class city high schools ranked consistently lower than all other classes in the three comparisons made. There was a tendency for third-class city and rural high schools to rank high. The reason for the differences in ranking may be due, in part, to the differences in administrative and supervisory setups of the different types of school organization.
2. The critical ratio values for this part of the study ranged from zero to 9.2, or from mere chance difference to complete reliability. The critical ratios below 2.0, although of low reliability, are an indication, while those above 2.0 are highly significant. The P. E.'s of the medians of the decile groups were, in many cases, greater than the differences between the medians. They are included in the table for suggestiveness only. All comparisons are made of all groups combined.
3. There is a uniform distribution of cases in each decile group from each type high school. This insures that no one type high school is handicapped by having an undue proportion in the lower preparation groups.
4. There is a tendency for all types of high schools to rank higher in elective courses than in all courses or in required courses.

## CHAPTER IV

SCHOLASTIC SUCCESS IN COLLEGE OF GRADUATES OF HIGH SCHOOLS  
ACCREDITED AND OF THOSE NOT ACCREDITED BY THE NORTH CENTRAL  
ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS

Many Kansas high schools are on the accredited list of the North Central Association of Colleges and Secondary Schools<sup>1</sup>. This accredited list includes all first and second-class city high schools in this study, a large majority of the community high schools, and many third-class city, rural, and consolidated high schools. The non-accredited group in this study consists chiefly of third-class city, rural, and consolidated high schools. A very small number are community high schools.

The aims or objectives of the North Central Association pertaining to their relations with secondary schools seems to center around college entrance requirements. Quoting from the "Policies, Regulations and Standards for Accrediting of Secondary Schools"<sup>2</sup>, the objectives are as follows.

"The aims of the North Central Association of Colleges and Secondary Schools are, first to bring about a better acquaintance, a keener sympathy, and a heartier cooperation between the colleges and secondary schools of this territory; second, to consider common educational problems and to devise the best ways of solving them; and third, to promote the physical, intellectual and moral well being of students by urging proper sanitary conditions of school buildings, adequate library and laboratory facilities, and higher standards of scholarship."

The North Central Association of Colleges and Secondary Schools' standards for accrediting are centered around the following points:

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<sup>1</sup>Carrothers, G. H., Policies, Regulations and Standards for the Accrediting of Secondary Schools. (Chairman of Commission on Secondary Schools) 1932, University of Michigan, Ann Arbor, Michigan, 11 pp.

<sup>2</sup>ibid.

first, condition and adequacy of the school plant and equipment; second, the adequacy and condition of libraries and laboratory equipment; third, type and condition of school records; fourth, salaries of teachers; fifth, preparation of administrators and teachers; sixth, requirements for graduation; seventh, type and quality of instruction; eighth, pupil and teacher load; and ninth, the management of athletic programs. It will be noticed that there is considerable overlapping between the North Central Association standards and the standards for class A high schools in Kansas. The standards for class A schools are given in Chapter II.

The following quotation concerning standards is taken from the "Policies, Regulations and Standards for the Accrediting of Secondary Schools"<sup>3</sup>.

"The association is conservative, believing that such a policy will eventually work to the highest interests of all. It aims to accredit only those schools which possess organization, teaching force, standards of scholarship, equipment and esprit de corps, of such character as will unhesitatingly commend them to any educator, college or university in the North Central Territory.

#### Standards

##### 1. The School Plant, Sanitation, Janitor Service.

- (a) The school plant shall be adequate for the number of pupils enrolled and the program of studies offered.
- (b) The heating, lighting, and ventilation of the buildings, lavatories and toilets, wardrobes and lockers, water supply, school furniture, location of the classrooms, shops, and laboratories, and janitor service shall be such as to insure hygienic conditions for pupils and teachers.

##### 2. Science Laboratories and School Libraries.

- (a) The laboratory facilities, the size of the laboratory, the equipment, instructional apparatus, materials, supplies,

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<sup>3</sup>op. cit.

maps, and charts must be adequate to meet the needs of instruction for all those courses involving laboratory work.

### 3. Records.

Accurate and complete records of attendance and scholarship must be kept in such a form as to be conveniently used and safely preserved.

### 4. Requirements for Graduation.

- (a) Three-year senior high schools must require a minimum of eleven units for graduation. Four-year high schools must require a minimum of fifteen units for graduation; these units to be earned in grades 9, 10, 11, and 12.
- (b) The school year shall consist of a minimum of thirty-six weeks.
- (c) The minimum length of recitation period shall be forty minutes, exclusive of all time used in changing classes or teachers.
- (d) A unit course of study in a secondary school is defined as a course covering an academic year that shall include an aggregate not less than the equivalent of one hundred twenty sixty-minute hours of classroom work, two class periods of unprepared work being equivalent to one class period of prepared work.

### 5. Instruction and Spirit.

The efficiency of instruction, the acquired habits of thought and study, the general intellectual and moral tone of the school and the cooperative attitude of the community are paramount factors, and therefore only schools that rank well in these particulars, as evidenced by rigid, thorough-going, sympathetic inspection, shall be considered eligible for the list.

### 6. Salaries.

No school shall hereafter be accredited whose salary schedule is not sufficient to command and retain teachers whose qualifications are such as required by the Association. The interpretation of this requirement shall be a matter of special responsibility of the State Committee.

### 7. Preparation of Teachers.

The minimum attainments of a teacher of any academic subject, or supervisors of teachers of such subjects, of the principal, and of the superintendent, shall be college work equivalent to graduation from a senior college belonging to the North

Central Association of Colleges and Secondary Schools.

(b) The minimum professional training of a teacher of any academic subject, of the superintendent, of the supervisors of teachers, and of the principal shall be fifteen semester hours in education.

(c) All teachers of academic subjects in new schools and all new teachers of academic subjects in accredited schools must teach only in those fields in which they have made adequate preparation. The following are the minimum requirements.

English--15 semester hours

Foreign language--15 semester hours in the language taught

Science--15 semester hours, of which 5 shall be in the science taught

Mathematics--15 semester hours

Social studies--15 semester hours, which must include preparation in the subjects taught

Deduction in the fields of foreign language and mathematics may be allowed to the extent of 2 semester hours for each unit earned in high school not to exceed 6 semester hours.

8. Teaching Load.

An average enrollment in the school in excess of thirty pupils per teacher shall be considered as a violation of this standard. For interpreting this standard the principal, vice-principals, study hall teachers, vocational advisors, librarians, and other supervisory officers may be counted as teachers for such portion of their time as they devote to the management of the high school. In addition, such clerks as aid in administration of the high school may be counted on the basis of two full-time clerks for one full-time teacher.

9. The Pupil Load.

Four unit courses, or the equivalent in fractional units as defined in standard 4, shall be considered the normal amount of work carried for credit toward graduation by the average or medium student. Only such students as rank in ability in the upper 25% of the student body may be allowed to take more than four units for credit. A different practice must be explained to the State Committee.

10. Athletics.

No accredited school shall participate in any national or interstate athletic meet or tournament or in any invitational athletic meet or tournament not approved by the state athletic association. Accredited schools not eligible to membership in the state athletic association are excepted.

It will be observed that standards 1, 2, and 3 are general and subjective. Standard 4, concerning graduation requirements, parallels the state requirement for accredited schools. The requirements for teachers are very similar to the state requirements for teachers in class A high schools.

#### Scholastic Success in all College Courses

For this part of the study an analysis was made of the scholarship records of graduates of high schools accredited and high schools not accredited by the North Central Association of Colleges and Secondary Schools in all college courses combined.

TABLE XI

DISTRIBUTION OF CASES FROM HIGH SCHOOLS ACCREDITED  
AND NOT ACCREDITED BY THE NORTH CENTRAL ASSOCIATION

Group No.	No. of cases	Accredited		Non-accredited	
		No.	%	No.	%
All	2085	1255	60.2	830	59.8
X	218	134	61	83	39
IX	219	128	58	91	42
VIII	203	131	64	72	36
VII	211	115	54	96	46
VI	204	127	62	77	38
V	201	134	66	67	34
IV	216	123	57	93	43
III	207	119	57	88	43
II	204	120	59	84	41
I	202	124	61	78	39
Range	18	19	12	24	12

In Table XI are listed the number and per cent of cases from accredited and non-accredited high schools in each decile group. It will be observed from this table that the percentage of cases from accredited high schools

ranged from 54 in decile VII to 66 in decile V. The percentage for all groups combined was 60.2. Six hundred thirty-five, or approximately 50%, of the 1255 cases from accredited high schools fell in the upper five decile groups. It will also be observed that the percentage of cases from non-accredited high schools ranged from 34 in decile group V to 46 in decile group VII. The percentage for all groups combined was 39.8. Four hundred twenty, or approximately 50%, of the 830 cases from non-accredited high schools fell in the upper five decile groups. The table shows a uniform distribution of cases in the study and insures that neither of the divisions compared profited unduly from a large proportion from the higher preparation groups.

The median mark index for each preparation group and for all groups combined for high schools accredited and those not accredited by the North Central Association of Colleges and Secondary schools will be found in Table XII.

TABLE XII

MEDIAN MARK INDEX OF GRADUATES OF ACCREDITED  
AND NON-ACCREDITED HIGH SCHOOLS IN ALL COURSES

Group No.	No. of cases	Accredited	Non-accredited
All	2,085	3.04 ±.016	2.90 ±.018
X	218	2.40 ±.04	2.19 ±.05
IX	219	2.61 ±.05	2.64 ±.05
VIII	203	2.87 ±.04	2.80 ±.05
VII	211	2.84 ±.04	2.84 ±.04
VI	204	3.01 ±.04	2.94 ±.04
V	201	3.12 ±.04	2.87 ±.04
IV	216	2.90 ±.05	3.20 ±.04
III	207	3.25 ±.04	3.29 ±.05
II	204	3.43 ±.05	3.49 ±.05
I	202	3.80 ±.05	3.65 ±.06
Total No. Cases	2,085	1255	830

From the table it will be observed that the non-accredited high schools excelled the accredited high schools with a mark index of 2.90 against 3.04. A further study of the table shows that the non-accredited high schools ranked first or tied for first in six of the ten decile groups.

In column 2 of Table XIII will be found the critical ratio values for all courses. It will be observed that the non-accredited high schools excelled the accredited high schools with a critical ratio of 5.8, or complete reliability. This finding is quite outstanding, as the North Central Association accredited list of secondary schools is supposed to include the better high schools.

TABLE XIII

COMPARISON OF THE SCHOLASTIC SUCCESS OF GRADUATES  
OF ACCREDITED AND NON-ACCREDITED HIGH SCHOOLS  
IN TERMS OF CRITICAL RATIO VALUES

	All courses	Electives	Required
Accredited and Non-accredited	-5.8*	-2.6	-1.4

\*A critical ratio preceded by a minus sign denotes that the second-named class exceeds the first named class. No sign denotes that the first-named class ranks first.

#### Scholastic Success in Elective Courses

A continuation of the inquiry deals with the scholastic success of graduates of accredited and non-accredited high schools in those college courses which are elective. The median mark index for accredited and non-accredited high schools for each decile group, and for all groups combined, for elective courses is shown in Table XIV.



In Table XIV it will be observed that both the accredited and the non-accredited group did much better in electives than in all courses combined. This was a persistent tendency throughout the study. It will also be observed that the non-accredited high schools excelled the accredited high schools with grade indices of 2.89 and 2.96 respectively. It will be noticed that the obtained difference is much smaller than that when the accredited and non-accredited high schools were compared in all college courses. A further study of the table reveals that the non-accredited high schools ranked first in seven of the ten decile groups as well as in all groups combined. The accredited high schools ranked first in but three of the ten decile groups. This substantiates the findings of all groups combined.

TABLE XIV

MEAN MARK INDEX OF GRADUATES OF ACCREDITED AND  
NON-ACCREDITED HIGH SCHOOLS IN ELECTIVE COURSES

Group No.	No. of cases	Accredited	Non-accredited
All	2,085	2.96 ± .019	2.89 ± .019
X	218	2.35 ± .05	2.17 ± .06
IX	219	2.53 ± .05	2.58 ± .05
VIII	203	2.80 ± .05	2.79 ± .05
VII	211	2.78 ± .04	2.82 ± .06
VI	204	2.93 ± .04	2.85 ± .05
V	201	2.99 ± .05	2.97 ± .05
IV	216	3.37 ± .05	2.94 ± .04
III	207	3.12 ± .05	3.06 ± .06
II	204	3.26 ± .05	3.19 ± .05
I	202	3.49 ± .05	3.51 ± .07
Total No. Cases	2,085	1,255	830

In column 3 of Table XIII will be found the critical ratio values for the comparison of scholastic success in required courses for accredited and non-accredited high schools. From this table it will be observed that the non-accredited high schools excelled the accredited high schools with a critical ratio value of 2.6, or a reliability of 96 chances in 100.

#### Scholastic Success in Required Courses

In continuing the study it was found that both accredited and non-accredited high schools ranked uniformly lower in scholarship in required courses than in all courses combined or in electives. In Table XV is listed the median mark index for accredited and non-accredited high schools for each decile group and for all groups combined in those college courses which are required.

TABLE XV

#### MEDIAN MARK INDEX OF GRADUATES OF ACCREDITED AND NON-ACCREDITED HIGH SCHOOLS IN REQUIRED COURSES

Group No.	No. of cases	Accredited	Non-accredited
All	2,085	3.17 ± .023	3.13 ± .018
X	218	2.33 ± .05	2.36 ± .05
IX	219	2.74 ± .05	2.71 ± .04
VIII	203	2.94 ± .04	2.83 ± .05
VII	211	2.87 ± .05	2.87 ± .05
VI	204	2.80 ± .04	2.96 ± .04
V	201	3.27 ± .04	3.05 ± .05
IV	216	3.17 ± .04	3.42 ± .03
III	207	3.30 ± .05	3.55 ± .06
II	204	3.66 ± .05	3.60 ± .06
I	202	3.89 ± .06	3.91 ± .07
Total No. Cases	2,085	1,255	830

From this table will be noted that the non-accredited high schools ranked first with a mark index of 3.13. The mark index for accredited high schools was 3.17. A further study of the table reveals that the P. E.'s of the medians, in most cases, exceeded the difference between the medians in the individual decile groups; therefore inter-decile comparison is unreliable. A persistence in ranking, however, was found. The non-accredited high schools ranked first or tied for first in six of the ten decile groups.

From Table XII, column 4, it will be observed that the non-accredited high schools excelled the accredited high schools with a critical ratio value of 1.4, or a reliability of 77 chances in 100.

#### Summary and Conclusions

1. Graduates of high schools not accredited by the North Central Association of Colleges and Secondary Schools tend to do better work in college than do graduates of high schools accredited by that body. Although no definite conclusions can be drawn, it is highly probable that a graduate of a Kansas high school not accredited by the North Central Association will do better work in all college courses combined than a graduate of a high school accredited by that body. The chances of superiority for the non-accredited group, however, are not so great in elective and required courses. The reason for this may be that the standards for accrediting used by the North Central Association are, in some instances, general and subjective; therefore having little significance to good methods of instruction. Other standards are concerning the physical condition of school plant and equipment, which may or may not be significant to efficient instruction. Standards for teachers deal solely with preparation.

2. While comparisons in the individual decile groups are unreliable because of the limited number of cases, which results in rather high P. E. values, there is a persistence in higher ranking in the decile groups favoring the non-accredited high schools.

3. The distribution of cases from the accredited and non-accredited high schools shows uniformity through the decile groups, thus insuring that neither of the groups of high schools compared profited unduly by having a large proportion in the higher preparation groups as measured by the college entrance tests.

## CHAPTER V

THE SCHOLASTIC SUCCESS IN COLLEGE OF GRADUATES  
OF THE DIFFERENT SIZES OF KANSAS HIGH SCHOOLS

The Kansas high schools vary greatly in size of enrollment. This variation is from enrollments as low as 18 in rural high schools to enrollments ranging up to and above 4000 in first-class city high schools. The students enrolled at the Emporia Teachers College are graduates of many different sizes of high schools. Is the size of high school attended a factor in scholastic success in college? This part of the study was made to throw light on this question.

For purposes of comparing the college success of the graduates of the different sizes of Kansas high schools, the high schools from which the students graduated were arbitrarily divided into five groups on the basis of size of enrollment. The data for the segregation of the high schools in the study into groups according to size were taken from the 1930-31 Kansas Educational Directory<sup>1</sup>. The enrollments and grouping of the schools in this part of the study is as follows: size I includes those high schools whose enrollments are 50 or below, size II includes those high schools whose enrollments range from 51 to 150, size III schools have enrollments from 151 to 300, size IV high schools have enrollments from 301 to 750, and size V includes high schools whose enrollments are above 750.

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<sup>1</sup>Allon, George Jr., Kansas Educational Directory, 1930-31,  
Topeka, Kansas. 65 pp.

TABLE XVI

DISTRIBUTION OF CASES IN THE DECILE GROUPS FOR EACH  
SIZE HIGH SCHOOL

Decile Group No.	No. of Cases	Size I		Size II		Size III		Size IV		Size V	
		No.	%	No.	%	No.	%	No.	%	No.	%
All	2085	184	8.9	737	35.1	409	19.6	596	28.7	159	7.7
X	218	16	7.3	72	33	40	18.4	78	36	12	5.5
IX	219	18	8.2	80	36.2	47	21.4	57	26	17	8.2
VIII	203	19	9.3	58	29	50	24.7	66	32.6	10	4.4
VII	211	19	9.0	73	34.6	41	19.4	67	31.8	11	5.2
VI	204	18	8.8	74	36.2	34	16.7	57	27.9	31	10.4
V	201	18	9.0	74	36.7	30	14.9	63	31.4	16	8.0
IV	216	24	11.0	77	35.4	48	22.2	50	23.1	17	7.5
III	207	22	10.6	67	32.3	55	26.7	56	27.0	7	3.4
II	204	15	7.3	89	43.7	34	16.7	46	22.5	20	9.8
I	202	15	7.2	73	36.5	30	14.8	56	27.7	28	13.8
Range	18	9	3.8	31	14.7	25	11.9	32	13.5	21	10.4

Table XVI shows the distribution of cases for each individual decile group, and for all groups combined, in each of the five groups in this part of the study. From this table it will be observed that none of the five sizes of high schools profited materially by having an unusually large proportion in the higher preparation groups as measured by the college entrance tests. It will be seen that the percentage of size I high schools ranged from 7.2 in decile group I to 11.0 in decile group IV. The percentage for all groups combined was 8.9. Ninety-four, or 51%, of the 184 cases from size I high schools fell in the upper five preparation groups. The percentage of cases from size II high schools ranged from 29 in decile group VIII to 43.7 in decile group II. Three hundred fifty-seven, or 48.5%, of the 737 cases from size II high schools fell in the upper five decile groups. The percentage of cases from size III high schools ranged from 14.8 in decile group I to 26.7 in decile group III. Two hundred twelve, or 51.8%, of the 409 cases from size III high schools fell in the upper five preparation groups. The percentage of cases from size IV high schools ranged from 22.5 in decile group II to 36 in decile group X. Three hundred twenty-five, or 54.5%, of the 596 cases from size IV high schools fell in the five upper preparation groups. The percentage for all groups of size IV high schools combined was 26.7. The percentage of cases from size V high schools ranged from 7 in decile group III to 28 in decile group I. The percentage for all groups combined was 7.7. Eighty-one, or 50.9%, of the 159 cases from size V high schools fell in the upper five preparation groups.

In Table XVII is listed the median mark index for each size high school in each decile group and in all groups combined. From this table it will be observed that the size I high schools ranked first with a mark index of 2.80, size II high schools ranked second with a mark index

TABLE XVII

MEDIAN MARK INDEX OF GRADUATES OF EACH SIZE HIGH  
SCHOOL IN ALL COURSES

Decile Group No.	No. of Cases	Size I	Size II	Size III	Size IV	Size V
All	2085	2.88 ± .04	3.09 ± .03	2.96 ± .03	3.10 ± .03	3.17 ± .05
X	218	2.18	2.31 ± .02	2.14 ± .03	2.54 ± .04	2.09
IX	209	2.63	2.66 ± .04	2.46 ± .05	2.65 ± .05	2.70
VIII	203	2.70	2.88 ± .05	2.75 ± .06	3.01 ± .06	2.91
VII	211	2.85	2.83 ± .04	2.80 ± .07	2.92 ± .08	2.89
VI	204	2.79	2.90 ± .02	3.10 ± .03	3.05 ± .03	3.07
V	201	2.86	2.98 ± .04	3.10 ± .04	3.12 ± .05	3.26
IV	216	3.22	3.11 ± .05	3.23 ± .05	3.22 ± .06	3.28
III	207	3.27	3.34 ± .07	3.24 ± .08	3.21 ± .05	3.11
II	204	3.42	3.42 ± .05	3.26 ± .04	3.49 ± .03	3.57
I	202	3.49	3.59 ± .03	3.45 ± .05	3.89 ± .04	3.93
Total Cases	2085	184	737	409	596	159

\*Cases in this column too limited for reliability.



of 2.96, size II high schools ranked third with a mark index of 3.09, size IV high schools ranked fourth with a mark index of 3.10, and size V high schools ranked fifth with a mark index of 3.17.

While the P. E.'s of the medians in the separate decile groups are too great for reliable comparison, there is a tendency toward high ranking on the part of some sizes of high schools. A further study of Table XVII reveals the following ranking in the decile groups. Size I high schools ranked first in three of the ten groups, second or tied for second in four groups, and fifth in none. Size II high schools ranked first in one of the ten decile groups, second or tied for second in four groups, third in two groups, fourth in two groups, and fifth in one group. Size III high schools ranked first in four of the ten decile groups, second in two groups, third in two groups, fourth in one group, and fifth in one group. Size IV high schools ranked first in none of the ten decile groups, second or tied for second in two groups, third in two groups, fourth in three groups, and fifth in three groups. Size V high schools ranked first in two groups, second in none, third in none, fourth in three groups, and fifth in five groups.

In Table XVIII are listed the critical ratios for the comparison of scholastic success in college of graduates of the different sizes of high schools. Column two of this table contains the data for all courses combined. It will be observed that size I high schools excelled size II high schools with a critical ratio of 4.1, or complete reliability. Size I high schools excelled size III high schools with a critical ratio of 1.8, or a reliability of 89 chances in 100. Size I high schools excelled size IV high schools with a critical ratio of 4.8, or complete reliability. Size I high schools excelled size V high schools with a critical ratio of

4.3, or complete reliability. Size III high schools excelled size II high schools with a critical ratio of 3.2, or a reliability of 89 chances in 100. The reliability of the comparisons between sizes II and IV, II and V, and IV and V are too low to be of much significance. Size III high schools excelled size IV high schools with a critical ratio of 3.5, or a reliability of 99 chances in 100. Size III high schools excelled size V high schools with a critical ratio of 3.4, or a reliability of 99 chances in 100. It will be observed that most comparisons in this part of the study have very high reliability.

TABLE XVIII  
COMPARISON OF THE SCHOLASTIC SUCCESS OF GRADUATES  
OF THE SIZES OF HIGH SCHOOLS IN TERMS  
OF CRITICAL RATIO VALUES

Sizes Compared	All Courses	Electives	Required
I and II	4.1	2.4	4.8
I and III	1.8	1.2	0.9
I and IV	4.8	2.2	4.6
I and V	4.3	3.9	5.3
II and III	-3.2	-1.4	-2.4
II and IV	0.14	-0.3	5.5
II and V	1.5	2.6	1.3
III and IV	3.5	1.1	2.3
III and V	3.4	1.8	3.5
IV and V	1.2	2.7	1.3

#### Scholastic Success in Elective Courses

A further study of the scholastic success of graduates of the different sizes of high schools deals with those college courses which are elective only. In Table XIX is listed the median mark index for each size of high school

TABLE XIX

MEDIAN MARK INDEX OF GRADUATES OF BASH SIZE HIGH  
SCHOOL IN ELECTIVE COURSES

Decile Group No.	No. of Cases	Size I	Size II	Size III	Size IV	Size V
All	2085	2.83 ± .04	2.94 ± .02	2.89 ± .03	2.93 ± .03	3.09 ± .05
X	218	2.13 *	2.29 ± .02	2.20 ± .03	2.52 ± .03	1.88 *
IX	219	2.63	2.60 ± .04	2.46 ± .04	2.56 ± .04	2.72
VIII	203	2.78	2.82 ± .05	2.64 ± .06	2.86 ± .06	2.96
VII	211	2.79	2.80 ± .07	2.70 ± .05	2.82 ± .04	3.01
VI	204	2.70	2.87 ± .06	3.01 ± .07	2.97 ± .03	2.88
V	201	2.82	2.85 ± .05	3.09 ± .06	2.95 ± .04	2.97
IV	216	2.96	2.92 ± .04	3.12 ± .03	2.99 ± .02	3.32
III	207	3.14	3.14 ± .03	3.07 ± .05	3.11 ± .06	3.03
II	204	3.17	3.22 ± .07	3.38 ± .06	3.36 ± .08	3.20
I	202	3.37	3.59 ± .05	3.24 ± .04	3.54 ± .06	3.57
Total Cases	2085	184	737	409	596	159

\*Cases in this column too limited for reliability.

for each decile group, and for all decile groups combined. From this table it will be observed that size I high schools ranked first with a mark index of 2.83, size III high schools ranked second with a mark index of 2.89, size IV high schools ranked third with a mark index of 2.93; size II high schools ranked fourth with a mark index of 2.94, and size V high schools ranked fifth with a mark index of 3.09.

Again it is found that the size of the P. E.'s of the medians of the separate decile groups is too great for reliable comparison, but a further study of the table reveals the fact that there is a persistence in ranking for the different sizes of high schools. Size I ranked first in three of the ten decile groups, second in five groups, third in none, fourth in two, and fifth in none. Size II high schools ranked first in one of the ten decile groups, second in two groups, third in four groups, fourth in two groups, and fifth in one group. Size III high schools ranked first in four of the ten decile groups, second in one group, third in one group, fourth in two groups, and fifth in two groups. Size IV high schools ranked first in none of the ten decile groups, second in one group, third in five groups, fourth in three groups, and fifth in one group. Size V high schools ranked first in two of the ten decile groups, second in one group, third in none, fourth in two groups, and fifth in five groups.

In column three of Table XVIII will be found the critical ratio values for elective courses. From this table it will be observed that Size I high schools excelled size II high schools with a critical ratio of 2.4, or a reliability of 95 chances in 100. Size I high schools excelled size III high schools with a critical ratio of 1.2, or a reliability of 79 chances in 100. Size I high schools excelled size IV high schools with a critical ratio of 2.2, or a reliability of 93 chances in 100. Size I high schools

excelled size V high schools with a critical ratio of 3.9, or a reliability of 99.6 chances in 100. Size III high schools excelled size II high schools with a critical ratio of 1.4, or a reliability of 95 chances in 100. Size IV high schools excelled size II high schools with a critical ratio of 0.3, or a reliability of 58 chances in 100, which is very low. Size II high schools excelled size V high schools with a critical ratio of 2.6, or a reliability of 96 chances in 100. Size III high schools excelled size IV high schools with a critical ratio of 1.1, or a reliability of 77 chances in 100. Size III high schools excelled size V high schools with a critical ratio of 1.3, or a reliability of 89 chances in 100. Size IV high schools excelled size V high schools with a critical ratio of 2.7, or a reliability of 97 chances in 100. Most critical ratios were much lower for elective courses than for all courses combined.

#### Scholastic Success in Required Courses

A further inquiry deals with those college courses which are required. In Table II will be found the median mark index for each size of high school in each preparation group, and in all groups combined. From this table it will be observed that all five sizes of high schools made lower scholastic records in required courses than in electives, or in all courses combined. It will be observed that, in all preparation groups combined, size I high schools ranked first with a mark index of 2.99, size III high schools ranked second with a mark index of 3.06, size II high schools ranked third with a mark index of 3.16, size IV high schools ranked fourth with a mark index of 3.21, and size V high schools ranked fifth with a mark index of 3.29.

The ranking of the different sizes of high schools in each decile group was as follows. Size I high schools ranked first in three of the

TABLE XX

MEDIAN MARK INDEX OF GRADUATES OF EACH SIZE HIGH  
SCHOOL IN REQUIRED COURSES

Decile Group No.	No. of Cases	Size I	Size II	Size III	Size IV	Size V
All	2085	2.99 ± .04	3.16 ± .02	3.06 ± .04	3.21 ± .03	3.29 ± .05
X	218	2.31 *	2.42 ± .02	2.34 ± .03	2.55 ± .04	2.14 *
IX	219	2.71	2.70 ± .04	2.59 ± .05	2.77 ± .05	2.83
VIII	203	2.64	2.91 ± .05	2.76 ± .06	2.97 ± .08	2.84
VII	211	2.89	2.87 ± .07	2.88 ± .06	3.02 ± .06	3.04
VI	204	2.90	2.99 ± .05	3.11 ± .05	3.19 ± .05	3.10
V	201	2.92	3.05 ± .04	3.13 ± .04	3.29 ± .03	3.32
IV	216	3.34	3.32 ± .02	3.36 ± .03	3.44 ± .04	3.54
III	207	3.41	3.55 ± .04	3.42 ± .05	3.15 ± .05	3.12
II	204	3.68	3.72 ± .05	3.22 ± .06	3.80 ± .06	3.74
I	202	3.64	3.84 ± .07	3.49 ± .08	4.00 ± .08	4.01
Total Cases	2085	184	737	409	596	159

\*Cases too limited for reliability.

ten decile groups, second in four groups, third in three groups, fourth in none, and fifth in none. Size II high schools ranked first in two of the ten decile groups, second in three groups, third in two groups, fourth in two groups, and fifth in one group. Size III high schools ranked first in three groups, second in two groups, third in three groups, fourth in two groups, and fifth in none. Size IV high schools ranked first in none of the ten decile groups, second in one group, third in none, fourth in five groups, and fifth in four groups. Size V high schools ranked first in two of the ten decile groups, second in none, third in two groups, fourth in one group, and fifth in five groups. It will be observed that size I high schools ranked third or higher in each of the ten decile groups.

In column 4 of Table XVIII will be found the critical ratio values for the comparison of the different sizes of high schools in required courses. From this table it will be observed that size I high schools excelled size II high schools with a critical ratio of 4.8, or complete reliability. Size I high schools excelled size III high schools with a critical ratio of 0.9, or a reliability of 73 chances in 100. Size I high schools excelled size IV high schools with a critical ratio of 4.6, or complete reliability. Size I high schools excelled size V high schools with a critical ratio of 5.3, or complete reliability. Size III high schools excelled size II high schools with a critical ratio of 2.4, or a reliability of 95 chances in 100. Size II high schools excelled size IV high schools with a critical ratio of 5.5, or complete reliability. Size II high schools excelled size V high schools with a critical ratio of 1.3, or a reliability of 81 chances in 100. Size III high schools excelled size V high schools with a critical ratio of 3.5, or a reliability of 99 chances in 100. Size IV high schools excelled size V high schools

with a critical ratio of 1.3, or a reliability of 81 chances in 100. Size III high schools excelled size IV high schools with a critical ratio of 2.3, or a reliability of 94 chances in 100.

#### Summary and Conclusions

1. Graduates from size I high schools, or those whose enrollments are 50 or below, have better chances for scholastic success in college than do graduates of any other size high school. The difference is greater in all courses and in required courses than in electives. The advantages of the size I high schools may be due, in part, to the fact that a large majority of these high schools are class B schools with at least four full-time high school teachers. Therefore, the number of pupils per teacher in a large share of these schools is twelve or less, making individual instruction possible.

2. Comparisons in the individual decile groups have very low reliability because of the limited number of cases; however, there is a persistence in high ranking on the part of size I and size III high schools.

3. Graduates of all five sizes of high schools do better in elective courses than in courses that are required.

4. The critical ratio values, in most cases, are rather high; therefore the results of this part of the study, when all groups are combined, have a high degree of reliability.



## CHAPTER VI

## SUMMARY AND CONCLUSIONS

In the first place there was very little difference in the distribution of cases in the ten decile groups of any one part of this study. No one class, type, size, accredited, or non-accredited group of high schools profited materially by having a disproportionate share of cases in the higher preparation groups as measured by the college entrance tests.

The ranking of the classes of Kansas high schools, as measured by the scholastic success of their graduates in college, was as follows: class B, first; class C, second; class D, third; and class A, fourth.

The ranking of the types of Kansas high schools, as measured by the scholastic success of their graduates in college, was as follows: third-class city high schools, first; community high schools, second; rural high schools, third; second-class city high schools, fourth; consolidated high schools, fifth; and first-class city high schools, sixth.

High schools not accredited by the North Central Association of Secondary Schools and Colleges ranked higher than high schools accredited by that accrediting body.

The various sizes of Kansas high schools ranked as follows: size I, or high schools with enrollments of 50 or less students, first; size III, or high schools with enrollments from 151 to 300, second; size II, or high schools from 51 to 150 in enrollment, third; size IV high schools, or those with enrollments from 301 to 750, fourth; and size V high schools, or those with enrollments above 750, fifth.

Contrary to common opinion, graduates of the smaller high schools tended to rank high throughout the study, while there was an equal tendency

on the part of the larger high schools to rank low.

While the reliabilities of the several parts of the study are not high enough for accurate prediction, the persistence in ranking on the part of certain schools is an indication. While this study included 2085 cases, a study of a wider scope, involving a larger number of cases, would probably yield higher reliability measures.

Comparisons with critical ratios of 2.0 or greater are significant, giving a reliability of from 98 to 100 chances in 100 of a true difference. Critical ratios of 1.0 or less have little reliability and, therefore, are not significant.

In this study, of the total 96 critical ratios computed, 42 reached or exceeded 2.0 and, of the remaining ones, 20 more reached or exceeded 1.0.

On the basis of the findings of the complete study, graduates of class B Kansas high schools, whose enrollments are 50 or less and whose school organization is of the third-class city type, and not accredited by the North Central Association of Secondary Schools and Colleges, have greater chances of scholastic success in college than do graduates of any other groups of Kansas high schools. Graduates of first-class city high schools, whose enrollments are above 750, whose classification is A, and who are accredited by the North Central Association of Secondary Schools and Colleges, have the lowest chances for scholastic success in college.

The following may have some significance in the high ranking of the smaller Kansas high schools. (1) Closer association between pupils and teachers made possible by low pupil-per-teacher load. Association with teachers outside the classroom, though difficult to measure, may be fundamental to scholastic success in college. (2) Greater opportunity for participation in extra-curricular activities. A large per cent of pupils

in the smaller schools may participate in those activities outside the classroom which may carry over into college and be fundamental in adjustment. (3) Possibilities for self-reliance developed in both the school and home. The child in rural communities, in many instances, has greater responsibilities thrust upon him in the home life and in the school.

(4) The restricted curricula of the small schools may be significant to scholastic success in college. The curriculum of the smaller school centers around requirements for college entrance. These may be of utmost significance to the high school graduate who goes to college. The differences that do exist are surely not due to differences in scholastic preparation in the high schools, because there is very little difference in the achievement of graduates from these various classes, sizes, and types of high schools as measured by the college entrance tests. It is safe to say that there is little, if any, difference in the scholastic preparation of the students from the various high schools.

A similar study might well be carried out in other institutions of higher education in the state. If the same results are found, then prediction could be made. State-wide results of a similar nature might lead to a revision of some standards for classifying and accrediting the high schools.

## APPENDIX

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