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A comparative study of social studies majors of Indiana State Teachers College for the years 1931-1933

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A COMPARATIVE STUDY OF SOCIAL STUDIES MAJORS OF INDIANA STATE TEACHERS COLLEGE FOR THE YEARS 1931 - 1933

By

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I. INTRODUCTION

A. Statement of Problem

Many statements are current concerning the ability of persons selecting social studies as a major. Often one hears that social studies majors are good at memorizing facts, but frequently fall short in other lines where quantitative thinking is involved. Another current idea is that women excel men in social studies scholarship. You alao hear that certain sections of the state send superior students to Indiana State Teachers College. It is the purpose of this study to learn the truth or falsity of such claims as these in respect to social studies majors in the Indiana State Teachers College.

B. Organization of Problem

The intelligence percentiles, personality rating by critic teachers, average marks in social studies, electives, and other majors, of students who majored in social studies and graduated during the years 1931 to 1933, form the basic material for this study. These materials are analyzed under the following headings:

1. Comparison of social studies scholarship and scholarship in English.

2. Comparison of social studies scholarship and scholarship in electives.

3. Comparison of science scholarship and social studies scholarship.

4. Comparison of language scholarship and social studies scholarship.

5. Comparison of industrial arts scholarship and social studies scholarship.

6. Comparison of physical education scholarship and social studies scholarship.

7. Comparison of commerce scholarship and social studies scholarship.

8. Comparison of student teaching scholarship and social studies scholarship.

9. Comparison of percentile ranks and social studies scholarship.

10. Comparison of social studies scholarship and personality rating by critic teachers.

11. Comparison of the scholarship of men and women students in social studies.

12. Comparison of mathematics scholarship and social studies scholarship.

13. Comparison of social studies scholarship of students from four sections of the state.

C. General Procedure

1. Selection of Material. Names of all students who majored in social studies were obtained from the license cards on file in the Registrar's office or from

lists of graduates in case these students did not apply for license. Data concerning the students whose names were on this list were obtained from the Registrar's office, the office of the Director of Supervised Teaching of the Indiana State Training School and from the Division of Research. These data were tabulated on individual cards. After these data were collected the cards were carefully checked and all cards that showed that the majority of the student's work had been done in other schools were excluded from the study. One hundred ninety cases then remained.

2. Preliminary Treatment of Data. The following information was taken from the office of the registrar: the total number of A's, B's, C's, D's, and F's received by each student in all subjects taken, the sex, and the race.

a. The average mark for each student was calculated in social studies, electives, personality rating, and other majors besides social studies. This was done by assigning to A a value of 4, to B a value of 3, to C a value of 2, to D a value of 1, and to F a zero value. The total number of each letter in a given subject was multiplied by its respective assigned value. These products were then added and the sum divided by the total number of letters. The quotient was the student's average mark in the subject. (All WF's were counted as

F's, and all deferred credits were omitted.)

3. Arrangement of Cards and Recording of Data. All cards were numbered as they were recorded. These data were then recorded by districts in tables in decending order of social studies averages.

4. Statistical Treatment of Data. The arithmetic mean was used as a measure of central tendency. If there was a large number of cases the short method of finding the mean was used. If there were fewer than thirty cases, all the scores were added, and then divided by the number of scores, as this was more accurate when a few scores were involved.

After finding the mean, the standard deviation was found by the following formula:

$$\sigma = \left[\sqrt{\frac{\Sigma fd^2}{N} - \left(\frac{\Sigma fd}{N}\right)^2}\right] \quad \text{x size of interval.}$$

After finding the standard deviation, the standard error of the mean was found by the formula which is stated as follows:

$$\epsilon_M = \frac{\sigma}{\sqrt{N}}$$

In all cases of comparison of the difference between the means in two subjects or comparing the mean of the men with that of the women, the standard error of the difference was figured by the formula:

$$\epsilon_S = \sqrt{(\epsilon_{M_1})^2 + (\epsilon_{M_2})^2}$$

The value obtained for the standard error of the difference was then divided into the difference between the two means. The significance of the result was then interpreted by means of a standard error table.[1]

The Product Moment Method was used to find the coefficient of correlation when the number of cases was greater than 30.[2] If the number of cases was more than thirty the Rank Difference Method was used. The probable error for each coefficient of correlation, where the number of cases was greater than 30, was found by the formula:

$$P.E^r = \frac{.6745 \times (1 - r^2)}{\sqrt{n}}$$

The true value for the coefficient of correlation (r) was then found to lie somewhere between

$$r - P.E^r \text{ and } r + P.E^r.$$

If r was more than four times the $P.E^r$ in a given case correlation was then considered as being greater than zero. The amount of correlation was then determined by the ratio of r to $P.E^r$.

The probable error of a coefficient of correlation has little significance where only a few cases are concerned.

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[1] E. W. Tiegs and G. C. Crawford. Statistics for Teachers. (Houghton Mifflin Company. 1932.) p. 137

[2] H. E. Garret. Statistics in Psychology and Education. (Longman Green and Company. 1932) pp. 70-71.

II. PRESENTATION AND TREATMENT OF DATA

A. Comparison of Social Studies Scholarship and Elective Scholarship

1. Materials. Tables XIV to XXI, pages 8 to 64, in the appendix shows the average scholarship of the one hundred eighty-seven students who majored in social studies and also took at least ten elective courses. The data of this table formed the basis for comparison of achievement in social studies and achievement in elective courses.

2. Analysis and Results.

a. The range of the social studies averages was 2.87, of the elective averages 2.78.

b. The highest average mark in social studies was 3.87, made by student number 14, a woman.

c. The highest average mark in electives was 3.90 and made by the same student as above.

d. The lowest average mark in social studies was 1.00, made by student number 148, a man.

e. The lowest average mark in electives was 1.12, made by student number 63, a woman.

3. Conclusions.

a. Central Tendency. Table I, page 7, shows that the difference between the mean in social studies and electives is only .616 times as great as the standard error of the difference between the means. Since this is even less than the standard error of the difference we could expect this

group of students to earn higher marks in electives than in social students only about 75 per cent of the time.

TABLE I

COMPARISON OF MEANS IN SOCIAL STUDIES AND ELECTIVES

Mean of Social Studies	Mean of Electives	Difference in Means	Standard Error of Difference	Critical Ratio
2.576	2.617	.041	.0665	.616

The coefficient of correlation (r) between electives and social studies was.673 ± .025. Which indicated that the chances are even that the true r lies within the limits of .648 and .698. This correlation is almost 27 times its standard error ± .025. Consequently, since there is a rather large number of cases, we can say this indicated a high correlation.

c. Figure 1, page 8, shows a graphical representation of the per cent of A's B's, C's, D's, and F's assigned by instructors in social studies was practically the same as those assigned by instrcutors in elective subjects. The per cent of each letter assigned in both social studies and electives varies from a normal distribution in practically the same way. There is a greater per cent of A's and B's and a smaller per cent of D's and F's than in a normal distribution.

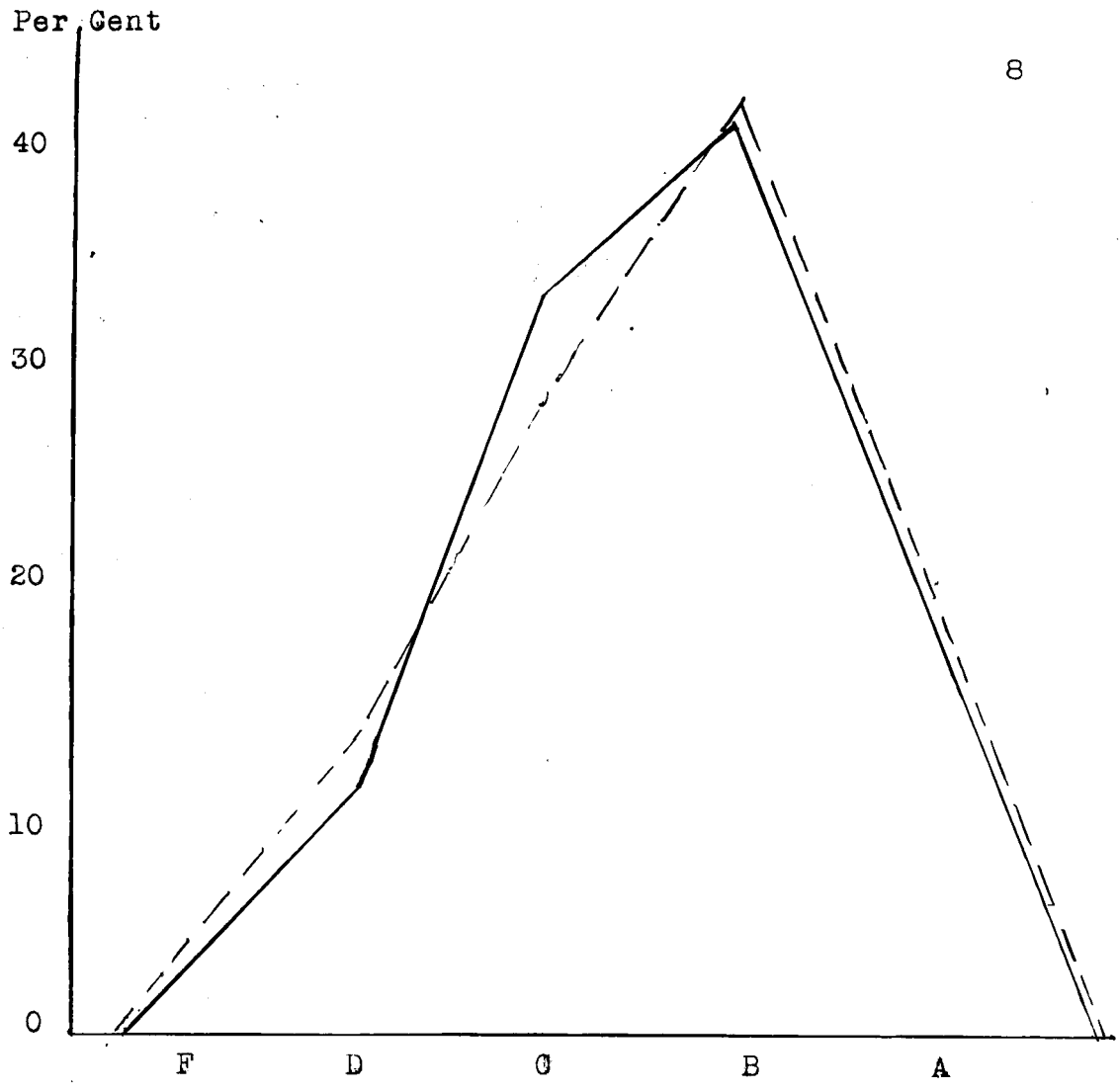

Figure 1. Distribution of marks in social studies and electives.

B. Comparison of Social Studies Scholarship And English Scholarship

1. Materials. All the materials for this section of the study were taken from all the data as found in Table XIV to XXI, pages 48 to 64, in the appendix. This study includes the record of 96 students who majored in social studies and English.

2. Analysis of Material.

a. The highest average mark in social studies was 3.87, made by student number 14, a woman.

b. The highest average mark in English was 3.92, made by student number 14, a woman.

c. The lowest average mark in social studies was 1.08, made by student number 106, a man.

d. The lowest average mark in English was 1.33, made by student number 179, a man.

e. The range in English averages was 2.59.

f. The range in social studies averages was 2.79.

3. Results and conclusions. The coefficient of correlation (r) between social studies and English was ,708 ± .034. Thus the chances are fifty-fifty that the true r lies between the limits of .674 and .704[1] as r is more than 20 times the probable error of r we can say that the correlation between English and social studies is fairly high.

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[1] E. W. Tiegs. Tests and Measurements for Teachers. (Houghton Migglin Company, 1932.) p. 83.

b. Central Tendency

TABLE II

COMPARISON OF MEANS IN SOCIAL STUDIES AND ENGLISH

Mean of Social Studies	Mean of English	Difference in Mean	Standard Error of Difference	Critical Ratio
2.700	2.708	.008	.089	.089

The above table shows that the difference in means is .008. Since this difference is less than the standard error of the difference there is no significant difference indicated by the difference in the two means. The standard error table shows that the chances are only 1.2 to 1 that these students would receive a higher means score in English than in social studies. This would mean that we could expect these students to receive a higher score in English about 55 per cent of the time. This is little better than chance.

c. Distribution of marks. In all the comparisons made the marks in English and social studies come the nearest to being distributed the same. Figure 2, page 11, shows that the distribution of marks in no place varies as much as 2 per cent between English and social studies. More than 60 per cent of all letters assigned in both English and social studies were A's and B's. Between 26 and 28 per cent were C's, and only about 10 per cent were D's and F's.

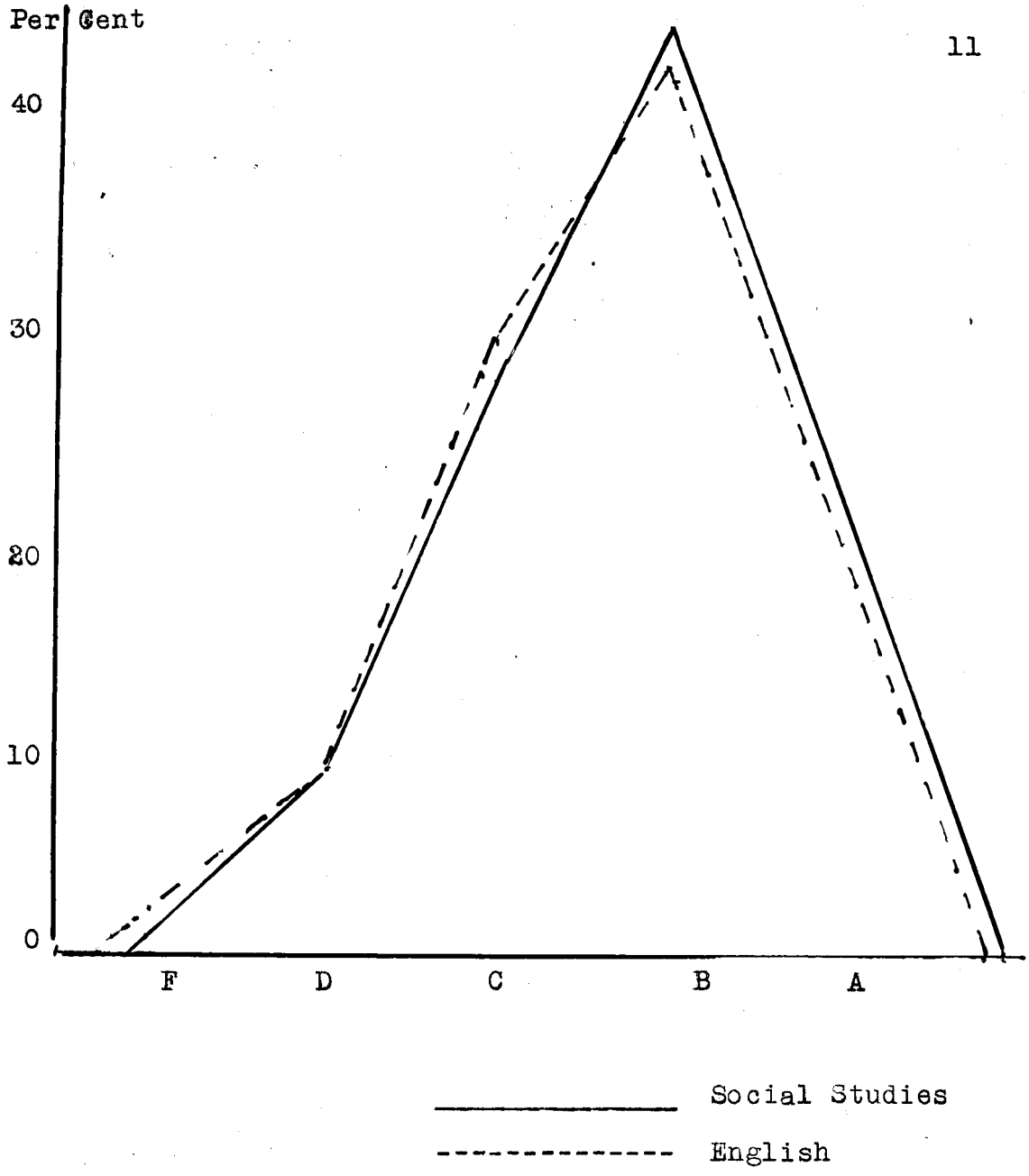

Figure 2. Distribution of marks in Social Studies and English.

G. Comparison of Social Studies Scholarship and Industrial Arts Scholarship

1. Materials. The data for this study, which includes the records of the ten students who majored in social studies and industrial arts, are all found in tables XIVto XXI in the appendix.

2. Analysis of Materials.

a. The range of the social studies averages was .85.

b. The range in industrial arts averages was 1.11.

c. All ten of these students received a higher average mark in industrial arts than in social studies.

d. The highest average mark in social studies was 2.75, made by student number 144.

e. The lowest average mark in social studies was 1.90, made by student number 115.

f. The lowest average mark in industrial arts was 2.12, made by student number 191.

g. The highest average mark in industrial arts was 3.23, made by student number 115. This student, as shown above, made the lowest average mark in social studies.

3. Conclusions. The coefficient of correlation between social studies and industrial arts was .846. This is high but since the number of cases are small it cannot be relied upon. We can say, however that these pupils received about the same relative ranking, (with respect to high and low average mark) in both social studies and industrial arts.

b. Central Tendency.

TABLE III

COMPARISON OF MEANS IN SOCIAL STUDIES AND INDUSTRIAL ARTS

Mean of Social Studies	Mean of Industrial Arts	Difference In Mean	Standard Error of Difference	Critical Ratio
2.413	2.876	.463	.18	2.57

The critical ratio shown in the above table indicates that the chances were about 184 to 1 for these students to make a higher average mark in industrial arts than in social studies, although the difference in means is not three times the standard error of the difference, which would indicate that we could not be sure of a real difference in merit. The fact that there is a difference in means, and that each student made a higher average mark in industrial arts than in social studies, would be strong evidence for saying that these students might be expected to do superior work in industrial arts. The findings here are somewhat in accord with the findings of George Clayton in Thesis Number 115.[1] In this thesis he states that "the average mark received by industrial arts majors in their special

[1]George B. Clayton. A Method of Arriving at Probable Teaching Success Based Upon Scholarship. Indiana State Teachers College. (Unpublished Master's Thesis, Number 115.)

field is significantly higher than average marks received by them in other fields.

c. Distribution of Scores. Of the total number of marks assigned to these students in social studies, there were 10 per cent A's, 31.54 per cent B's, 35.85 per cent C's, 4.62 per cent D's and no F's. These students made 25.93 per cent A's, 48.15 per cent B's, 27.87 per cent C's, 4.63 per cent D's and no F's in industrial arts. The distribution of grades in social studies is much a normal distribution than the distribution in industrial arts. In neither case were there any F's assigned.

D. Comparison of Social Studies Scholarship and Language Scholarship

1. Materials. The data for this study are taken from the records of the 18 students who majored in social studies and language. Twelve of these students majored in Latin and six in French.

2. Analysis of Material.

a. Twelve students made average marks in language that were above 3.00.

b. Eleven students had average marks in social studies above 3.00.

c. The range of the social studies averages was 2.04.

d. The range of the Latin averages was 2.40.

3. Conclusions. The coefficient of correlation between language and social studies averages was .826. A probable error was not figured for the coefficient of correlation because the number of cases are too small to make it reliable.

a. Central Tendency

TABLE IV

COMPARISON OF MEANS IN SOCIAL STUDIES AND LANGUAGE

Mean of Social Studies	Mean of Language	Difference In Means	Standard Error of Difference	Critical Ratio
3.125	3.070	.055	.193	.284

This is one of several cases in this study in which we cannot be sure that the difference of means signifies a difference in merit between the work done in the two subjects. A standard error table shows that we could expect this group of students to receive higher average marks in social studies about 60 per cent of the time, which is little better than chance.

c. Distribution of Marks. Of the total number of marks assigned to social study students there were 37.07 per cent A's, 37.83 per cent B's, 21.24 per cent C's,

3.47 per cent D's and.35 per cent F's. These students made 40.9 per cent A's, 30.9 per cent B's, 20.9 per cent C's, 4.7 per cent D's and .5 per cent F's in language. In the case of both social studies and language the distribution of marks is far from a normal distribution of seven per cent A's, 24 per cent B's, 38 per cent C's, 24 per cent D's and 7 per cent F's.

E. Comparison of Social Studies Scholarship and Mathematics Scholarship

1. Materials. The data for this section of the study are taken from the records of the fifteen students who majored in social studies and mathematics.

2. Analysis and Results.

a. The highest average mark in social studies was 3.52, made by student number 51, a woman.

b. The highest average mark in mathematics was 4.00, also made by a woman student number seventy-nine.

c. The lowest average mark in social studies was 1.60, made by a man student, number 119.

d. The lowest average mark in mathematics was 1.27, which was also made by student number 119.

e. The range in social studies averages was 1.92.

f. The range in mathematics averages was 2.73.

g. Six students had averages above 3.00 in mathematics.

h. Seven students had averages above 3.00 in social studies.

i. In five cases the same students had an average above 3.00 in both social studies and mathematics.

3. Conclusions. The coefficient of correlation between mathematics and social studies was found to be .83. This is a high correlation but we can not be sure of its reliability because the number of cases is too small. A probable error of mean has little or no value in determining reliability where the number of cases is small.

a. Central Tendency.

TABLE V

COMPARISON OF MEANS IN SOCIAL STUDIES AND MATHEMATICS

Mean of Social Studies	Mean of Mathematics	Difference In Means	Standard Error of Mean	Critical Ratio
2.809	2.791	.018	.2169	.083

The difference between the two means, as shown by the above table, is less than the standard error of the difference between the means; consequently, we cannot be sure that there is any real difference in merit represented by this

difference. A standard error table shows that the chances for these students to make a higher average mark in social studies than in mathematics were only 1.2 to 1. We then could expect their average mark to be higher in social studies only about 53 per cent of the time.

b. Distribution of Marks. The mathematics students included in this study made 26 per cent A's, 31.32 per cent B's, 31.33 per cent C's, 10 per cent D's and 1.33 per cent F's. The social studies students made 21.2 per cent A's, 40.9 per cent B's, 30.3 per cent C's, 5 per cent D's and 1.5 per cent F's.

F. Comparison of Social Studies Scholarship and Physical Education Scholarship

1. Materials. Tables XIV to XXI pages 48 to 64 , show the average scholarship of each of the twenty-two students who majored in social studies and physical education. The data of this table form the basis for all comparisons made of achievement in social studies and achievement in physical education.

2. Analysis and Results.

a. The range of the physical education averages was 2.15, of the social studies averages 2.00.

b. The highest average mark in physical education was 3.60, made by a woman student, number 91.

c. The lowest average mark in physical education was made by student number 44, a woman.

d. The highest average mark in social studies was 3.60, made by the same woman student who made the highest average mark in physical education.

e. The lowest average mark in social studies was 1.25, made by a man student, number 104.

3. Results and Conclusions.

a. Correlation. The coefficient of correlation between social studies averages and physical education averages was .736. The number of cases was to small to make a probable error reliable, consequently, one cannot be sure that this high correlation is sufficient.

b. Central Tendency.

TABLE VI

COMPARISON OF MEANS IN SOCIAL STUDIES AND PHYSICAL EDUCATION

Mean of Social Studies	Mean of Physical Education	Difference in Means	Standard Error of Difference	Critical Ratio
2.318	2.647	.329	.155	2.122

In order to be practically certain that there is a real difference in merit represented by the difference in means, the difference should be at least three times the standard error of the difference. The above table shows that the difference in means is 2.122 times the standard error of

the difference. A standard error table shows that the chances are about 62 to 1 that this group would make higher marks in physical education than in social studies. This would mean that we could expect these students to get higher marks in physical education approximately 98 per cent of the time.

c. Distribution of Marks. The distribution of marks in social studies and physical education is fairly near a normal distribution, with the exception of the per cent of B's assigned. Approximately 10.7 per cent of all letters assigned in physical education were A's, 31.7 per cent were B's, 38.5 per cent were C's, 16.7 per cent were D's and 2.5 per cent were F's. There was very little difference between this distribution and the distribution of marks in social studies.

G. Comparison of Social Studies Scholarship and Science Scholarship

1. Materials. Tables XIV to XXI, pages 48 to 64, in the appendix, shows the average mark in social science for each of the thirty-one students who majored in social studies and science. The data of this table formed the basis for all comparison of achievement in social studies and achievement in science.

2. Analysis of Materials.

a. The range of the science averages was 2.22.

b. The range of the social studies averages was 2.37.

c. The highest average mark in social studies was 3.70, made by a woman student, number 85.

d. The lowest average mark in social studies was 1.33, made by a man student, number 149.

e. The highest average mark in science was 4.00, made by a woman student, number 46.

f. The lowest average mark in science was 1.78, made by a woman student, number 44.

3. Conclusion.

a. Correlation. The coefficient of correlation between science and social studies was.638 ± .072, which indicates that the chances are even that the true correlation lies between the limits of .566 and.71. Since this is almost 8 times the probable error we can conclude that the correlation between social studies and science is considerable.

b. Central Tendency.

TABLE VII

COMPARISON OF MEANS IN SOCIAL STUDIES AND SCIENCE

Mean of Social Studies	Mean of Science	Difference In Means	Standard Error of Difference	Critical Ratio
2.648	2.734	.086	.124	.689

Since the difference between the means, as shown by the above table, is .086, it does not appear that there is any real difference in merit between the work done in science and that done in social studies. A standard error table, however, reveals that the chances are 3.1 to 1 that the students who majored in science did better work in that subject than they did in social studies.

c. Distribution of Marks. Figure 3, page 23, shows that the students received slightly higher marks in science than in social studies. It also shows that, while the distributions of marks for both science and social studies are not so very near normal distributions, the distribution for social studies is the nearer.

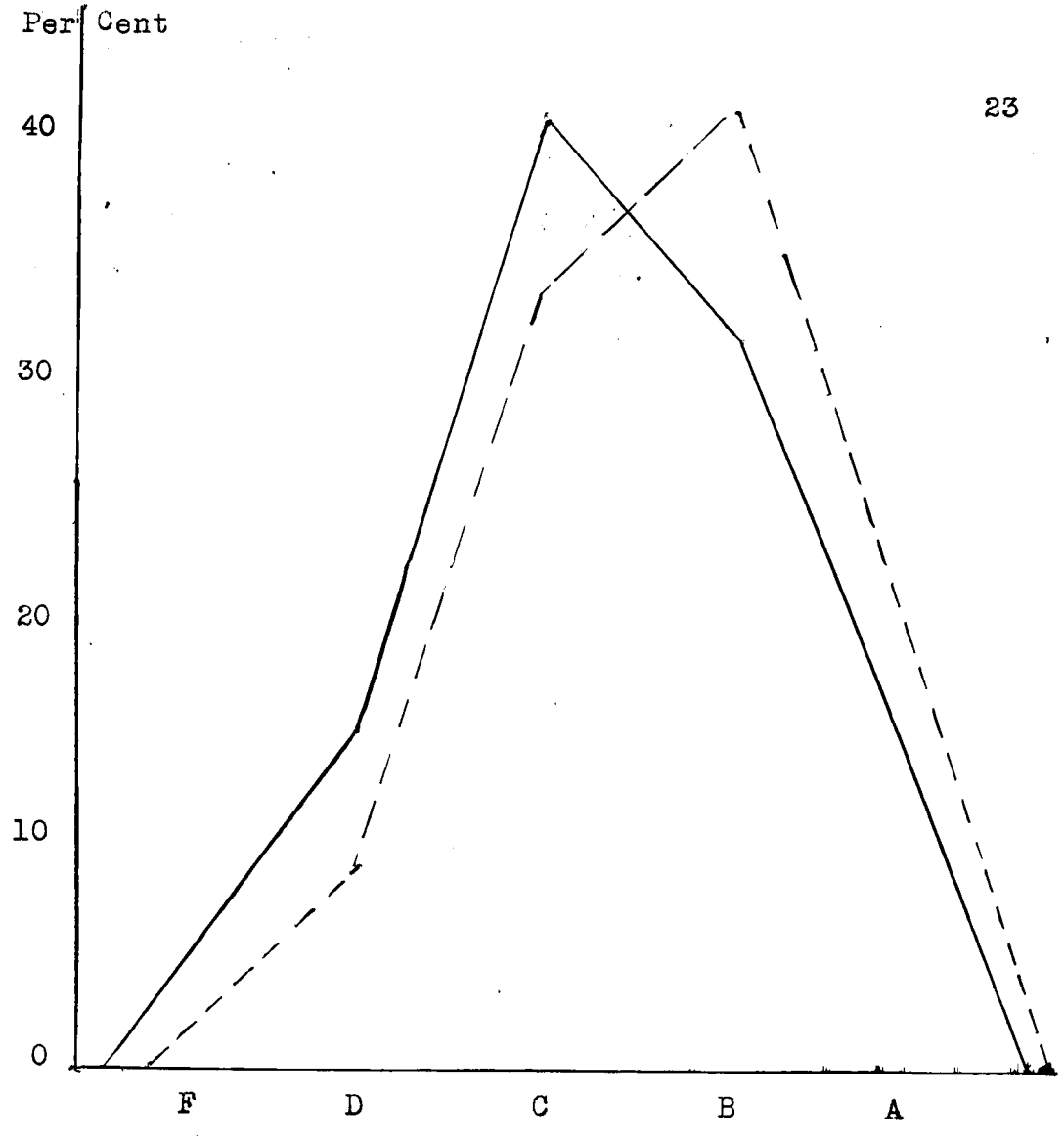

Figure 3. Distribution of marks in social studies and science.

H. Comparison of Social Studies Scholarship And Student Teaching Scholarship

1. Materials. Table XII shows the average mark in social studies and student teaching for each of the 128 students who majored in social studies and took student teaching as a required subject. This table and results obtained from the records of the same students in senior college courses form the basis for all comparisons made in this section of the study.

2. Analysis and Results.

a. The range of the student teaching averages was 3.00, of the social studies averages 2.79.

b. The highest average mark in student teaching was 4.00, made by students number 173, 135, 176, 8 62, 4, 19, 60, 35, 24, 26, and 6. There were four men and nine women in this group.

c. The lowest average mark in student teaching was 1.000, made by two women students, numbers 2 and 17.

d. The highest average mark in social studies was 3,87, made by a woman student, number 14.

e. The lowest average mark in social studies was 1.08, made by a man student, number 116.

3. Conclusions.

a. Correlation. The coefficient of correlation between student teaching and social studies was .335 $\pm$ .055.

This means that the chances are even that the true r lies between the units of .28 and .39.. Since r is more than four times as great as the Probable Error (.055) we can say that there is some correlation between student teaching and social studies averages.

b. Central Tendency.

TABLE VIII

COMPARISON OF MEANS IN SOCIAL STUDIES AND STUDENT TEACHING

Mean of Social Studies	Mean of Student Teaching	Difference In Means	Standard Error of Difference	Critical Ratio
2.6578	2.8243	.1665	.0824	2.01

The above table shows that the difference between the means is in favor of student teaching, and that this difference is 2.01 times the standard error of the difference. A standard error table reveals that the chances are 42.8 to 1 that these students would receive higher marks in student teaching than in social studies. In order to be practically certain that these two groups of scores show a real difference in merit, the difference between the means should be at least three times the standard error of the difference. In the present case the difference is a little more than twice as

large as the standard error of the difference. On the basis of these data we can say that only 2.3 per cent of the time would these students actually obtain a higher mean score in social studies than in student teaching.

c. Distribution of Marks. Figure 4 shows the graphic representation of the distribution of marks in social studies and student teaching. A study of this figure shows that a larger per cent of A's and B's were made in student teaching than in social studies, that the per cents of F's and D's were much smaller and that the per cents of C's were nearly equal.

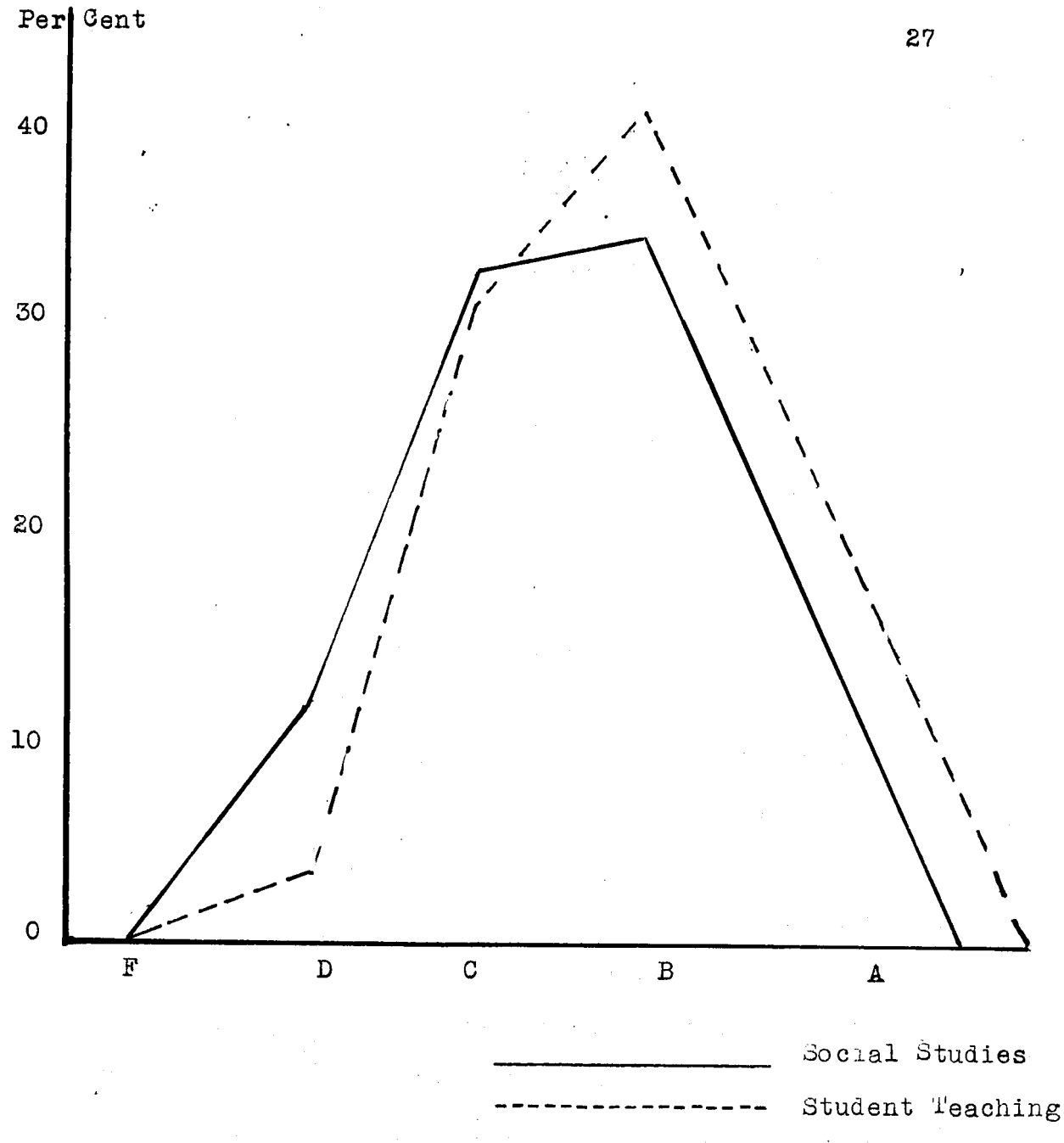

Figure 4. Distribution of marks in social studies and student teaching.

I. Comparison of Social Studies Scholarship And Personality Rating By Critic Teacher

1. Materials. The data for this section of the study are taken from the material as used in Table XII . This table shows the average mark in social studies and the personality rating by the critic teacher. Personality ratings were not available for all the students who took practice teaching.

2. Analysis of Materials.

a. The range in personality ratings was 2.63.

b. The range in social studies averages was 2.47.

c. The highest personality rating was 4.00, which was made by students 102, 62, and 167, two women and one man student.

d. The lowest personality rating was 1.37, which was made by a man student, number 108.

e. The highest average mark in social studies was 3.87, made by a woman student, number 19.

f. The lowest average mark in social studies was 1.40, made by a woman student, number 12.

g. Six women and fifteen men received ratings below 2.50.

h. Twenty-two women and twenty men received personality ratings of 3.00 or more.

3. Results and Conclusions.

a. Correlation. The coefficient of correlation between social studies and personality rating was .158 ± .066. This means that the chances are even that this coefficient is correct within .066; that is that it is between .092 and .224. Since r is only about 2.3 times as large as the Probable Error (.066) of the coefficient of correlation. We can not be sure that r is greater than zero. Therefore if any correlation exists between social studies and personality rating it is very low.

b. Central Tendency.

TABLE IX

COMPARISON OF MEANS IN SOCIAL STUDIES AND PERSONALITY RATING

Mean of Social Studies	Mean of Personality Rating	Difference In Means	Standard Error of Difference	Critical Ratio
2.823	3.280	.457	.0847	4.22

Since the above table shows that the difference between the two means is 4.22 times the standard error of the difference between the two means, it seems that we are very safe and sane in concluding that the chances for this group of students to receive a higher average personality rating than social studies average were very good.

c. Distribution of Marks. Figure 5, page 31, shows that the per cent of high scores is very much in favor of the personality rating. The figure shows that while both distributions are far from the normal distribution, the distribution of personality rating scores shows little, if any, similarity to the normal distribution.

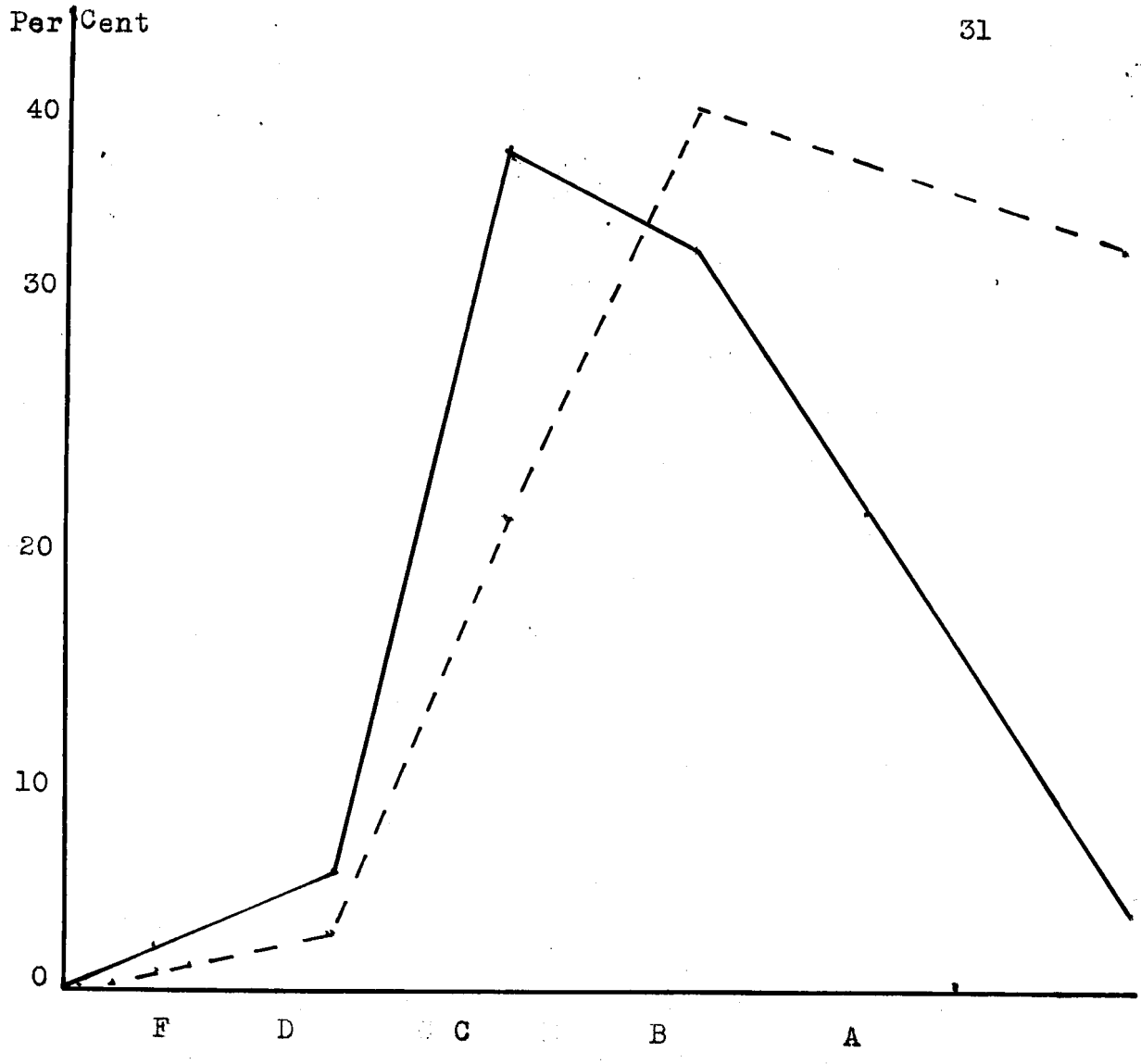

Figure 5. Distribution of marks in social studies and personality rating.

J. Comparison of Scholarship of Men and Women In Social Studies

1. Materials. Table XIII, show the sex and average mark of each of the 190 students included in this study. The fact that this study is based on the record of 100 women as compared to the record of 90 men, does not affect the results. When the record of 90 women students chosen at random from this group was compared with the record of this same group of men the results were practically the same.

2. Analysis and Result.

a. The highest average mark was 3.87, made by student number 75, a woman.

b. The lowest average mark was 1.08, made by student number 116, a man.

c. Two men had averages above 3.50.

d. Fourteen women had averages above 3.50.

e. Five men and four women had averages below 1.50.

3. Conclusions.

TABLE X

COMPARISON OF MEANS OF BOTH SEXES IN SOCIAL STUDIES

Mean of Women	Mean of Men	Difference in Means	Standard Error of Difference	Critical Ratio
2.781	2.450	.331	.089	3.72

a. Central Tendency. In order to be practically certain that there is a real difference in merit between these two groups the difference between the means should be at least three times as great as the standard error of difference. In the present case the difference is 3.72 times as great as the standard error of the difference. On the basis of these data we can say that about 99.9 per cent of the time the women should obtain a higher mean score than the men. Judging from these data, it is safe to say that the women did a much higher grade of work in social studies than did the men.

b. Distribution of Marks. A study of figure 6, page 34, shows that 67.7 per cent of the marks made by women were A's and B's, as compared to 33.5 per cent A's and B's made by the men. Also, the men have 56.5 per cent C's, D's and F's, as compared to approximately 32 per cent for the women. This would seem to indicate that the women were a superior group as compared with men. Figure 6 also shows that the marks assigned to the men students make more nearly a normal distribution than those assigned to women.

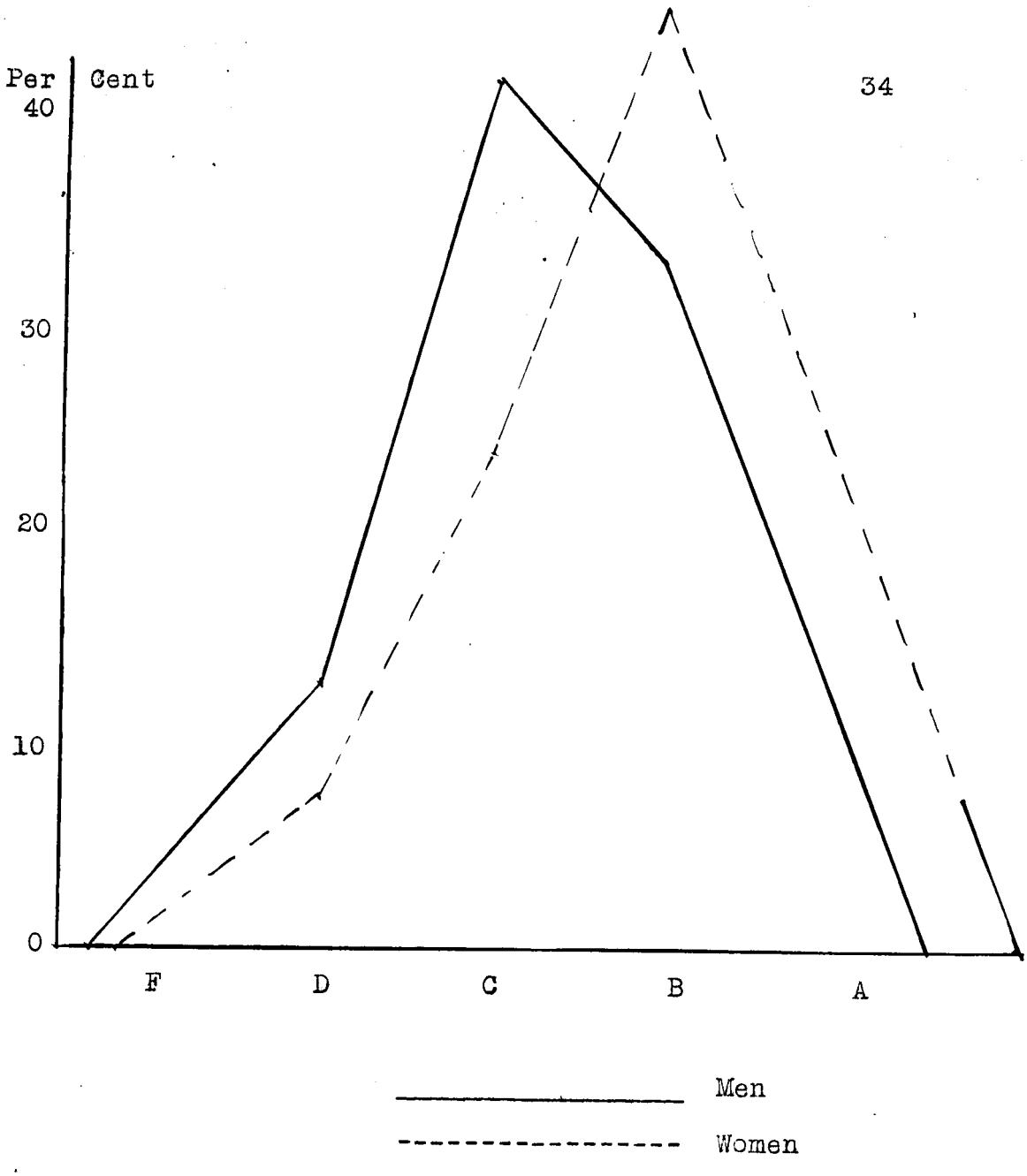

Figure 6. Distribution of marks for men and women in social studies.

K. Comparison of Social Studies Scholarship of Students In Four Sections of the State

1. Materials. The data for this section of the study include the records of 188 students who majored in social studies. Tables XIV to XXI, pages 48 to 64 show the average mark, number sex, and the section of the state that each student is from. Section 1 includes all students from Vigo County who majored in social studies. Section 2 includes all social studies majors who came from counties adjoining Vigo. Section 3 includes all social studies majors from counties south of Vigo and adjoining counties. Section 4 includes all social studies majors from counties north of Vigo and adjoining counties.

2. Analysis of Materials.

a. The range of the social studies averages in district 1 was 2.48, in district 2, 2.20, in district 3, 2.61, and in district 4, 2.72.

b. The highest average mark was 3.87, made by student number 14, of district 1.

c. The lowest average mark was 1.08, made by student number 116, of district 4.

d. Twenty-four students in district 1, twelve students in district 2, seventeen in district 3, and six in district 4 had average marks above 3.00.

.3. Conclusions.

a. Central Tendency.

TABLE XI

COMPARISON OF MEANS IN FOUR DISTRICTS OF THE STATE

Mean of Social Studies in District 1	Mean of Social Studies In District 2	Mean of Social Studies In District 3	Mean of Social Studies In District 4
2.665	2.665	2.592	2.559

The above table shows that the means for students of district 1 and district 2 are the same. The difference between means in district 1 and 3 is .073, and the standard error of the difference is .12. When you divide .073 by .12 you get a critical ratio of .608 which is not high enough to be significant. A standard error table shows that the chances were 2.6 to 1 in favor of the students from district 1 getting higher average marks in social studies than those from district 3. The difference between the means in districts 1 and 4 is .106, and the standard error of the difference between the means is .141. Dividing .106 by .141 gives a critical ratio of .68. Here again the critical ratio is too small to be greatly significant. A standard error table shows that we might expect students

from district 1 to make a higher average mark in social studies about 75 per cent of the time. When districts 1 and 2 are compared with districts 3 and 4, very simular results are obtained, because the means in districts 1 and 2 are equal. The difference between the means in districts 3 and 4 is .043. The standard error of the difference is .141, and the critical ratio is .305. This indicates that the chances were about 1.6 to 1 in favor of the students from district 3 doing superior work to that done by the students from district 4.

b. Distribution of Marks. The students of district 1 received a greater per cent of A's than did any of the other districts. District 2 received a greater per cent of B's. District 4 received a greater per cent of C's, D's and F's than did any of the other districts. The marks assigned the students of district 3 and 4 make a more nearly normal distribution than those assigned to students of district 1 and 2.

c. Rank of Districts. According to the evidence presented above we can rank the districts as follows: Districts 1 and 2 would have a rank of 1 1/2. District 3 would rank third and district 4 fourth.

L. Comparison of Social Studies Scholarship And Intelligence Percentile Rank

1. Materials. The data for this section of the study are found in the appendix. This study includes the record

of 133 students who majored in social studies and also took the intelligence test.

2. Analysis of Materials

a. 25 women had percentile ranks above 90.

b. 8 men had percentile ranks above 90.

c. 14 women students had percentile ranks below 25.

d. 9 men students had percentile ranks below 25.

e. Students number 26, 50, 59, 75, 56, 6, and 129 had percentile ranks of 99. The first five named are women, and number 6 and number 129 are men students.

f. The highest average mark in social studies was 3.87, made by student number 14, a woman. Her percentile rank was 98.

g. The lowest average mark in social studies was 1. 12, made by a woman student, number 63. Her percentile rank was 6.

3. Conclusions.

a. Correlation. The coefficient of correlation between percentile rank in intelligence tests and social studies averages was .48 $\pm$ .043. Thus the chances are even that the true coefficient will fall between .437 and .523. Since this correlation is 11.11 times the Probable Error we can be fairly sure that fair degree of correlation exists between percentile ranks and social studies averages.

We can be sure that correlation is at least higher than zero if the coefficient is 4 times the Probable Error.[3] The findings here agree somewhat with the findings of Paul L. Boynton who found that in 59 cases where correlations were made between intelligence and college work, the average correlation was .42.[4]

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[3]H. E. Garret. Statistics in Psychology and Education. (Longmans, Green and Company, 1932) pp. 170-171.

[4]Paul L. Boynton. Intelligence Its Manifestations and Measurements. (New York: D. Appleton Co., 1933) p. 364.

III. SUMMARY OF FINDINGS

A. Women Students are Superior in Average Scholarship to Men Students

This can be partly accounted for by the fact that the average intelligence percentile rank for the men of this group was only 56.2, as compared with an average percentile rank of 79.5 for the women. The finding here agrees with the findings of others. E. Toeve[1] found that women excel men in scholarship. E. Higgins[2] found that women excel men in mathematics scholarship.

B. There Is a High Correlation Between English and Social Studies Averages.

There is no significant difference in the average scholarship of the two groups.

C. The Industrial Arts Students Made Higher Individual Records than did Social Studies Majors

The industrial arts students made higher averages marks in each individual record than they did in social studies. The findings here are very much in agreement with the

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[1] E. Toeve. Sex Differences in College Scholarship. Education and Supervision Vol. II. p. 202.

[2] E. Higgins. A Study of the Achievement and Related - etc. (Indiana State Teachers College, Unpublished Masters Thesis, Number 76.

findings of Clayton.[3]

D. Small Correlation Between Personality Rating and Social Studies Averages

There is little or no correlation between personality rating and social studies averages. Also the difference in mean of social studies and personality rating was very much in favor of the personality ratings.

E. High Correlation Between Science and Social Studies Averages

The correlation between social studies scholarship and science scholarship was substantial and the difference in mean was too small to be significant.

F. High Correlation between Electives and Social Studies Averages

The difference between the average mark in social studies and electives was too small to be significant, and the correlation between the two groups was substantially high.

G. Large Correlation Between Language and Latin Students and Social Studies Averages

The students who chose language and social studies as

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[3]George Clayton, A Method of Arriving at Probable Teaching Success Based Upon Scholarship (Indiana State Teachers College, Unpublished Masters Thesis, Number 115)

as majors had the highest average marks of any students in the study. This indicates that these students are of a superior group, which agrees with the finding of J. C. Corn[4] that students selected Latin as a major subject have higher averages scholarship than do non-Latin students.

H. The Equality of Students Taking Mathematics And Social Studies

The social studies students were able to make eqmally high marks in both social studies and mathematics. The difference in means, while slightly in favor of social studies, was too small to be significant.

I. High Correlation Between Physical Education And Social Studies Averages

The physical education majors made the lowest average mark in social studies of any group in the study.

J. The Coefficient of Correlation Between Social Studies and Intelligence Percentile Ranks

The coefficient of correlation between social studies and intelligence percentile ranks, which was .48, agrees with the usual finding where college scholarship has been correlated with intelligence.

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[4]J. C. Corn. A Study of the Achievement of Latin and Non-Latin Students of Indiana State Teachers College. Indiana State Teachers College. (Unpublished Masters Thesis, Number 149)

K. The Correlation Between Student Teaching Averages And Social Studies Averages

The correlation between student teaching averages and social studies averages was low. The differences in mean social studies and student teaching showed that the chances were in favor of these students receiving higher marks in student teaching.

L. The Equality of Social Studies Students in the Different Districts

The section of the study dealing with students from four districts of the state showed that the students from Vigo county and the students from surrounding counties had about the same average scholarship. The students from these two districts did slightly better work than those from the districts north or south of Vigo county.

TABLE XII

SUMMARY OF CORRELATIONS

Subjects Correlated	Number of Students	Correlation ± P. E r
Industrial Arts and Social Studies	10	.846
Mathematics and Social Studies	15	.830
Language and Social Studies	18	.826
Physical Education and Social Studies	22	.736
English and Social Studies	100	.708 P.E. ± .034
Electives and Social Studies	187	.673 P.E. ± .025
Science and Social Studies	31	.638 P.E. ± .072
Intelligence Percentile Rank and Social Studies	132	.484 P.E. ± .043
Student Teaching and Social Studies	127	.335 P.E. ± .055
Personality Rating and Social Studies	99	.158 P.E. ± .066

TABLE XIII

COMPARATIVE SUMMARY OF MEANS

	Mean Scholarship	Means of Same Students In Social Studies
Personality Rating	3.280	2.823
Language	3.070	3.125
Industrial Arts	2.876	2.413
Student Teaching	2.824	2.658
Mathematics	2.791	2.809
Science	2.734	2.648
English	2.708	2.700
Physical Education	2.647	2.318
Electives	2.617	2.576
Men Students		2.450
Women Students		2.781
District 1 of State		2.665
District 2 of State		2.665
District 3 of State		2.592
District 4 of State		2.559

IV. APPENDIX

A. Bibliography

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TABLE XIV

SUBJECT AVERAGE, PERCENTILE RANK, AND PERSONALITY RATING FOR SOCIAL STUDIES MAJORS OF DISTRICTN MBER 1 (MEN)

Student Number	Social Studies Average	English Average	Elective Average	Student Teaching Average	Science Average	Physical Education Average	Language Average	Industrial Arts Average	Mathematics Average	Commerce Average	Per-Centile Rank	Personality Rating
130	3.81		3.52	3.00				3.00*			96	3.64
125	3.78	3.50	3.33	3.00							92	
124	3.44	3.57	2.75								79	
127	3.00	2.33	3.00	4.00				3.25**			84	
129	3.00	2.60	3.50	3.50							99	3.71
152	2.83		2.45	3.50				2.76*			92	3.93
189	2.76		2.95		2.66							
151	2.58		2.30	2.00				2.92			55	2.06
155	2.46		2.57	3.50	2.61						96	3.38
162	2.46	3.00	2.06	2.50							66	3.19
190	2.45		2.82						3.16			
164	2.44			2.00					2.16		88	2.23
153	2.41	2.28	2.05	2.20							95	3.71

TABLE CONTINUED
XIV

181	2.33	2.40	2.06	3.00							89	2.71
178	2.27	1.88	1.60	3.50								3.54
168	2.11	2.00	2.50	1.50							67	2.07
172	2.00	1.83	2.86	2.50							49	2.81
139	2.00		2.45	3.00	1.79						29	
120	1.94		2.21	2.00	2.83						68	2.48
115	1.90		2.12	3.00				3.23			35	3.25
113	1.88	1.85	2.04	3.00							94	2.69
106	1.63		2.07			1.85					53	
118	1.60		1.33	3.00		3.22						3.26
103	1.47		2.07		2.08						19	
110	1.39		1.52	3.00						1.69	24	3.00
Means	2.399	2.522	2.422	2.835	2.394	2.535	....	3.075	2.660	1.690	69.52	3.038

* Art

** Music

TABLE XV

SUBJECT AVERAGE, PERCENTILE RANK, AND PERSONALITY RATING FOR SOCIAL STUDIES MAJORS OF DISTRICT NUMBER 1 (WOMEN)

Student Number	Social Studies Average	English Average	Elective Average	Student Teaching Average	Science Average	Physical Education Average	Language Average	Industrial Arts Average	Mathematics Average	Commerce Average	Percentile Rank	Personality Rating
14	3.87	3.92	3.90	3.50							97	3.80
94	3.72	3.18	3.06									
48	3.64	3.66	2.50	2.00							14	3.62
49	3.64	3.50	3.23	3.50	3.33						95	3.56
64	3.60	3.00	1.90								97	
24	3.60	3.28	3.50	4.00							88	3.92
51	3.52	3.56		2.50					3.33		45	2.00
60	3.44	3.00	3.12	4.00							86	
27	3.43		3.54	3.50			3.40				90	3.65
35	3.40	3.23	3.17	4.00			3.72				23	3.51
26	3.37		3.69	4.00					3.60	3.10	99	3.30
20	3.30	3.77	2.91	3.00			3.90				95	2.89
50	3.30	3.40	3.50	3.50			3.40				90	2.88
99	3.28	3.10	2.90									

TABLE XV CONTINUED.

91	3.25		3.03			3.60						
25	3.20		3.60	3.00						3.30	87	3.33
17	3.05	3.40	3.35	3.50							86	3.76
81	3.00	2.40	2.72									
96	3.00		2.00		3.09							
31	3.00	2.50	2.52	3.50							66	3.00
37	2.90	2.25	1.86	2.50						2.00	10	2.86
19	2.71	3.27	2.64	4.00			3.10				61	3.87
1	2.70	2.30	2.78	3.00								
38	2.69		2.50	2.50			2.30				21	3.09
33	2.68	2.71	2.87	3.00			2.44				87	2.75
67	2.66	2.50	2.62								34	
62	2.60	3.16	2.33	4.00							88	4.00
9	2.50		1.45	2.00				1.54*			2	2.25
5	2.43	2.25	2.55	2.50							32	
82	2.41		3.00					3.53*				
2	2.40		1.22	1.00	3.00							
29	2.40		2.00	3.66	2.65			2.00			23	3.25
59	2.33	3.57	3.18	3.00							99	

TABLE XV CONTINUED.

73	2.27	1.64	2.66				3.00				41	
53	2.26		2.40	3.50			2.40				37	3.18
102	2.20		3.03	2.00	2.80							4.00
56	2.18	2.80	2.15	3.00	3.08						99	3.00
30	2.15		1.16	2.50	2.31						30	3.08
61	2.13	2.41	2.50	2.00						2.00	24	
93	2.10		3.06	3.50		3.10				3.33	66	3.76
16	1.63	2.00	2.00	3.00	2	2.80**					33	3.00
52	1.43	2.06	1.47	3.00							20	3.12
76	1.21		1.83							1.86	7	
Means	2.804	2.923	2.702	3.126	2.894	2.350	3.073	....	3.465	2.598	59.06	3.275

*Home Economics

**Music

TABLE XVI

SUBJECT AVERAGE, PERCENTILE RANK, AND PERSONALITY RATING FOR SOCIAL STUDIES MAJORS OF DISTRICT NUMBER 2 (MEN)

Student Number	Social Studies Average	English Average	Elective Average	Student Teaching Average	Science Average	Physical Education Average	Language Average	Industrial Arts Average	Mathematics Average	Commerce Average	Percentile Rank	Personality Rating
47	3.23		2.80	3.50			3.25				40	3.26
128	2.30		2.80	2.00					3.80		40	1.44
136	3.10	3.60	3.10	3.00								
177	2.90		2.17	2.00			1.60					
138	2.71	2.28	2.27								77	
185	2.70		2.60					3.18				
174	2.70	2.00	2.10	4.00								
141	2.60		2.70					3.10			20	
145	2.60		2.70							2.60	65	
166	2.56		2.20	3.50		2.80					62	3.61
169	2.50		3.30	2.00		2.53					30	2.49
142	2.33		2.40			2.90					64	
188	2.33	2.26	2.90									
163	2.18	2.27	2.13	2.66							69	2.75

TABLE CONTINUED
XVI

40	2.00	2.33	2.75	2.50							94	2.92
121	1.80	1.90	1.90	2.00							54	2.61
112	1.68		1.59	2.00		2.41					22	3.06
119	1.60		1.90	2.33					1.27			2.13
108	1.50	2.40	2.60	2.00							66	1.37
Means	2.433	2.38	2.474	2.832	...	2.65	2.425	2.483	2.035	2.60	58.07	2.564

TABLE XVII

SUBJECT AVERAGE, PERCENTILE RANK, AND PERSONALITY RATING FOR SOCIAL STUDIES MAJORS OF DISTRICT NUMBER 2 (WOMEN)

Student Number	Social Studies Average	English Average	Elective Average	Student Teaching Average	Science Average	Physical Education Average	Language Average	Industrial Arts Average	Mathematics Average	Commerce Average	Percentile Rank	Personality Rating
15	3.70	3.00	3.30	2.50							98	3.11
72	3.60	3.30	3.27								94	
55	3.46	3.61	2.75	2.00			3.40				75	
80	3.36	3.42	3.53									
28	3.30			3.00					3.00		93	2.78
54	3.25	2.90	3.60	3.33							94	3.75
78	3.12	3.42	2.62								96	
92	3.06	3.07	2.87	2.50			2.80				45	2.81
79	3.00		3.00	1.50					4.00		96	1.81
98	3.00	2.00	2.33									
65	2.80		2.29							2.40	62	
77	2.80	2.50	2.90								71	
10	2.53	2.14	2.44	2.50							81	2.54
69	2.52	1.80	2.60								18	

TABLE CONTINUED
XVII

21	2.35	2.60	2.76	2.00							88	2.65
13	2.30	2.11	2.42	2.50						3.10	84	3.11
58	2.12	2.07	1.85	2.00							14	
42	1.86		2.25	2.00			2.00				38	2.42
44	1.85		2.50	2.50	1.78	1.45					90	3.22
Means	2.947	2.71	2.739	2.361	1.78	1.45	2.733	....	3.50	2.75	73.94	2.82

TABLE XVIII

SUBJECT AVERAGE, PERCENTILE RANK, AND PERSONALITY RATING FOR SOCIAL STUDIES MAJORS OF DISTRICT NUMBER 3 (MEN)

Student Number	Social Studies Average	English Average	Elective Average	Student Teaching Average	Science Average	Physical Education Average	Language Average	Industrial Arts Average	Mathematics Averages	Commerce Averages	Percentile Rank	Personality Rating
135	3.28	3.28	3.00	4.00								
123	3.20		4.00		2.75							
134	3.16	2.80	3.60									
133	3.16		3.15	3.66	3.11							
132	3.14		3.50	3.00		2.66						
131	3.12		2.90	3.00	3.60							
126	3.06		2.20			3.07					82	
137	3.00		3.08						2.77			
122	3.00		3.00						2.50			
173	2.91		3.00	4.00	3.00							
186	2.90		2.80			3.09						
181	2.90		2.30	2.50					2.14			3.00
161	2.80		2.40	3.00	2.80						85	3.36
154	2.76		2.30	2.00					2.80		92	2.38

TABLE CONTINUED
XVIII

144	2.75		2.40					2.80			19	
176	2.70	3.00	3.00	4.00								
157	2.56		2.85	2.00					2.30		88	2.37
180	2.50	3.04	3.04					2.72				
143	2.40		2.22		2.30						16	
150	2.40		1.70	2.00						1.72	37	2.33
184	2.33	2.40	2.41					3.00				
165	2.27		2.70	2.50				3.09			26	2.67
158	2.23		2.30	3.00		3.00					66	2.61
187	2.15		2.26						2.40			
170	2.15		2.20	2.50		2.21					28	3.40
156	2.00	1.46	2.05	1.50							9	2.75
191	2.00		2.10					2.12				
105	1.50		2.40	2.33		2.40					66	3.75
149	1.33		1.60	2.50	2.60						37	
104	1.25		1.38			2.20					34	
Means	2.563	2.663	2.594	2.853	2.880	2.661	....	2.526	2.485	1.72	49.90	2.882

TABLE XIX

SUBJECT AVERAGE, PERCENTILE RANK, AND PERSONALITY RATING FOR SOCIAL STUDIES MAJORS OF DISTRICT NUMBER 3 (WOMEN)

Student Number	Social Studies Average	English Average	Elective Average	Student Teaching Average	Science Average	Physical Education Average	Language Average	Industrial Arts Average	Mathematics Average	Commerce Average	Percentile Rank	Personality Rating
8	3.86	3.27	3.44	4.00			3.80				92	3.61
6	3.79	3.66	3.77	4.00							99	3.79
68	3.50	3.16	3.01								57	
4	3.30	2.92	2.63	4.00								
34	3.16	2.50	3.00	3.00							92	3.27
46	3.16		2.00	2.50	4.00						92	2.69
88	3.15	3.13	3.22									
71	3.00		3.25			2.50					56	
83	2.87	2.44	1.81									
3	2.80	2.85	2.56	3.00								
97	2.66	2.00	2.70									
57	2.60	2.50	3.11	3.75							68	
11	2.55		2.14	2.50		2.50					46	2.60
70	2.45		2.56		3.07						50	

TABLE XIX CONTINUED

66	2.02	2.89	3.00								20	
32	2.00	3.00	2.73	3.51							77	3.81
36	2.00	2.40	2.06	3.50							39	3.73
87	1.83	1.83	2.00									
45	1.80	2.20	1.40	3.00							16	3.25
74	1.71		1.93					2.10*			30	
107	1.70	1.80	1.60								55	
117	1.61	1.90	2.25	1.00								
63	1.12	2.25	2.17	2.00							6	
Means	2.545	2.592	2.532	3.058	2.535	2.500	3.800	...	...	...	55.31	3.342

* Home Economics

TABLE XX

SUBJECT AVERAGE, PERCENTILE RANK, AND PERSONALITY RATING FOR SOCIAL STUDIES MAJORS OF DISTRICT NUMBER 4 (MEN)

Student Number	Social Studies Average	English Average	Elective Average	Student Teaching Average	Science Average	Physical Education Average	Language Average	Industrial Arts Average	Mathematics Average	Commerce Average	Percentile Rank	Personality Rating
167	3.90		2.50	3.00		3.46					22	4.00
175	2.80		2.57	3.00	2.70							
146	2.80		4.00		2.80						76	
192	2.80		1.60		2.66							
140	2.70		3.00		2.55						28	
147	2.56		2.02		2.26						7	
183	2.50		2.30	3.00	2.69							
148	2.50		1.00					2.50			31	
159	2.50		1.80	2.00	2.60						31	2.17
182	2.30	2.80	2.80	2.50								2.82
179	2.00	1.33	1.40	2.00								1.67
160	2.00		2.44			2.50			2.20		49	3.06
109	1.87		1.83	3.50		2.33					35	3.00
111	1.80		2.10	2.00		2.07					79	2.68

TABLE CONTINUED
XX

114	1.50		1.90	2.50	2.00						64	2.27
116	1.08		1.56	3.00								
Means	2.288	2.065	2.176	2.650	2.533	2.590	....	2.50	2.20	....	42.20	2.709

TABLE XXI

SUBJECT AVERAGE, PERCENTILE RANK, AND PERSONALITY RATING FOR SOCIAL STUDIES MAJORS OF DISTRICT NUMBER 4 (WOMEN)

Student Numbe	Social Studies Average	English Average	Elective Average	Student Teaching Average	Science Average	Physical Education Average	Language Average	Industrial Arts Average	Mathematics Averages	Commerce Average	Percentile Rank	Personality Rating
43	3.80	3.00	3.33	3.00							93	3.68
85	3.70		3.50		3.74							
84	3.60	3.50	2.56				3.42					
86	3044	2.97	2.70									
39	3.42	2.55	2.54	3.00			3.22				67	2.94
23	2.90	3.00	3.06	3.00							62	3.19
18	2.83	2.60	2.00	2.00						1.60	56	2.70
7	2.70	2.00	2.50	2.00							79	1.87
90	2.62	3.00	2.50									
223	2.17	2.50	2.06	3.00							66	3.55
41	2.00	2.00	2.30	3.00							29	3.18
101	1.80	3.00	2.00	1.50								2.48
12	1.40	1.66	2.15	3.00							63	3.42

TABLE CONTINUED
XXI

Means	2.798	2.648	2.554	2.611	3.78	....	3.32	....	....	1.600	64.375	3.001