A COMPARISON OF EUROPEAN HISTORY STUDENTS AT BETHANY
COLLEGE, KANSAS BASED ON VARIOUS HIGH SCHOOL SIZES

by

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A MASTER'S REPORT

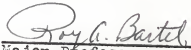submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

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Introduction to the Problem

The study of school size is invariably concerned with
the search for efficiency. Does the size of the high school
attended influence the efficiency of students in college?

There are those who write that the larger schools have
made wider ranges of experiences available to their students,
and that better teaching has been available in the larger
schools.[1] There are those who write that the major problem
facing education in the United States today is the existence
of too many small schools.[2] Advances registered in all areas
of the secondary curriculum in recent years, in both new know-
ledge to be learned and in new ways of presenting the materials
to students, point to a continual study program for teachers
in secondary schools. There is the possibility that continuing
advances in any area the curriculum are great enough to
require concentrated study in that area by teachers. Hence, it
seems that the advances would demand a specialization in one
area if a teacher were to stay abreast of these trends. The
problem of meeting this demand is compounded in the smaller

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[1]Carl Eisemann, "In Reorganized Districts Children do
Learn More," The Nation's Schools, LIX (June, 1957), pp. 61-63.

[2]James B. Conant, The American High School Today (New
York: McGraw-Hill Book Co., 1959), p. 37.

schools where the teacher must teach in at least two, and in many cases more than two fields of study. The problem may, or may not, be complicated further by the shorter tenure of teachers in the smaller districts. A number of studies have shown that the teachers in the smaller schools, for a variety of reasons including the number of different classes they teach, salary differential, lack of advancement possibilities, the restricted social environment, and the paucity of professional contacts, tend to migrate to larger school systems. One result of this movement is that teachers seldom remain in the smaller schools long enough to learn what materials are available for them to use as they plan the educational experiences that the children in their classrooms will have.

If one is to know whether the above weaknesses in the small high school have any effect upon the student's ability to achieve academically in college, a study comparing academic achievement in college with academic accomplishments in high school organized along the lines of various high school sizes is essential.

Statement of the Problem

The students in the European history survey courses at Bethany College were divided into three categories according to the size of high school they attended, (a) small high school of 299 students or less, (b) large high school of 300 to 1299 students, (c) and very large high school of 1300 or

more students. The purposes of this study were to (1) compare
the academic achievement of each group to reveal if a parti-
cular size of high school affected the efficiency of a stu-
dent in European history at Bethany College and (2) correlate
the high school and college European history grade within each
group to reveal if a particular size of high school resulted in
one obtaining the same college grade in European history at
Bethany college as he did in European history on the high
school level.

Statement of the Hypotheses

1. There will be a numerical difference in the grade point
    averages (means) of the three categories in high school
    European history.

2. There will be a numerical difference in the grade point
    averages (means) of the three categories in college
    European history.

3. There will be a numerical difference between the high
    school and college European history grade point averages
    (means) within each category.

4. There will be a numerical difference among the three
    categories pertaining to hypothesis three.

5. There will be at least a low positive correlation
    (+.20 to +.40) between high school and college
    European history grades within each category.

6. There will be a correlational difference among the
    three categories pertaining to hypothesis five.

Definition of Terms Used

Small high school. A small high school was the last
four years on the secondary level 9th, 10th, 11th, and 12th
grades, of a high school with 299 or less students enrolled.

Large high school. A large high school was the last
four years on the secondary level 9th, 10th, 11th, and 12th
grades, of a high school with 300 to 1299 students enrolled.

Very large high school. A very large high school
was the last four years on the secondary level 9th, 10th,
11th, and 12th grades, of a high school with 1300 or more
students enrolled.

Academic Achievement. As applied in this study,
academic achievement was a measurement of scholastic suc-
cess by the use of grades obtained in the survey courses,
"Europe to 1815" and "Europe Since 1815" in comparison
to grades made in the high school European history courses.
These grades received in college and high school were
identified on a numerical base of A= 4 points; B= 3 points;
C= 2 points; D= 1 point; and F= 0 points.

REVIEW OF THE LITERATURE

Pittenger reported a study concerned with size of high school and efficiency of the graduates of the different size high schools in the College of Science, Literature and the Arts at the University of Minnesota in 1917. He used six differing sizes of public high schools with the following enrollment categories in his study: 1-100, 101-200, 201-300, 301-500, 501-1,000, and 1,000 and more. He divided his sample, by size of high school, into three groups representing the upper quartile, middle quartiles, and lower quartile in college scholarship as measured by what is termed "grade points" today. Total grade points earned on his rating scale were used to place a student in a certain quartile as stated above. On this basis he concluded,

> Graduates of the large public schools, speaking in terms of enrollment showed greater college efficiency, both in marks and retention, than did graduates of the smaller public schools. . . . In general, the larger the schools, the greater was the college efficiency of its graduates; this seems to have been the rule.[1]

Thornberg did a Master's thesis concerned with college

[1] Benjamin F. Pittenger, "The Efficiency of College students as Conditioned by Age at Entrance and Size of High School," Sixteenth Yearbook of the National Society for the Study of Education, Part II (Bloomington, Illinois: Public School Publishing Co., 1917), p. 109.

scholarship and size of high school at Washington State
College in 1924. The 1921 and 1922 entering freshmen classes
served as the sample for his study. Seven varying sizes of
high schools, from an enrollment of less than 50 students
to an enrollment of 1,000 and over were used. Working with
grade points, as he defined them, he found the total grade
points earned by students from the various sizes of high
schools. By dividing total grade points earned by all students
of a certain size high school, he arrived at an average number
of grade points for the students in each high school size
category. He found that students from the smallest high
schools, category 1 to 50, had an average of 16.91 points
for each semester's work and concluded that they were "C"
students. The students from the largest high schools had an
average of 23.11 points for each semester's work, and Thornberg
concluded that they averaged 8 hours of "B" work each sem-
ester. The difference found in the averages by Thornberg
was further illustrated in the average number of "A" grades
in the smallest and largest schools. This was listed as an
average of 4.92 hours of "A" grade for the graduates of the
smallest schools and an average of 9.95 hours of "A" grade
for the graduates of the largest schools. These figures
were for the 1921 entering freshmen class. Respective figures
for the 1922 entering class were 1.13 hours of "A" grade
for the graduates of the smaller schools and 2.45 hours of
"A" grade for the graduates of the larger schools. As a
general conclusion, Thornberg wrote:

According to this investigation, students from large high schools are superior in scholarship in college to those from smaller high schools.[1]

Odell reported a study of 1702 graduates from Illinois high schools, class of 1924, in which he compared average college marks and size of high school attended. He established five size categories for the high schools, 1 to 99, 100 to 299, 300 to 499, 500 to 999, and 1,000 and more. He concluded:

> The apparent conclusion regarding the matter is, therefore, that on the whole there is little relationship between size of high school attended and college success as measured either by marks received or length of attendance.[2]

Odell did find, however, that there were slight advantages in favor of the largest high schools, or slight disadvantages in favor of the smallest high schools.[3]

Burgraff studied the academic records of 890 students from Idaho public high schools who entered the three institutions of higher learning in Idaho in 1925. These were divided among the three institutions of higher education and according to size of high school from which the students had graduated. Burgraff found that the smaller schools sent a larger percentage

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[1] Lester H. Thornberg, "College Scholarship and Size of High School," School and Society, XX (August, 1924), pp. 189-192.

[2] C. W. Odell, Predicting the Scholastic Success of College Students, Bureau of Educational Research, Bulletin No. 52 (Urbana: University of Illinois College of Education, 1930), p. 39.

[3] Ibid.

of their graduates to college than did the larger schools.[1]
She also reported that the size of the high school in which
a student received his training had no significance in de-
termining either scores on intelligence tests taken upon
entrance or quality of scholarship at the higher institu-
tions as measured by grade point average achieved.[2]

The first term college grade averages of 1,293
students who entered the University of Oregon in the Fall
terms of 1926, 1927, and 1928 were studied in relationship
to both size of high school graduated from and percentile
rank on the ACE Psychological tests by T. R. Humphreys in
1929. Humphreys found no relationship between percentile
ranking on the ACE tests and size of high school from which
students graduated. He did find a relationship between
size of high school and average college marks. The stu-
dents from the larger schools received the higher averages
and those from the smallest schools received the lowest
college averages. Upon closer examination Humphreys found
that the error of measurement attendant to college aver-
ages was quite large, and he concluded that any difference

[1]Katherine Burgraff, "The Relation of the Accredit-
ing Standards of Idaho High Schools to their Educational
Product" (unpublished Master's thesis, University of Idaho,
1926), p. 24.

[2]Ibid., p. 37.

found was not significant.[1]

McQuitty compared freshmen year scholarship of students who entered the University of Florida the three years between 1930-31 and 1932-33. If ten or more freshmen from a high school entered the University during the time period, McQuitty classified it as a large high school. If fewer than ten freshmen entered during the three year period, the school was classified as a small school. Grade point averages of 1,831 students were compared. Of these, 1,457 were from large schools, 374 from small schools. McQuitty found that the large school graduates achieved higher averages in all areas except languages. The grade point differences between the groups ranged from 1.32 in science courses to .13 in social science courses. The standard error of the difference between the averages was reported to be .12 and this was said to be quite significant. McQuitty's conclusion was that, "As a group, graduates from large high schools are scholastically superior to those from small high schools."[2]

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[1]T. R. Humphreys, "A Study of the Relationship between Size of Oregon Secondary Schools and the Ability of their Graduates Entering the University of Oregon" (unpublished Master's thesis, University of Oregon, 1929), p. 118.

[2]J. V. McQuitty, "Relative Scholarship of Graduates According to Accreditation of High Schools," Bulletin of the American Association of Collegiate Registrars, IX (1934), p. 189.

In a study of 1,568 freshmen who entered the University of Minnesota during the 1932-33 school year, True E. Pettingill found a significant difference in the mean percentile rank on the Minnesota College Aptitude Test in favor of the group of 1,151 freshmen who graduated from high schools in towns of less than 5,000 population. This initial advantage was not evident when the average college grades were compared at the end of the first quarter of college work. The difference found in the performance of the two groups was not significant. Pettingill's study was made in an attempt to determine if size of high school might be a significant factor in the prediction of academic success in college. On the basis of his findings, it was concluded,

> There appear to be no significant differences at the University of Minnesota between freshmen from public high schools in cities of less than 5,000 population and freshmen from Minneapolis and St. Paul public high schools in the value of percentile ranks on the Minnesota College Aptitude Test, taken either separately or combined in predicting first quarter college grades.[1]

Feder compared entrance examination scores and college grade point averages for the first and second semesters of the freshmen who entered the State University of Iowa during the five year period, 1929-1933, inclusive. The measures were recorded according to the size of high school from which the

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[1]True E. Pettingill, "Size of high School and Predictive Value of Class Rank and Aptitude Test Rank," _Bulletin of the American Association of Collegiate Registrars_, IX (1934), p. 193.

students graduated. Using the high school size categories,
1-64; 65-149; 150-349 and over, Feder found that generally
students from the larger high schools scored higher on the
Freshmen Qualifying examination, but that subsequent achieve-
ment of graduates of the smaller high schools. Feder did
record the percentages of students in the state according
to the various sizes of high schools listed and compared
these percentages with the percentages entering the University.
He found that the two smaller categories did not contribute
their expected percentage of students to the University en-
rollment and that the upper two sizes contributed more than
their expected percentage of students.[1]

Jones and Laslett made a study of 500 students at
Oregon State College which was reported in 1935. The study
included calculations with the Jones Prediction Formula for
estimating college success. The formula overpredicted in
this study and one reason offered in explanation was that
many students from the small high schools had developed weak
study habits.[2] The authors concluded, however, that "in this

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[1]D. D. Feder, "Factors Which Affect Achievement
and Its Prediction at the College Level," _Journal of the
American Association of Collegiate Registrars_, XV (January,
1940), pp. 107-118.

[2]George A. Jones and H. R. Laslett, "The
Prediction of Scholastic Success in College,"
Journal of Educational Research, XXIX (December, 1935),
p. 268.

study the size of high school from which the students came
bears little relation to the college marks they made."[1]

     F. S. Sheeder, doing research with students at
Ursinus College who graduated from high schools in the bottom
half of their graduating classes, reported that whereas
71 per cent of the lower group students from city schools
were able to do satisfactory work in college. Only 45 per
cent of the lower group students from small town or rural
schools could do satisfactory college work. Sheeder attempt-
ed to analyze why the results he obtained may have been true.
He said that some subtle factors such as cultural background
may have been the cause, but that it was more likely the
opportunities available in the larger schools such as a
better quality of teaching, better school facilities, and a
wider range of experience.[2]

     Alexander and Woodruff studied the 1938 entering
freshmen class at the University of New Hampshire look-
ing for determinants of college success. With a sample of
1,600 students, they reported that on freshmen mental tests
there was "no relation between percentile rank on tests
and the size of the high school from which the students

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[1]Ibid., p. 271.

[2]F. S. Sheeder, "College Achievement of Lower
Group Students," Journal of Educational Research, XXXVI
(March, 1938), pp. 497-505.

graduated."[1]

Daniel Harris, in a review of the factors affecting college grades, reported that of the studies he reviewed, the superior college students came from large city high schools in two studies, but in three others this was reported not to be the case. One of the three did report that grade prediction was more accurate for students from the larger high schools.[2] In his conclusion, Harris wrote that he felt that the essential factors in achievement, in their order of importance were "(1) Ability (or intelligence, or scholastic aptitude, etc.); (2) Effort (or drive, or degree of motivation, etc.); (3) Circumstances (personal, social, etc.)."[3]

Seyler studied 6,263 Illinois high school graduates who entered the University of Illinois in 1935, 1936, 1937, and 1938. Using eight size categories of high schools, he found that the mean freshmen grade point average for the students from high schools with less than 100 enrollment was the highest. He added that although his study indicated that a better quality of student entered the University of Illinois

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[1]Norman Alexander and Ruth J. Woodruff, "Determinants of College Success," Journal of Higher Education, XI (December, 1940), p. 483.

[2]Daniel Harris, "Factors affecting College Grades: A Review of the Literature 1930-37," Psychological Bulletin, XXXVII (March, 1940), p. 133.

[3]Ibid., p. 151.

from the smaller high schools, that the difference in achieve-
ment would not justify using a separate educational guidance
program for the students which was based upon the size of
high school from which the students graduated.[1] Seyler
reported no attempt to control scholastic aptitude of these
students when he compared their achievement.

        The records of 1,321 freshmen at the University
of Missouri were studied by Mildren Winn Saupe in 1941.
She was interested in how the scholastic achievement of
students from various size high schools, who were in the
middle 60 per cent range of scores on the Ohio State Psycho-
logical Examination, and whose class rank in high school
was in the middle 60 per cent, compared. She also compared
the achievement of students in the upper quartile in this
test's distrifution in relation to the size of high school
from which the students graduated. Four hundred sixty-two
students were in the "average" group and 356 students were
in the "superior" group.[2] Saupe used size of graduating
class to determine her enrollment categories. These were

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[1] E. C. Seyler, "The Value of Rank in High School
Graduating Class for Predicting Freshmen Scholarship,"
Journal of the American Association of Collegiate Registrars,
XVI (January, 1941), pp. 123-133.

[2] Mildred Winn Saupe, "Size of High School as a
Factor in College Success of Average and Superior Graduates,"
Journal of the American Association of Collegiate Registrars,
XVII (October, 1941), pp. 45-57.

1 to 24; 25 to 49; 50 to 99; 100 to 199; 200 and over. She
included a special category for graduates of the large city
high schools in St. Louis, Kansas City, and St. Joseph.
When comparisons of average scholastic achievement for the
freshmen year were made on a 400-point index, it was found
that in the "average" group the mean score of the students
from the smallest enrollment category was 21 points higher
than the mean score of the students from the large city
schools. In the "superior" group, the students from the
large city schools averaged three points higher scores than
the students from the smallest schools. Neither of these
differences proved to be statistically significant. Saupe
concluded that although the students in the larger schools
seemed to have many apparent advantages, perhaps the students
in the smaller schools learned superior study habits.[1]

Harl Douglas, in a study attempting the prediction
of success of students in the various schools of the Uni-
versity of Minnesota, and especially in connection with
success in the medical school, concluded that neither size
nor type of high school were closely related to success
in this school. Numbers of students involved in this study
and calculation upon which to base this conclusion are not
shown in the report. Although this study was reported in
1942, the groups of students studied were in the 1933, 1934,

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[1]Ibid., p. 57.

and 1935 entering freshmen classes of the University of Minnesota.[1]

Garrett, in a 1949 summary of the studies of factors relating to college success, listed nine studies which dealt with the relationship between high school size and success in college. Of these, seven listed little, if any, relationship and two found relationships in favor of high schools with enrollments of over 100 students.[2]

Bertrand, in a dissertation submitted to Cornell University in 1950, reported on the relationship between size of high school attended and success of students at the Agricultural and Mechanical College of Texas. His enrollment categories were, under 150; 150 to 249; 250 to 499; 500 to 999; and 1,000 and over. He had a varying sample that ranged between 352 and 621, all white, male students who entered the college with the 1946-1948 classes. Bertrand controlled aptitude in his calculations by comparing the marks of students who had scored in the same quartile on the gross score of the ACE. Within these quartile ranges,

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[1]Harl R. Douglas, *University of Minnesota Studies in Predicting Scholastic Achievement, Part II* (Minneapolis: University of Minnesota Press, 1942), p. 15.

[2]Harold F. Garrett, "A Review and Interpretation of Investigations of Factors Related to the Scholastic Success in Colleges of Arts and Sciences and Teachers Colleges," *Journal of Experimental Education*, XVIII (December, 1949), pp. 98-115.

he then compared percentages of students from each size
high school scoring in each quartile of the ACE, their mean
grade point ratios at the end of the second year in all
courses taken in English, natural science, and agriculture,
and the numbers of students who completed two years of college.
An analysis of this report leads one to the conclusion that
there is little consistent relationship between size of
high school and college grades in the fields which Bertrand
studied. He did find a higher percentage of students from
the smaller schools scoring in the lowest quartile on the
ACE gross score, and a much smaller percentage of students
from these schools scoring in the highest quartile. He
suggested that this might be due to the language portion
of the test. Students from the small schools in the lowest
quartile on the aptitude measure scored considerably higher
grade point averages than did students from the largest
schools, who also scored in the lowest quartile, in all
areas except English. In the highest quartile, the students
from the largest schools generally received the highest
marks.[1]

Gray, in 1950, studied the relationship between size

[1] J. R. Bertrand, "Relation between Enrollment of
High Schools from Which Students Graduated and Academic
Achievement of Agricultural Students, A. and M. College of
Texas," Journal of Experimental Education, XXV (September,
1956), pp. 59-69.

of high school attended and success in college as measured
by honor point ratio obtained by students from different
sizes of high schools. He used as his sample 2,476 students,
1,107 males and 1,369 females, who met the following require-
ments:

> A graduate of a Minnesota public high school who
> entered an institution of higher learning for the first
> time in the College of Science, Literature, and the
> Arts during one of the fall quarters of the years 1940-
> 41 to 1946-47, inclusive, and who received at least one
> final grade.[1]

His sample was divided into nine sizes of high schools
according to enrollment in grades 10, 11, and 12. These
were later reduced to three, as follows: 25 to 174; 175
to 974; 975 and over. He found that there were significant
differences in high school percentile ranks and in Co-
operative English scores among the students from the different
size high schools. This difference was at the .05 level
of confidence. Gray further treated his data by comparing
honor point ratio quartile scores with the ACE percentile
ranks and high school percentile ranks from the various
sizes of high schools. He then made paired comparisons
between small and medium size schools, medium and large

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[1]A. L. Gray, "The Relation of Size of High
School to Collegiate Success" (Unpublished Doctoral
Dissertation, University of Minnesota, January, 1950),
p. 74.

size schools, and small and large size schools. These
were made on the sexes individually. In making the compari-
sons, Gray found that of 261 collegiate honor point ratio
quartile comparisons, 49 differences were in favor of the
smaller of the pair of schools being compared. Two of these
were significant differences. There were 205 differences
in favor of the larger of the pair of schools being compared
and 58 of these were significant differences. Of the dif-
ferences in favor of the larger schools, only three were
for percentile rank groups in the ACE or high school rank
below the fiftieth percentile rank, while 39 were for per-
centile rank groups above the seventieth percentile. Gray
concluded that his results indicated that the more capable
students in his study from the high schools enrolling 975
or more students in grades 10, 11, and 12 earned significantly
higher honor point ratios than did the more capable students
from either medium or small schools. He emphasized that
this is especially true of those students who ranked above
the seventieth percentile on the ACE or above the seventieth
percentile in high school marks. It was true to some ex-
tent of those students who ranked above the fiftieth per-
centile on these two variables. Gray also stated that there
was little difference between the collegiate honor point
ratios earned by graduates of high schools enrolling between
175 and 975 students and those enrolling fewer than 175
students.[1]

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[1] Ibid., pp. 74-86

A study of the graduates of Georgia secondary
schools for white students and their success in college in
relation to size of high school attended was reported by
Bledsoe in 1954. The sample was divided into large, medium,
and small high schools by comparing the size of graduating
classes. Thus, less than 40 graduates was a small school,
40 to 99 graduates a medium size school, and 100 and over
graduates a large school. Bledsoe was able to compute the
average college marks received by graduates of these various
size schools, and his report was based upon the numbers
of schools in his size categories, and not the number of
students involved. By this process, average mean marks of
graduates from the larger schools were shown to be signi-
ficantly higher than the average mean marks for either the
small or medium size schools. The significance was at the
.01 level of confidence. Bledsoe also compared the schools
within the tip 27 per cent of his marking index with those
in the lower 27 percent of the index. In this manner he
found that the schools in the top 27 per cent averaged 49
students in their graduating classes while those in the
lowest 27 per cent averaged but 29 students in their graduat-
ing classes. From these findings, Bledsoe concluded that
in Georgia, white students from large graduating classes
did make significantly higher average marks during their
first year in college than did students from small and medium

size high schools.[1]

      In a study of seventh semester students at Central Michigan College concerned with size of high school and academic achievement at the college, Altman, in 1959, reported the following conclusion: "Graduates of the larger high schools did not achieve significantly higher point averages than did the graduates of the smaller schools."[2] Altman's sample was a limited one of 144 students. The enrollment categories of the schools used for comparison in her study were, under 175 students; 175 to 374; 375 to 899; 900 and more. In the smallest category, she had only ten students so her conclusions were based upon a comparison of sizes remaining. Altman did show calculations of the college marks of the group of students from the smallest schools. These showed that no student from the smallest size school group was in the 2.50 to 2.99, or A-minus mark group.[3]

      Collegiate scholastic achievement and its relationship to high school size was studied by Lathrop at Iowa State

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[1] J. C. Bledsoe, "An Analysis of the Relationship of Size of High School to Marks Received by Graduates in First Year of College," Journal of Educational Sociology, XXVII (March, 1954), p. 418.

[2] Esther R. Altman, "Effect of Rank in Class and Size of High School on the Academic Achievement of Central Michigan College Senior Class of 1957," Journal of Educational Research, LII (April, 1959), p. 309.

[3] Ibid., pp. 307-309.

College in 1960. He had a sample of 1,516 nontransfer Iowa
public school graduates who entered Iowa State College in
the Fall of 1952, but to eliminate what he called "the com-
pounding effect of high school course patterns", he reduced
this sample to 180 students and three size categories when
considering scholastic achievement at the college. He than
concluded that the size of high school was almost unrelated
to college achievement.[1]

A brief analysis of the studies reviewed would in-
dicate that early findings concerned with marks in college
courses obtained by graduates of various sizes of high
schools generally favored the graduates of the larger schools.
Most differences reported were not significant differences.
Later comparisons generally found no significant differences
in attained college grade point averages in relationship to
size of secondary school attended.

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[1] I. T. Lathrop, "Scholastic Achievement at Iowa
State College Associated with High School Size and Course
Pattern," Journal of Experimental Education, XXIX (September,
1960), p. 48.

A NORMATIVE APPROACH

Description of Subjects

The subjects in this study were students enrolled in either one or both European history survey courses at Bethany College in Lindsborg, Kansas. Students from all four years of the undergraduate classification were represented. A detailed description of each anonymous student in the population is presented in Table I which states the size of high school attended, high school European history grade, and college European history grade.

From the description of each student's record presented in Table I, the creation of the three categories according to the size of high school attended was possible. The first division was based upon the recommendations of the National Commission on School Reorganization in 1948 in which the Commission stated that a high school consisting of the last four years on the secondary level should include a minimum of 300 students.[1] From this recommendation, a small high school category and large high school category was established. The small high school category included 39 students while the large high school category consisted of 33 students.

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[1]S. J. Knezevich, _Administration of Public Education_, New York: Harper and Brothers, publishers, 1962), pp. 136-137.

TABLE I

HIGH SCHOOL AND COLLEGE GRADES AND SIZE OF HIGH
SCHOOL ATTENDED BY EACH STUDENT

Student	High School Enrollment	European History Grade High School	College
1	200	C	D,C
2	250	A	B,C
3	250	A	C
4	55	A	D
5	60	A	C
6	100	A	A
7	50	B	D,F
8	60	B	C
9	175	C	D
10	200	C	C
11	256	B	B
12	153	C	D
13	270	B	C
14	200	A	B
15	200	A	D
16	250	A	C
17	100	B	D
18	200	C	D
19	230	D	F
20	280	C	C
21	83	B	C
22	250	A	B
23	200	B	B
24	135	B	C
25	250	A	B
26	52	B	C
27	152	C	B
28	30	C	F
29	249	A	C,D
30	75	A	C
31	250	C	B
32	200	B	C
33	90	A,B	C
34	70	A	C
35	108	A	A
36	275	B	B
37	290	C,B	D
38	250	B	C
39	54	A	B
40	350	A	B

TABLE I (continued)

Student	High School Enrollment	European History Grade	
		High School	College
41	1200	A	B,A
42	2500	C	C
43	2500	C	D
44	2400	B	C
45	600	B	B
46	3000	C	D
47	1800	C	C,D
48	750	A	C
49	1200	B	B
50	450	C	C
51	1400	B	A
52	1200	A	A
53	2350	A	A
54	470	A	B
55	650	B	C
56	2700	A	C
57	3000	C,B	C,B
58	2000	B	C,B
59	1200	B	C
60	475	C	C
61	1100	C	C
62	785	B	C
63	1500	C	C
64	1250	D	C
65	1100	B	C
66	4000	C	C,D
67	600	A	B
68	450	B	C
69	775	B	B
70	780	C	C
71	2000	B	C
72	475	B	B
73	350	C	C
74	750	C	D
75	2300	C	C
76	2400	A	A
77	650	B	C
78	2000	A	B
79	750	A	B
80	2500	D	D

TABLE I (continued)

Student	High School Enrollment	European History Grade	
		High School	College
81	587	C,D	C
82	1270	B	C
83	750	B	B
84	1600	C	C
85	2500	B	C
86	4500	D	C
87	2000	B	A
88	2100	C	B
89	1200	B	D
90	1500	B	D
91	2000	C	C
92	2600	C	F
93	2000	A	A
94	1250	C	C,D
95	495	C	D
96	450	B	F
97	1600	C	C
98	5029	C,B	B
99	1200	B	B
100	475	A	C
101	2500	B	B

The third division was a mere extension of the National Commission on School Reorganization's recommendation for the minimum size large high school. The very large high school included twenty nine students from the entire population of one hundred and one.

Limits of the Study

Various limits were imposed in the study to allow the findings to be more meaningful. These limits are listed as follows:

1. Only the lower-division European history courses were used to avoid the bias grading which might occur in upper-division courses.

2. Only students having taken a high school European history course were used to avoid any disadvantages from lack of prior experiences occurring.

3. Only the academic school year 1965-66 was used to obtain the college European history grade.

4. Only students without previous college European history courses were used.

Kinds of Data Used

Record check. The high school European history grade was collected to show the achievement each student had made on the secondary level in the desired subject.

The college European history grade was collected to show the academic achievement in the subject and to compare the two standards of achievement for possible similarities.

Questionnaire. An example of the questionnaire asking the student to state the approximate size of high school he had graduated from, is presented in Figure 1.

HIGH SCHOOL INFORMATION

Name_____

What was the student enrollment of your high school, the last four years on the secondary level? Please place your answer in numerical form in the blank below.

_____

FIGURE 1

A QUESTIONNAIRE PERTAINING TO THE SIZE OF HIGH
SCHOOL EACH STUDENT HAD GRADUATED FROM

Procedures Employed in the Study

Collecting data. Each student's high school European history grade was taken from the files of the Bethany College registrar's office. If there were a case of two semesters of high school European history marks without an average given for the year on the transcript, an average was established from the two grades.

If a letter average was impossible to obtain, both grades were recorded.

Each student's college European history grade was taken from the grade book of the European history instructor. If there were a case of two semesters of college European history marks, an average was established from the two grades. If a letter average was impossible to obtain, both grades were recorded.

The questionnaire described on page 28 was given to each student during a regular class period in each European history survey course after an oral explanation pertaining to its content was made. Of the 137 questionnaires collected from all the students in the survey courses, only 101 questionnaires were used in the study after the various limits to the study mentioned on page 27 were met.

Presenting and Analyzing Data

Mean academic achievement. The letter grades from Table I on page 24 were changed to a numerical base established from the definition of "academic achievement" on page 4.

The thirty nine students from small high schools had a high school European history mean of 3.1 grade points while the thirty three students from large high schools had a high school European history mean of 2.9 grade points. The twenty nine students from very large high schools had a high school European history mean of 2.6 grade points. The difference between the small high school and the very large high school means was .5 grade points. Since there was a numerical difference in the grade point averages (means) of the three categories in high school European history grades, hypothesis one as stated on page three was accepted.

The small high school had a college European history mean of 2.0 grade points while the large high school had a college European history mean of 2.2 grade points. The very large high school had a college European history mean

of 2.3 grade point. The difference between the small high school and the very large high school means was .3 grade points. Since there was a numerical difference in the grade point averages (means) of the three categories in college European history, hypothesis two was accepted.

The difference between the high school and college European history means for the small high school was 1.1 grade points while for the large high school, it was .7 grade points. The difference between the high school and college European history means for the very large high school was .3 grade points. Since there was a numerical difference between the high school and college European history grade point averages (means) within each category, hypothesis three was accepted.

There was a .8 grade point difference between the small high school and the very large high school pertaining to the comparison of high school and college European history means. Since a numerical difference of 18 grade points did occur, hypothesis four was accepted.

Correlations concerned with data. The high school European history grades in numerical form were correlated with the college European history grades within each category. The product moment method of correlation was employed in the experiment. A correlation for small high schools is presented in Table II in which high school and college European history grades were correlated while a correlation for large high schools is presented in Table III. High

school and college European history grades are correlated
for the very large high schools in Table IV.

The product moment correlation formula is stated as
follows:

$$r = \frac{xy}{x^2 \cdot y^2}$$

The meaning of the symbols of the formula is as
follows:

r= The product-moment correlation coefficient between
two sets of measures, X and Y

x and y= Deviations from the Means, M_x and M_y, respec-
tively

= The sum of

After analyzing Tables II through IV, the correlation
formula was applied to each category of high school size.

TABLE II

CORRELATION OF HIGH SCHOOL AND COLLEGE EUROPEAN HISTORY
GRADES OF THE SMALL HIGH SCHOOL CATEGORY

Case	X	Y	x	y	x^2	y^2	xy (+)	xy (-)
1	2	1.5	-1.1	- .5	1.21	.25	.55	
2	4	2.5	.9	.5	.81	.25	.45	
3	4	2	.9	0	.81	0	0	
4	4	1	.9	-1.0	.81	1.00		.90
5	4	2	.9	0	.81	0	0	
6	4	4	.9	2.0	.81	4.00	1.80	
7	3	.5	- .1	-1.5	.01	2.25	.15	
8	3	2	- .1	0	.01	0	0	
9	2	1	-1.1	-1.0	1.21	1.00	1.10	
10	2	2	-1.1	0	1.21	0	0	
11	3	3	- .1	1.0	.01	1.00		.10
12	2	1	-1.1	-1.0	1.21	1.00	1.10	
13	3	3	- .1	1.0	.01	1.00		.10
14	4	3	.9	1.0	.81	1.00	.90	
15	4	1	.9	-1.0	.81	1.00		.90
16	4	2	.9	0	.81	0	0	
17	3	1	- .1	-1.0	.01	1.00	.10	
18	2	1	-1.1	-1.0	1.21	1.00	1.10	
19	1	0	-2.1	-2.0	4.41	4.00	4.20	
20	2	2	-1.1	0	1.21	0	0	
21	3	2	- .1	0	.01	0	0	
22	4	3	.9	1.0	.81	1.00	.90	
23	3	3	- .1	1.0	.01	1.00		.10
24	3	2	- .1	0	.01	0	0	
25	4	3	.9	1.0	.81	1.00	.90	
26	3	2	- .1	0	.01	0	0	
27	2	3	-1.1	1.0	1.21	1.00		1.10
28	2	0	-1.1	-2.0	1.21	4.00	2.20	
29	4	1.5	.9	- .5	.81	.25		.45
30	4	2	.9	0	.81	0	0	
31	2	3	-1.1	1.0	1.21	1.00		1.10
32	3	2	- .1	0	.01	0	0	
33	3.5	2	.4	0	.16	0	0	
34	4	2	.9	0	.81	0	0	
35	4	4	.9	2.0	.81	4.00	1.80	

TABLE II (continued)

Case	X	Y	x	y	x^2	y^2	xy (+)	xy (-)
36	3	3	- .1	1.0	.01	1.00		.10
37	2.5	1	- .6	-1.0	.36	1.00	.60	
38	3	2	- .1	0	.01	0	0	
39	4	3	.9	1.0	.81	1.00	.90	
							18.75	-4.85
Mx=3.1		My=2.0			$x^2=$ 28.09	$y^2=36.00$	xy=13.90	

NOTE: The symbols used in Table II were interpreted as follows:

Case: The number given each anonymous student in Table I

X: The numerical high school European history grade

Y: The numerical college European history grade

x: The deviation, numerically, from the high school European history grade Mean

y: The deviation, numerically, from the college European history grade Mean

x^2: The numerical deviation squared from the high school European history grade Mean

y^2: The numerical deviation squared from the college European history grade Mean

xy: The two deviations from the Mean (x and y) multiplied together

TABLE III

CORRELATION OF HIGH SCHOOL AND COLLEGE
EUROPEAN HISTORY GRADES OF THE LARGE
HIGH SCHOOL CATEGORY

Case	X	Y	x	y	x^2	y^2	xy (+)	xy (−)
40	4	3	1.1	.8	1.21	.64	.88	
41	4	3.5	1.1	1.3	1.21	1.69	1.43	
45	3	3	.1	.8	.01	.64	.08	
48	4	2	1.1	− .2	1.21	.04		.22
49	3	3	.1	.8	.01	.64	.08	
50	2	2	− .9	− .2	.81	.04	.18	
52	4	4	1.1	1.8	1.21	3.24	1.98	
54	4	3	1.1	.8	1.21	.64	.88	
55	3	2	.1	− .2	.01	.04		.02
59	3	2	.1	− .2	.01	.04		.02
60	2	2	− .9	− .2	.81	.04	.18	
61	2	2	− .9	− .2	.81	.04	.18	
62	3	2	.1	− .2	.01	.04		.02
64	1	2	−1.9	− .2	3.61	.04	.38	
65	3	2	.1	− .2	.01	.04		.02
67	4	3	1.1	.8	1.21	.64	.88	
68	3	2	.1	− .2	.01	.04		.02
69	3	3	.1	.8	.01	.64	.08	
70	2	2	− .9	− .2	.81	.04	.18	
72	3	3	.1	.8	.01	.64	.08	
73	2	2	− .9	− .2	.81	.04		.18
74	2	1	− .9	−1.2	.81	1.44	1.08	
77	3	2	.1	− .2	.01	.04		.02
79	4	3	1.1	.8	1.21	.64	.88	
81	1.5	2	−1.4	− .2	1.96	.04	.28	
82	3	2	.1	− .2	.01	.04		.02
83	3	3	.1	.8	.01	.64	.08	
89	3	1	.1	−1.2	.01	1.44		.12
94	2	1.5	− .9	− .7	.81	.49	.63	
95	2	1	− .9	−1.2	.81	1.44	1.08	
96	3	0	.1	−2.2	.01	4.84		.22
99	3	3	.1	.8	.01	.64	.08	
100	4	2	1.1	− .2	1.21	.04		.22

TABLE III (continued)

Case	X	Y	x	y	x^2	y^2	xy (+)	xy (-)
							11.58	-1.10
M_x= 2.9	M_y= 2.2			x^2= 21.88		y^2= 21.62	xy= 10.48	

NOTE: The symbols used in Table III were interpreted
as follows:

Case: The number given each anonymous student in Table I

X: The numerical high school European history grade

Y: The numerical college European history grade

x: The deviation, numerically, from the high school
European history grade Mean

y: The deviation, numerically, from the college
European history grade Mean

x^2: The numerical deviation squared from the high
school European history grade Mean

y^2: The numerical deviation squared from the college
European history grade Mean

xy: The two deviations from the Mean (x and y)
multiplied together

TABLE IV

CORRELATION OF HIGH SCHOOL AND COLLEGE EUROPEAN
HISTORY GRADES OF THE VERY LARGE
HIGH SCHOOL CATEGORY

Case	X	Y	x	y	x^2	y^2	xy (+)	xy (−)
42	2	2	− .6	− .3	.36	.09	.18	
43	2	1	− .6	−1.3	.36	1.69	.78	
44	3	2	.4	− .3	.16	.09		.12
46	2	1	− .6	−1.3	.36	1.69	.78	
47	2	1.5	− .6	− .8	.36	.64	.48	
51	3	4	.4	1.7	.16	2.89	.68	
53	4	4	1.4	1.7	1.96	2.89	2.34	
56	4	4	1.4	− .3	1.96	.09		.42
57	2.5	2.5	− .1	.2	.01	.04		.02
58	3	2.5	.4	.2	.16	.04	.08	
63	2	2	− .6	− .3	.36	.09	.18	
66	2	1.5	− .6	− .8	.36	.64	.48	
71	3	2	.4	− .3	.16	.09		.12
75	2	2	− .6	− .3	.36	.09	.18	
76	4	4	1.4	1.7	1.96	2.89	2.38	
78	4	3	1.4	.7	1.96	.49	.98	
80	1	1	−1.6	−1.3	2.56	1.69	2.08	
84	2	2	− .6	− .3	.36	.09	.18	
85	3	2	.4	− .3	.16	.09		.12
86	1	2	−1.6	− .3	2.56	.09	.48	
87	3	4	.4	1.7	.16	2.89	.68	
88	2	3	− .6	.7	.36	.49		.42
90	3	1	.4	−1.3	.16	1.69		.52
91	2	2	− .6	− .3	.36	.09	.18	
92	2	0	− .6	−2.3	.36	5.29	1.38	
93	4	4	1.4	1.7	1.96	2.89	2.38	
97	2	2	− .6	− .3	.36	.09	.18	
98	2.5	3	− .1	.7	.01	.49		.07
101	3	3	.4	.7	.16	.49	.28	

TABLE IV (continued)

Case	X	Y	x	y	x^2	y^2	xy (+)	xy (-)
							16.38	-1.81

M_x= 2.6 M_y= 2.3 x^2= 20.54 y^2= 30.81 xy= 14.57

NOTE: The symbols used in Table IV were interpreted as follows:

Case: The number given each anonymous student in Table I

X: The numerical high school European history grade

Y: The numerical college European history grade

x: The deviation, numerically, from the high school European history grade Mean

y: The deviation, numerically, from the college European history grade Mean

x^2: The numerical deviation squared from the high school European history grade Mean

y^2: The numerical deviation squared from the college European history grade Mean

xy: The two deviations from the Mean (x and y) multiplied together

The results of this application for each category, step by
step, is presented below:

1. Small high school

$$r = \frac{13.90}{\sqrt{28.09 \quad \times \quad 36.00}}$$

$$r = \frac{13.90}{\sqrt{1011.24}}$$

$$r = \frac{13.90}{31.8}$$

$$r = .44$$

2. Large high school

$$r = \frac{10.48}{\sqrt{21.88 \times 21.62}}$$

$$r = \frac{10.48}{\sqrt{473.05}}$$

$$r = \frac{10.48}{21.7}$$

$$r = .48$$

3. Very large high school

$$r = \frac{14.57}{\sqrt{20.54 \times 30.81}}$$

$$r = \frac{14.57}{\sqrt{632.84}}$$

$$r = \frac{14.57}{25.1}$$

$$r = .59$$

Since there was at least a low positive correlation
(+.20 to +.40) between high school and college European
history grades within each category, hypothesis five was
accepted.

There was a .15 correlational difference between the
small high school and the very large high school. Since
a correlational difference did occur among the three cate-
gories, hypothesis six was accepted.

This correlational difference can be graphically seen
in Figure 2 in which the high school and college European
history grades for all three categories of school size
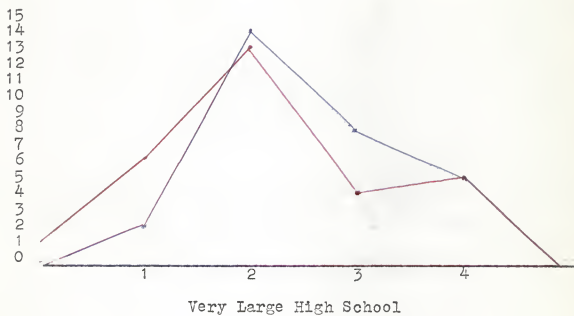are plotted on separate graphs.
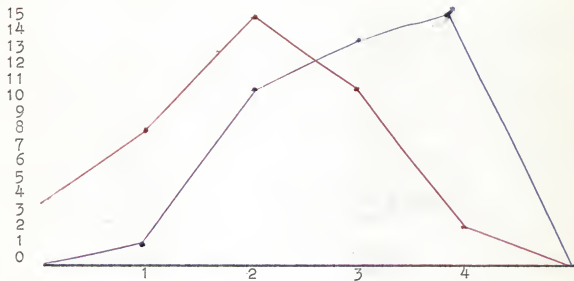
Small High School
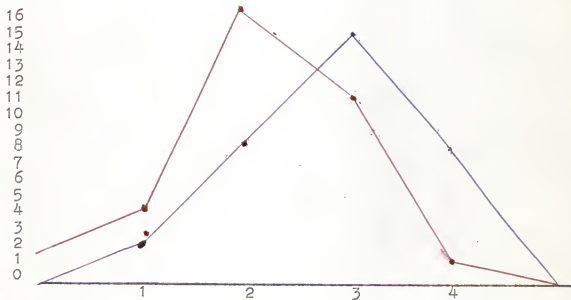
Large High School

Very Large High School

Vertical lines= Number of students

Horizonal lines= Numerical grade

⸻ = High School European history curve

⸻ = College European history curve

FIGURE 2

HIGH SCHOOL AND COLLEGE EUROPEAN HISTORY
GRADES WITHIN EACH CATEGORY
OF SCHOOL SIZE

SUMMARY AND CONCLUSIONS

Summary

The purposes of this study were to divide the students in the European history survey courses at Bethany College into three categories according to the size of high school they attended; (a) small high school (299 or less students), (b) large high school (300 to 1299 students), (c) very large high school (1300 or more students); to compare the academic achievement of each group; and to correlate the high school European history grade of each student with the college European history grade within each category.

Six hypotheses were established to test academic achievement within the three high school size categories. They are as follows:

(1) There will be a numerical difference in the grade point averages (means) of the three categories in high school European history.

(2) There will be a numerical difference in the grade point averages (means) of the three categories in college European history.

(3) There will be a numerical difference between the high school and college European history grade point averages (means) within each category.

(4) There will be a numerical difference among the three categories pertaining to hypothesis three.

(5) There will be at least a low positive correlation (+.20 to +.40) between high school and college European history grades within each category.

(6) There will be a correlational difference among
the three categories pertaining to hypothesis
five.

A brief analysis of the studies viewed in the REVIEW
OF THE LITERATURE section would indicate that early (1920-
1930) findings concerned with marks in college courses
obtained by graduates of various sizes of high schools gen-
erally favored the graduates of the larger schools. Most
differences reported were not significant differences.
Later (1940-1950) comparisons generally found no significant
differences in attained college grade point averages in
relationship to size of secondary school attended.

A description of each student was collected by means
of a questionnaire (information concerned with the size of
the high school each student attended), and two record
checks (high school and college European history grades).

The letter grades were changed to a numerical base in
order to find the mean "academic achievement" (an average
of the high school and college European history grades) of
each category. The findings are stated below:

(1) High School European History Grade

Small high school: Mean of 3.1 grade points
Large high school: Mean of 2.9 grade points
Very large high school: Mean of 2.6 grade points

Since there was a difference in the means of the three
categories in high school European history grades, hypothesis
one was accepted.

(2) College European History Grade

                 Small high school: Mean of 2.0 grade points
                 large high school: Mean of 2.2 grade points
            Very large high school: Mean of 2.3 grade points

Since there was a numerical difference in the means of the three categories in college European history grades, hypothesis two was accepted.

(3) The Difference Between the High School and College European History Grade Means

      Small high school: Difference of 1.1 grade points
      large high school: Difference of .7 grade points
Very large high school: Difference of .3 grade points

Since there was a numerical difference between the high school and college European history means within each category, hypothesis three was accepted.

There was a .8 grade point difference between the small high school and the very large high school pertaining to the comparison of high school and college European history means. Since a numerical difference of .8 grade points did occur, hypothesis four was accepted.

(4) Correlation between High School and College European History grades within each Category

      Small high school: Correlation of .44
      Large high school: Correlation of .48
Very large high school: Correlation of .59

Since there was at least a low positive correlation between high school and college European history grades within each category, hypothesis five was accepted.

There was a .15 correlational difference between the small high school and the very large high school. Since a correlational difference did occur among the three categories, hypothesis six was accepted.

Conclusions

The following conclusions have been reached after an evaluation of the findings. These conclusions pertain only to students taking the European history survey courses at Bethany College in 1965-1966.

(1) Students from the small high schools achieved highest in high school European history in relationship to grades than did the students in the other two categories.

(2) Students from the small high schools achieved lowest in college European history in relationship to grades than did the students in the other two categories.

(3) Therefore, the small high school had the least similarities (correlation) between high school European history grades and college European history grades.

(4) Students from the very large high school showed the highest similarities (correlation) between the high school European history grade and the college European history grade.

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A COMPARISON OF EUROPEAN HISTORY STUDENTS AT BETHANY
COLLEGE, KANSAS BASED ON VARIOUS HIGH SCHOOL SIZES

by

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AN ABSTRACT OF A MASTER'S REPORT

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The students in the European history survey courses at Bethany College were divided into three categories according to the size of high school they attended, (a) small high school of 299 students or less, (b) large high school of 300 to 1299 students, (c) and very large high school of 1300 or more students. It was the purpose of this study to (1) compare the academic achievement of each group to reveal if a particular size of high school affected the efficiency of a student in European history at Bethany College and (2) correlate the high school and college European history grade within each group to reveal if a particular size of high school resulted in one obtaining the same college grade in European history at Bethany College as he did in world history on the high school level.

The procedures followed were to (1) review the available literature; (2) administer a questionnaire to each student pertaining to the size of high school he had attended; (3) compile the data from the questionnaire to select the population of the study; and (4) collect the high school and college European history grades of each student.

Six hypotheses were established to test academic success within the three high school size categories. They are listed below; and the results, after testing each hypothesis, follows.

(1) There will be a numerical difference in the grade point averages (means) of the three categories in high school European history.

          Small high school: Mean of 3.1 grade points
          Large high school: Mean of 2.9 grade points
  Very large high school: Mean of 2.6 grade points

Therefore, hypothesis one was accepted.

     (2) There will be a numerical difference in the grade point averages (means) of the three categories in college European history.

          Small high school: Mean of 2.0 grade points
          Large high school: Mean of 2.2 grade points
  Very large high school: Mean of 2.3 grade points

Therefore, hypothesis two was accepted.

     (3) There will be a numerical difference between the high school and college European history grade point averages (means) within each category.

          Small high school: Difference of 1.1 grade points
          Large high school: Difference of .7 grade points
  Very large high school: Difference of .3 grade points

Therefore, hypothesis three was accepted.

     (4) There will be a numerical difference among the three categories pertaining to hypothesis three.

                            Difference of .8 grade points

Therefore, hypothesis four was accepted.

     (5) There will be at least a low positive correlation (+ .20 to + .40) between high school and college European history grades within each category.

          Small high school: Correlation of .44
          Large high school: Correlation of .48
  Very large high school: Correlation of .59

3

(6)   There will be a correlational difference among
the three categories pertaining to hypothesis five.

Correlational difference of   .15

Therefore, hypothesis six was accepted.