



The relationship between the size of high school and college success for students graduating from Montana high schools and attending Montana State University
by Ardys Sixkiller Clarke

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University
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Abstract:

The major problem of this study was to determine if there was a difference between the rate of college graduation among students graduating from accredited Montana public high schools of different size who entered Montana State University in the fall of 1978. The secondary problem of this study was to determine the perceptions of the 1983 entering freshman students at Montana State University from accredited Montana public high schools of different size as to the adequacy of their high school preparation and their social and academic adjustments from high school to college.

For the major study, a one-way analysis of variance was used to test for differences between the means. The Duncan post hoc procedure was used to test for significant differences at the .10 level. A two-way analysis of variance was used to test for interaction of sex and size of high school. The chi-square test for independence was used to determine whether college graduation was independent of sex, size of high school and of curriculum. A multiple regression procedure was used to test the relationship between the independent and the dependent variables. The F test was applied to determine if the R^2 was significant.

For the secondary study, a one-way analysis of variance was used as the method for testing for differences among means of dependent variables in relation to the independent variable. Where differences were found, the Duncan post hoc procedure was used.

The conclusions of this study suggested that it does not matter what size of high school a student attends in Montana. Students from the smallest high schools did just as well academically and remained at Montana State University and graduated as frequently as those from the very largest high schools.

The major recommendations for further study include: (a) a determination of why over half of the students who enter Montana State University leave before they graduate, (b) an examination of consolidation of schools in terms of cost effectiveness and (c) an investigation of optimum size of high school.

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SUCCESS FOR STUDENTS GRADUATING FROM MONTANA HIGH SCHOOLS
AND ATTENDING MONTANA STATE UNIVERSITY

by

Ardys SixKiller Clarke

A thesis submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Education

MONTANA STATE UNIVERSITY
Bozeman, Montana

May 1985

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Cop. 2

APPROVAL

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This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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May 13, 1985

ACKNOWLEDGMENTS

This researcher wishes to acknowledge several persons who helped in the completion of this study. She is especially appreciative of Dr. Donald Robson, chair of her committee, for his continuous encouragement, his friendship and his guidance throughout the entire process. A special gratitude is expressed to Dr. Eric Strohmeier. A sincere appreciation is also expressed to the other members of the committee: Dr. LeRoy Casagrande, Dr. Jerry Sullivan and Dr. Paul Markovits. This same appreciation is expressed to the Bilingual/Multicultural Center staff: Carol Greer, Lucy Pope, Rosalie Robson, Bobby Wright and Carlie Casey -- all of whom provided support for this endeavor in so many ways.

A special deep appreciation is expressed to her husband, Louis Bowker, for his patient encouragement, his understanding and moral support while this study was being completed.

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ABSTRACT

The major problem of this study was to determine if there was a difference between the rate of college graduation among students graduating from accredited Montana public high schools of different size who entered Montana State University in the fall of 1978. The secondary problem of this study was to determine the perceptions of the 1983 entering freshman students at Montana State University from accredited Montana public high schools of different size as to the adequacy of their high school preparation and their social and academic adjustments from high school to college.

For the major study, a one-way analysis of variance was used to test for differences between the means. The Duncan post hoc procedure was used to test for significant differences at the .10 level. A two-way analysis of variance was used to test for interaction of sex and size of high school. The chi-square test for independence was used to determine whether college graduation was independent of sex, size of high school and of curriculum. A multiple regression procedure was used to test the relationship between the independent and the dependent variables. The F test was applied to determine if the R² was significant.

For the secondary study, a one-way analysis of variance was used as the method for testing for differences among means of dependent variables in relation to the independent variable. Where differences were found, the Duncan post hoc procedure was used.

The conclusions of this study suggested that it does not matter what size of high school a student attends in Montana. Students from the smallest high schools did just as well academically and remained at Montana State University and graduated as frequently as those from the very largest high schools.

The major recommendations for further study include: (a) a determination of why over half of the students who enter Montana State University leave before they graduate, (b) an examination of consolidation of schools in terms of cost effectiveness and (c) an investigation of optimum size of high school.

Chapter 1

Introduction

Among the continuing debates in American education, at least for the last seventy-five years, has been the controversy over the small school versus the larger or consolidated school. Educators, in general, most often have aligned themselves with the large or consolidated school. The public, however, seemingly cherishes the image of the "little red school house" and has remained a persistent, vocal group with unwavering faith in the ultimate superiority of the local, small town school (Downey, 1978).

In the United States, a school district is the local government unit through which local citizens may exercise control of the schools. As a local governmental unit, state legislators have often been reluctant to arbitrarily alter those units or establish new ones. Some legislatures have taken action, however, and it is significant to note that in a twenty year period, 1947-1967, the number of school districts in the United States was reduced by nearly 75,000. At present, school districts remain the most numerous units of local governments in the United States with approximately 16,000 separate school districts still in existence (Campbell, et. al., 1985).

Within the last three decades, with tremendous improvements in communication and transportation, shifts in population and the

demand for more accountability in education by taxpayers and the public in general, much attention has been given to school district organization and reorganization. There are a number of emotional factors, however, which influence reorganization decisions. In 1963, Kammeyer listed several factors including: (1) persistence in the desire for local control, (2) philosophy that the quality of education in a small district is superior, (3) nostalgia for the home town school, and (4) resistance to tax increases for any public service. According to Campbell those emotional factors continue to exist today (1985).

The question of the relative merits of large and small high schools is particularly relevant and pertinent in the state of Montana. During the 1983-84 school year, 551 elementary and high school districts were listed in the Directory of Montana Schools 1984-85, (1984) as operating in the state. This included a large number of small and isolated high schools. Because of the large number of school districts in Montana, it is appropriate that the data be examined to determine some of the effects of high school size on a student's subsequent college work.

Statement of Problem

The major problem of this study was to determine if there was a difference in the rate of college graduation among students from high schools of different size in Montana.

This major problem allowed the researcher to determine if there was a difference in the first or third quarter mean freshman Grade

Point Average (GPA) and mean verbal and quantitative stanine scores among students from high schools of different size. The study examined the interaction of sex and high school size on four dependent variables: first and third quarter mean freshman GPA, and mean verbal and quantitative stanine scores. Additionally, the study determined whether college graduation was independent of sex and size of high school and whether high school size was independent of the choice of curriculum.

Finally, this problem allowed the researcher to determine the relationship of high school size and academic performance in college and the incidence of college graduation.

A secondary problem of this study was to determine the perceptions of freshman students from high schools of different size as to the adequacy of their high school preparation for college and their perceptions of their social and academic adjustments from high school to college.

This problem allowed the researcher to observe if the perceptions of freshman students of their high school preparation and their adjustments to university life was dependent upon high school size, sex or curriculum choice.

Need for Study

The need to expand upon the current body of literature was readily apparent when consideration was given to the facts that:

- 1) The debate over the existence of a relationship between academic success of college students to the size of high

school as the basis for individual prediction of college success has been waged for decades with no consensus (Downey, 1972).

- 2) Despite decades of emphasis on consolidation, small schools still exist and the issues surrounding their existence are often imbedded in the concept of local control or emotional issues (Campbell, et. al., 1980).
- 3) Much of the criticism directed against small schools deals with them as a source of fiscal inefficiency (Anderson, 1974). During the 1983 Montana Legislative Session, Senate Bill 43 was introduced by Senate Minority Leader Chet Blaylock to encourage consolidation of high schools with less than 100 students by reducing the state funding to schools with enrollments below 100 (see Appendix A). Sixty-nine schools in 1982 were listed by the Office of Public Instruction as having fewer than 100 students (Directory of Montana Schools 1983-84, 1983). Although the bill failed, this issue of efficient fiscal management of small schools is critical in the state of Montana.
- 4) It is often maintained that the typical large high school appears to be more favorable to higher attainment in college, in that, it would appear reasonable to suggest that larger high schools offer more varied curricula, have more financial resources and are more likely to attract better qualified teachers (Cashem, 1970).

A study conducted by Bledsoe (1954) noted several purposes/assumptions for the existence of high schools. These purposes/assumptions lent further credibility to this study and included:

- 1) At least one significant purpose of a high school is to prepare students (at least a certain portion of them) to attend college.
- 2) One measure of a high school's efficiency is the degree to which those graduates who attend college are successful in terms of academic success as defined by the freshman year GPA.
- 3) Another measure of a high school's efficiency is the degree to which those graduates who attend college are successful in terms of college graduation.

Questions to be Answered

The following research questions were answered in this study:

MAJOR PROBLEM

- 1) Did students who entered Montana State University in the fall of 1978 from high schools of different size differ in terms of their mean first and third quarter freshman GPA in college?
- 2) Was there a relationship between sex of student and high school size to first and third quarter freshman GPA for students who entered Montana State University in the fall of 1978?

- 3) Did students who entered Montana State University in the fall of 1978 from high schools of different size differ in terms of their Montana State University computed mean verbal stanine scores?
- 4) Was there a relationship between sex of students and high school size to the Montana State University computed mean verbal stanine scores?
- 5) Did students who entered Montana State University in the fall of 1978 from high schools of different size differ in terms of their Montana State University computed mean quantitative stanine scores?
- 6) Was there a relationship between sex of students and high school size to the Montana State University computed mean quantitative stanine scores for students who entered in the fall of 1978?
- 7) Was the size of high school a student entering Montana State University in the fall of 1978 attended, a factor in whether a student who entered Montana State University in the fall of 1978 graduated from college?
- 8) Were sex and the size of high school the student attended factors in whether a student who entered Montana State University in the fall of 1978 graduated from college?
- 9) Was the size of high school a student attended a factor in the selection or choice of a curriculum for students who entered Montana State University in the fall of 1983?

- 10) Was there a relationship between college graduation and first quarter freshman GPA for students entering Montana State University in the fall of 1978?
- 11) Was there a relationship between college graduation and the verbal stanine scores for students entering Montana State University in the fall of 1978?
- 12) Was there a relationship between college graduation and the quantitative stanine scores for students entering Montana State University in the fall of 1978?
- 13) Was there a relationship between first quarter freshman GPA and high school size for students entering Montana State University in the fall of 1978?
- 14) Was there a relationship between first quarter freshman GPA and the verbal stanine scores for students entering Montana State University in the fall of 1978?
- 15) Was there a relationship between first quarter GPA and the quantitative stanine scores for students entering Montana State University in the fall of 1978?

SECONDARY PROBLEM

- 16) Was there a difference in the perceptions of the 1983-84 freshman students from high schools of different size about their high school math and English preparation?
- 17) Was there a difference in the perceptions of the male and female 1983-84 freshman students about their high school math and English preparation?

- 18) Was there a difference in the perceptions of 1983-84 freshman students enrolled in the different colleges or schools at Montana State University about their high school math and English preparation?
- 19) Was there a difference in the perceptions of the 1983-84 freshman students from high schools of different size about their study skills and social skills?
- 20) Was there a difference in the perceptions of the male and female 1983-84 freshman students about their high school study skills and social skills?
- 21) Was there a difference in the perceptions of 1983-84 freshman students enrolled in the different colleges/schools at Montana State University about their study skills and social skills?
- 22) Was there a difference in the perceptions of the 1983-84 freshman students from high schools of different size about their high school facilities?
- 23) Was there a difference in the perceptions of the male and female 1983-84 freshman students about their high school facilities?
- 24) Was there a difference in the perceptions of 1983-84 freshman students enrolled in the different colleges/schools at Montana State University about their high school facilities?

- 25) Was there a difference in the perceptions of the 1983-84 freshman students from high schools of different size about their academic adjustment to the university?
- 26) Was there a difference in the perceptions of the 1983-84 freshman students from high schools of different size about their social adjustment to the university?
- 27) Was there a difference in the perceptions of the male and female 1983-84 freshman students about their social adjustment to the university?
- 28) Was there a difference in the perceptions of the male and female 1983-84 freshman students about their academic adjustments to university?
- 29) Was there a difference in the perceptions of the 1983-84 freshman students from the various colleges/schools within the university about their academic adjustment to the university?
- 30) Was there a difference in the perceptions of the 1983-84 freshman students from the various colleges/schools within the university about their social adjustment to the university?

General Procedures for Major Problem

The population included in this study for the major problem included all entering freshmen at Montana State University for the fall of 1978, who graduated from Montana public high schools in the spring of 1978. Montana's state-supported institutions of higher

education must by law admit all graduates of accredited Montana high schools who make application. The 1978 freshman class was chosen because it was recent enough to allow for generalization of the findings for the present time, and distant enough to allow for the population to have completed a four-year degree over a five year period of time.

The stratum of the high schools was determined by this researcher. Six classes based upon 1978 student enrollment figures recorded in the Directory of Montana Schools 1978-79, which is published by the Office of Public Instruction, comprised the stratum. The six classes were: 0-50, 51-100, 101-200, 201-400, 401-900, and 901-2300. (See Appendix B for listing of the schools in each class.)

Montana State University computed verbal and quantitative stanine scores were used in lieu of standardized test scores. Verbal and quantitative stanine scores were computed for all freshman students. Entering freshmen were required to take the Scholastic Aptitude Test (SAT) or American College Testing Program (ACT) prior to attending Montana State University. If a student was unable to take the ACT or SAT, a Montana State University placement exam was administered. The results of these different tests were then converted to the verbal and quantitative stanine scores. In order to develop a conversion method, students who had taken the SAT were selected so that their distribution of Ohio scores coincided with the distribution of the Ohio scores obtained by the entire

freshman class. Stanines were computed for the SAT verbal scores and were then labeled national verbal stanines. A similar method was used in converting SAT quantitative scores to stanines. In computing the SAT quantitative scores the School and College Aptitude Test (SCAT) quantitative scores were used as the equating agent. In the same manner the ACT composite score was converted into a verbal stanine and the ACT quantitative score was computed into a national quantitative stanine (Suvak, 1982).

All information concerning first and third quarter freshman GPA, populations and sex were obtained from the Montana State University Testing Service. A list of 1982 and 1983 graduating students from the freshman class of 1978 was obtained from the Montana State University Registrar's Office.

The following general procedures were applied to the data. A one-way analysis of variance was used to test for significant differences between the means. The Duncan post hoc procedure was applied to determine the differences among the means. A two-way analysis of variance was used to test for interaction and main effects. The chi square test of independence was used with data which was nominal in strength. Multiple regression was used to determine if there was a relationship between an independent variable and several dependent variables and the F test was applied to test the statistical significance of the multiple correlation coefficient.

General Procedures for Secondary Problem

The population included in the study of the secondary problem was a random sample of the 1983-84 entering freshman class at Montana State University who had graduated from a Montana public high school in the spring of 1983. This class was chosen because their high school background would not be influenced as much by the lapse of time.

A questionnaire was developed by the researcher to measure the perceptions of the 1983-84 freshman students at Montana State University from high schools of different size. The questionnaire contained thirty-seven items (see Appendix C). Students completing the questionnaire were required to identify sex, high school and major field of study. From this information, the researcher coded all questionnaires according to sex, size of high school and college or school of enrollment within Montana State University. Seventeen questions called for perceptions of high school preparation on a four point rating scale which included: Strongly Agree, Agree, Disagree, and Strongly Disagree. Subscale responses were computed in five categories: high school math preparation, high school English preparation, high school study skills, high school social activities, and adequacy of high school facilities. A third section of the questionnaire called for Yes/No responses to twenty questions relating to the students' perceptions of their adjustment to university life. Subscale responses were computed in two categories: (1) perceptions of academic adjustment related to

university life and (2) perceptions of social adjustment related to university life. Sudman and Bradburn (1985) recommended the procedure of combining answers into subscale responses on instruments measuring attitudes, whereby a researcher could use each subscale as an independent measure of attitude. This method, according to Sudman and Bradburn, was most often employed using four or five point rating scales and yes/no responses for the measurement of perceptions or attitudes.

As no model for the questionnaire existed, this researcher solicited input from university faculty including professional faculty associated with the Montana State University Counseling Center in the development of the questionnaire. An original pool of forty items was generated from the literature and from input from counseling specialists. After review and criticism of the items, thirty seven were selected for use in the survey. This process was used to establish content validity. Gay (1981) described content validity as the degree to which a test measured an intended content area. This content area can be determined by expert opinion. Gay further noted that once validity had been established, reliability was also established.

The questionnaire was administered to a random sample of the 1983-84 freshman class at Montana State University. All respondents participating in this study were graduates of Montana public high schools in the spring of 1983.

The following general procedures were applied to the data for the secondary problem. A one-way analysis of variance was used to test for significant differences between the means. The Duncan post hoc procedure was applied to determine which means were different from other means.

Limitations

- 1) This researcher established the six classes of schools for the purpose of defining size of school.
- 2) High school grade point average was not included as a variable as the data was inconsistently recorded for a large group of the sample population.
- 3) The researcher eliminated the use of information on the number of remedial classes completed by students from high schools of different size because in the year of 1978, students were assigned or directed to enroll in remedial classes by counselors rather than being tested for competencies to determine placement.
- 4) Standardized test scores, such as the ACT or SAT, were unavailable for this study. Students attending Montana State University may take either the ACT, SAT or a Montana State University placement exam. All test scores are converted to verbal and quantitative stanine scores. This study was restricted to the use of those stanine scores.
- 5) Data on suspensions and probation was unavailable in the Montana State University Testing Service data bank.

- 6) Data on the size of graduating class and high school rank was unavailable in the Montana State University Testing Services data bank as the data was not consistently reported because of the open admission policy at the university.

Delimitations

- 1) This study was confined to students who graduated from Montana public high schools in the spring of 1978 and who entered Montana State University in the fall of 1978. It did not include students from private, parochial, Bureau of Indian Affairs or tribal schools, non-resident students, foreign students or students entering with a General Educational Development Test (GED).
- 2) Although graduation requirements are generally similar, each college or university in Montana establishes its own requirements. The graduation requirements for this study were limited to Montana State University only.
- 3) This study provided for a four year degree to be obtained within the time-frame of five years only. Students who entered in the fall of 1978 were reviewed for graduation in the spring of 1982 and 1983.
- 4) This study did not provide for transfers from Montana State University who may have graduated from other colleges or universities.

- 5) This study chose to examine size of high school rather than other variables as addressed in other studies such as student-staff ratio, per capita expenditures, curriculum, etc.
- 6) This study was based upon the assumption that the 1978-79 and 1983-84 freshman classes were representative of other freshman classes that entered Montana State University.

Definitions

- 1) First and third quarter freshman Grade Point Average (GPA) (GPA1, GPA3) - when GPA was used, only students who had completed the first quarter or third quarter constituted the cases for this study.
- 2) High school size - categories arbitrarily determined by this researcher (see Table 2). Information on school size was compiled from Directory of Montana Schools 1978-79.
- 3) SAT will be used for the Scholastic Aptitude Test. ACT will be used for the American College Testing Program.
- 4) Stanine scores - converted scores computed by the Montana State University Testing Service for the ACT, SAT or Montana State University placement examination.
- 5) Curriculum of first choice - determined by the first curriculum selected at the time of the student's entry at Montana State University. College or school of applicant was determined from the curriculum and is used interchangeably in this study.

Summary

For several decades extensive research has been conducted to determine the most valid predictors of college success. One of the areas of research has been the study of the relationship of high school size to academic success in college or to college graduation. A few studies have been conducted at Montana State University which have addressed various issues about high schools in Montana. The overall research on this subject has been inconclusive.

Given the changing social and residential patterns of the country, the demand for more accountability in terms of fiscal efficiency, the rapid technological changes, the emphasis on school consolidation for the past several decades, and the political issues raised in terms of state funding of schools, there is a need to replicate and extend the current body of literature.

The major problem of this study was to determine if there was a difference in the rate of college completion among students from high schools in Montana of different size. The population for this study included all students who graduated from an accredited Montana public high school in the spring of 1978 and entered Montana State University in the fall of 1978.

The secondary problem of this study was to determine if the perceptions of freshman students about their high schools and their adjustment to university life were dependent upon high school size, sex of the student or curriculum pursued. The population for the secondary problem was a random sample of freshman students who

entered Montana State University in the fall of 1983, and who had graduated from an accredited Montana public high school in the spring of 1983.

Chapter 2

Review of Literature

For three-quarters of a century, researchers have attempted to determine the relationship between size of high school attended, academic success in college and the incidence of college graduation. These studies have arrived at varying conclusions.

As Montana is a large, sparsely-populated rural state with many small and isolated high schools, this study was conducted to determine if there was a difference in the rate of college completion among students at Montana State University from high schools of different size in Montana. Further, the study sought to determine if Montana State University freshman students' perceptions of their high school preparation and adjustment to college life was dependent upon the size of high school attended, sex, or major field of study.

For the purpose of the review of the literature, this researcher grouped the studies into four categories: (1) those which found no relationship between college performance and size of high school and (2) those which found a significant relationship between size of high school attended and college success or college graduation, (3) in-state studies and (4) general studies related to students' perceptions and attitudes concerning their high school preparation and adjustment to college life.

No Relationship Between High School Size and College Success

The relationship of high school size to success in college has long been the subject of debate in educational research. One body of research has maintained that there is no relationship. These studies are reviewed in a chronological order.

As early as 1924, Somers collected data in a study conducted at Columbia Teachers College in New York which reported a coefficient of .05 between high school size and college academic performance. A year later Jackson (1925) studied the freshmen entering the University of Nebraska and found little difference in the scholastic success of students from different size high schools. Most often cited in the literature of this period, however, was the 1926 study of Gowan and Gooch. They conducted a study of nine hundred and twenty-seven graduates from the University of Maine who entered college during 1909-1917. Only two groups were defined: schools with average daily attendance less than 100 and those with more than 100. They used the freshman grade point average as the index for academic success. Only those students who had graduated were included in the study. They concluded "that the quality of the high school does not play more than an insignificant part in the subsequent college work which the student does" (p. 414).

Douglass (1931) followed with a study on the University of Oregon's class of 1930. For the purpose of his study he compared high school size with college GPA over a five year time period.

Douglass concluded "that the schools of less than four teachers do not do quite so well as those from higher (bigger) high schools, but the difference is small, less than .25 of a grade point" (p. 292). Douglass also found that almost as many outstanding students come from the smaller schools as from the larger schools.

T. E. Pettengill (1932) studied 1,151 freshmen from Minneapolis and St. Paul and 417 freshmen from high schools in towns of less than 5,000 population who entered the University of Minnesota during the academic years of 1932-33. He eliminated freshmen who failed to complete one quarter of college work. He concluded that there was no significant difference between the two groups on the basis of average scholarship in the first quarter of the freshman year.

This finding was supported by T. L. Nelson, (1932) who used SAT scores and high school size for predicting college academic success. Nelson found little difference between students from large and small schools.

Daniel Feder (1949) attempted to isolate the factors of size and types of high school and time-lapse between high school graduation and college entrance to determine their effects upon the ability of the first year achievement of students in the College of Liberal Arts at the University of Iowa. The population sample was drawn from the freshman classes of the years 1929-33. Feder concluded that although students from small high schools appear to be less prepared as indicated by their college qualifying

examination scores, their subsequent achievement records suggest that they were able to overcome any lack of preparation.

Mildred Saupe (1941) investigated the records of 1,321 freshmen at the University of Missouri who had completed two semesters or earned 24 semester hours of credit. She classified the students into seven categories according to school size. She noted from her research that there was no evidence to support the assumption that large schools were preparing students for college any better than small schools. In the same year, Alexander and Woodruff (1941) studied the determinants of college success at the University of New Hampshire for students entering in 1938-39. They found no relationship between percentile rank on tests and the size of high school from which the students graduated. These findings were further corroborated by Garrett (1949) when he found that high school size had no effect on a student's academic performance in college.

During the 1950's five researchers who investigated the effect of size of high school on academic achievement in college arrived at similar conclusions as the previously cited studies. A. L. Gray in 1950 reported on the relationship of the size of high school to collegiate success. The sample population included 2,476 graduates of Minnesota public high schools who were enrolled at the University of Minnesota during one fall quarter of the years 1940-41 to 1946-47. In an extensive study Gray found that the size of high school graduating class was not related to freshman year

quality-point ratio and that there was no difference in the mean high school rank for students from high schools of different size.

In 1955, Boyd reported that the size of high school from which a student graduated and university grade point average showed very little relationship. The coefficients reported in Boyd's study ranged from a minus 0.148 to a positive 0.147 between the size of high school graduating class, which is reflective of the size of high school and first quarter college grades.

Slocum (1956) conducted a study of dropouts from three freshman classes at the State College of Washington and found no relationship between size of high school attended and academic achievement or dropout behavior in college. Betrand (1956) studied 637 all white male freshman students who entered the Agriculture and Mechanical College of Texas during 1946, 1947 and 1948, and found that there was no relationship between high school enrollment and completion of the second year of college. Altman (1959) studied seniors who had entered Central Michigan College as freshman in 1953 and who graduated in 1957. As in the Gowan and Gooch study, the data were limited to graduates, therefore, only 144 of the entering 638 students were subjected to the study. Although her sample included twice as many students from large high schools as small ones, Altman maintained that graduates of the larger high schools did not achieve significantly higher college GPA's than did graduates of smaller high schools.

With the decade of the 1960's, more research was conducted which reinforced the earlier findings. Lathrop (1960) collected data on students at Iowa State College who came from high schools with enrollments from 7 to 2,350. For the purpose of his study, he identified ten different school categories. His objective was to determine if students from different sized high schools had the same survival-attrition ratio and achieved equally well scholastically, and to determine whether the various course patterns available in high school prepared students equally well for college entrance. According to Lathrop, "it appears that the size of high school from which a student graduated has little influence at Iowa State College when the confounding effect of high school size and course pattern is eliminated" (p. 48).

Lewis Aiken (1964) reported the results of a study at the University of North Carolina Woman's College. His study consisted of seven groups of 140 freshman women who entered the Woman's College in 1960, 1961, 1962. His study corroborated other studies that freshman grade point average was not affected by high school size.

Chase (1965) in a study of 75 dropouts after one semester at the University of Indiana found that high school graduating class size had no effect on whether or not a student dropped out of college. One year later, Lins, Abell and Hutchins (1966) investigated a number of variables, including high school size. Their study was conducted on 3,700 freshman entering the University

of Wisconsin, Madison campus. They limited their study to the first semester GPA and concluded, "There appears to be no association between high school graduating class size and first semester GPA" (p. 26).

A study conducted by Kiesling (1967) sampled students from 97 high schools out of 1,400 high schools in the state of New York. He used several input variables: pupil intelligence, socio-economic attributes of the community, per student expenditures, school size and growth rate. He found school size was negatively related to achievement.

Bayer (1968) conducted a study known as Project TALENT, a University of Pittsburgh project, which studied 8,567 students who had completed college within five years of high school graduation. For this study, Bayer identified thirty-eight psychological and demographic variables. Six of those variables dealt with high school characteristics, which included size of student body. He concluded that none of the high school variables had influence on college completion.

Cashem (1970) conducted a study of 206 first semester freshman students enrolled in general psychology at Illinois State University. He divided the schools from which they graduated into six categories: (1) 100 or less, (2) 101-300, (3) 301-500, (4) 501-1,000 and (5) over 1,000. He computed the college GPA on one semester's work for each member. He concluded that students from smaller schools fared "just as well or better than students from

larger schools" (p. 259). He also observed that students from medium sized high schools were superior to students from small and large high schools.

A few years later Downey (1978) studied a group of entering freshmen at Kansas State University. From 1,932 freshmen, a random sample of 400 were selected and these were divided into seven subsamples based on the size of high school graduating class. This study found only minor evidence that students from smaller schools were doing less well in college than students from larger schools. From the data Downey stated, "The overall GPA for the various groups was not different and only the students from the very smallest schools showed a lower rate of persistence after three complete semesters" (p. 358).

In 1981, Powell conducted a study on the influence of certain non-cognitive factors on achievement of 236 students randomly selected from a freshman class of 572, who entered Fort Valley State College, a predominantly black state-supported college. For purposes of listing the significance of the hypothesis that no significant difference existed between college achievement and the size of high school attended, he divided the high schools into three classes: (1) 600 or less, (2) 600-1,299, and (3) 1,300 or more. Powell concluded that there was no significant difference between achievement of freshmen at Fort Valley State College and the size of high school from which the students graduated.

In 1982, Haviland and Shaw reported the findings of a study at the University of Colorado designed to predict college attrition.

High school class size was used as one of the independent variables. The fall quarter 1977 entering freshman students, which included 1,943 individuals, were the subjects of their study. The findings concluded that high school size bore no relationship to the college attrition rate.

A Relationship Between High School Size and College Success

As stated earlier, studies which have investigated the relationship between high school size and academic success in college have arrived at varying conclusions. This section will review those studies which have found a relationship between high school size and college success.

Pittenger (1917) studied the classes entering the University of Minnesota in 1910 and 1911. He classified the high schools into six groupings: (1) 1-100, (2) 101-200, (3) 201-300, (4) 301-500, (5) 501-1,000, and (6) 1,000 plus. He measured success in college by total points rather than by average. He separated the freshmen, sophomores, juniors and seniors in measuring academic success and presented his results by use of medians and quartiles. He concluded that "graduates of larger high schools may be expected slightly to surpass the graduates of the smaller high schools, when both reach college" (p. 109).

A study of high school size and its effect on college efficiency was conducted by L. H. Thornberg (1924) on the classes entering the State College of Washington in 1921 and 1922. He tabulated the students' grades according to seven sizes of high

schools: (1) 1-50, (2) 51-100, (3) 101-200, (4) 201-300, (5) 301-500, (6) 501-1,000, and (7) 1,001 and over. He used total honor points as a measure of academic success and presented his results in tables with the use of percentages. As a measure of success he combined the freshman records for the class of 1922 with the two-year records of the 1921 class. He concluded that "students from large high schools are superior in scholarship in college to those coming from small high schools" (p. 192).

In 1926, H. E. Benz conducted a study of freshmen entering the State University of Iowa. His study was an attempt to determine the relationship between size of town and school efficiency. School efficiency was measured by scores on qualifying examinations administered to all freshmen entering the State University of Iowa. The examination contained four parts: English, Math, Science and Social Studies, and was in the form of a multiple choice test with five alternate responses for each item. A comparison was made of scores on the test obtained by freshmen coming from four sizes of towns and types of high schools: (1) large city high schools, (2) small city high schools, (3) small town independent districts, and (4) consolidated high schools. Benz concluded that students coming from large city high schools made the highest scores on all parts of the test and found the superiority of that group was pronounced, whereas the difference between the other three groups was not so great.

E. L. Clark (1927) conducted a study of the relationship of school size and college achievement at Northwestern University in

1926. His investigation led to the conclusion that, "The standing of those from high school graduating classes of one hundred or more, is especially valuable in indicating the high quality of work which will be done in college" (p. 125).

Ayres (1927) conducted a study using engineering students at the University of Iowa. He concluded that large and small high schools seemed to prepare students more thoroughly for college than intermediate sized high schools. In the same year, Lemon (1927) reported the findings of a study on students in the lowest decile group, based on the Iowa Qualifying Examination, administered to all freshmen entering the University of Iowa. Although Lemon's study did not specifically address high school size and college success, it should be noted that two-thirds of the students in the lowest decile group came from small high schools.

Remmers and Stalnaker conducted a number of studies on students entering Purdue University. In a study reported in 1926, they concluded that a student's rank in his high school graduating class was meaningless in the case of small schools as contrasted to larger schools. In a later study Stalnaker and Remmers (1930) reported a correlation coefficient of $.144 \pm .028$ and a larger correlation coefficient of $.21 \pm .01$ when the high schools were grouped into large and small. They maintained that the size of high school, at least in Indiana, was significantly related to the attrition rate at Purdue University.

Ruth Brown (1930) conducted a study in 1928 on freshmen entering twenty colleges and universities in Michigan. She measured

size of graduation class and used class intervals 0-24, 25-49, 50-74, 75-99, etc. She used first semester averages as the measure of academic success and tabulated the results by presenting means and standard deviations for each high school group. She concluded that there was a tendency for students from larger high schools to achieve higher first semester grades, but that this trend was not consistent unless the high schools were grouped into three divisions: small, medium and large.

Grace Munson (1930) used a similar technique in a study of freshmen entering the University of Michigan in 1926 and 1927. She tabulated correlation tables for first and second semester grades of students enrolled in the Library College, the College of Engineering and the College of Agriculture. She concluded from her study that although students from smaller schools did below average work, it was the students from the medium sized schools who did the best work.

In 1931, R. L. Garnett conducted a study of the factors in college success at the University of Missouri among 798 entering freshmen in 1929. Garnett divided the students into thirteen graduation class sizes: (1) 1-10, (2) 10-20, (3) 20-30, (4) 30-40, (5) 40-50, (6) 50-75, (7) 75-100, (8) 100-150, (9) 150-200, (10) 200-300, (11) 300-400, (12) 400-500 and (13) 500 plus. In his findings Garnett reported that students from graduating classes of 40-50 students produced a higher percentage of successful students than did any other class size and that students from extremely small

high school classes and extremely large classes met with a low rate of success at the University of Missouri.

Upshall and Masters conducted a study of the best and poorest students categorized from scores received on entrance exams. Subjects entered the Washington State Normal School in 1931. The researchers chose a sample of 61 students from a freshman class of 300. Thirty-three students were labeled the "poor group" (lowest entrance exam scores) and twenty-eight the "high group" (highest entrance exam scores). Their study, although not specifically addressing high school size, noted that the low group came from smaller high schools. The study, however, placed no emphasis on the size of high school as being important to college achievement.

In 1938, P. S. Dwyer presented a report on the conflicting studies in the literature concerning the relationship existing between high school size and success in college. He cited studies of various researchers, all of whom were noted in this literature review. Dwyer was convinced through this investigation that there was a consensus of opinion among the research and summed up his paper with the following tentative conclusions:

- 1) That there is quite universally a positive significant correlation between size of high school and first semester grades which is represented by a coefficient of less than .25.
- 2) That the size of this coefficient decreases with successive semesters so that by the end of two or three years its size is so small as to be insignificant.
- 3) That a larger percentage of the students from the small high schools than from other groups is

eliminated in the first semester and in succeeding semesters.

- 4) That the students from small high schools who survive the elimination are at least the equals, and perhaps the superiors, (in the academic sense), of the students from the larger high schools who have also survived (p. 276).

In order to check his conclusions, an analysis of certain data, using the measures employed by Brown (1930) and Manson (1930) were applied to the freshman class entering all non-professional schools of the University of Michigan in 1928. Correlation coefficients were computed for each semester for three years. On the basis of this analysis, Dwyer concluded, "it appears that the probability of early withdrawal from college is greater in the case of graduates from the smaller schools" (p. 277). Dwyer also found that there was no appreciable difference in the attainments of the students from high schools of different size completing their junior year.

In 1941, E. C. Seyler investigated the effect of high school size on the correlations between collegiate success and high school rank. His population included the combined classes of 1935, 1936 and 1937 at the University of Illinois. He classified the high schools according to total enrollment into eight categories: (1) less than 100, (2) 100-199, (3) 200-399, (4) 400-599, (5) 600-999, (6) 1,000-2,999, (7) 3,000-3,999 and (8) 4,000 and up. Seyler concluded that,

A comparison of the mean percentile ranks (high school) and the mean percentile averages (collegiate) of the several groups, shows that at the University of

Illinois, a better quality of student is received from small schools than from large schools (p. 124).

Bou and Stovall (1950) concluded in a study of high school academic records that chances for success in college are greater for students from larger high schools than for students from small high schools with the same academic record.

In 1954, L. J. Lins conducted an investigation of students who entered the University of Wisconsin, Madison campus in the fall of 1948. Only persons who graduated from Wisconsin high schools were included in the study. Five non-cognitive factors were studied as well as the academic success of students from small and large high schools. One fourth of the 1948 freshman population came from a high school graduating class of 65 or less and one fourth came from a graduating class of 336 or more. Lins concluded in his study that, "the means of freshman first semester grade point averages of students from the small high schools are lower and generally differ significantly from the means of the first semester grade point averages of students coming from large high schools" (p. 158). He also found that among valedictorians and salutatorians, that as high school size increased, variance in freshman grade-point average increased and academic disciplinary action (probation and dismissal) decreased.

In the same year, Bledsoe (1954) conducted a study of secondary schools for white students in the state of Georgia to determine how those students performed in college. The findings reported that students from Georgia high schools who graduated in

large graduating classes tend to make significantly higher grades during the first year of college than students who attend small and medium sized high schools. In a 1957 study at Chico State College, Shaw and Brown concluded that underachievers came from less populated areas.

In a 1959 study of 1,949 freshmen entering the University of Wisconsin in 1953, J. Kenneth Little found that a smaller proportion of freshmen from small schools graduated from college than the proportion from larger high schools. Donald Hoyt (1959) conducted a study of freshmen entering Kansas State College in 1956. High school graduating class size was used to determine the five classes of schools. The sample population was comprised of 894 freshmen; 598 males and 296 females. Hoyt concluded that, "there was a distinct trend for students from smaller high schools to receive lower grades at college when these grades were adjusted for high school rank" (p. 573). He also noted that grades for students from smaller high schools tended to be over-predicted.

By holding measured intelligence constant for two groups, Fisher (1963) found that high school size was not important for students who had been in the upper one third of their high school graduating class, but those who ranked in the lower third of their high school graduating class from large high schools, 1500 and up, tended to be more successful than their counterparts from medium size schools of 501-1500 and from small high schools of 500 and less.

A year later, Watley (1964) conducted a study at the University of Minnesota. In an effort to increase the efficiency of college grade prediction, Watley considered the type, size and location of high schools as variables in an investigation of 1,101 freshman males enrolled in the University Institute of Technology. Results indicated that inclusion of those variables in a multiple regression formula increased prediction efficiency significantly (.05 level) for those graduates from large high schools. Small, insignificant differences were noted for students from all other sizes of high schools.

The relationship between school size and readiness for specialization at a university was the subject of a study in Washington and Oregon (Ford, 1970). The Oregon study indicated that graduates of high schools of 100 students or less did significantly poorer in freshman college studies than did students from large high schools.

Robert Cope (1972) conducted an investigation of high school and hometown size on 586 college dropouts and on 745 students who remained in college at a large university in the midwest. The results of the investigation suggested that the size of high school and community is related to academic persistence. Cope qualified his results by noting that his findings may only be true where students found themselves in environments substantially different from those to which the students were accustomed.

Two years later, Anderson (1974) conducted a study involving a statewide sampling of 2,355 students who attended North Dakota

institutions of higher education during 1962-63, 1963-64 and 1964-65. Results of a chi-square test applied to the collected data indicated that graduates of small high schools drop out of college in significantly larger numbers than do graduates of larger high schools. Anderson stated that "students who attend high schools that annually have fewer than 20 graduates are not as likely to complete programs of higher education as students from larger high schools" (p. 192). He concluded his study by stating, "Small rural schools may be hardy, but they are not necessarily effective in preparing their graduates for college success" (p. 193).

Timothy Sanford (1982) conducted a study on the freshman class of 1974 at the University of North Carolina at Chapel Hill. The study used race, sex, major, high school rank, high school size, and SAT scores as predictor variables in a multiple regression and discriminant analyses for the purposes of computing predicted graduation equations. In comparing students in terms of race, Sanford found that high school size is important for black students and high school rank was slightly more important for white students.

In the same year, Domer and Johnson (1982) conducted a study of students who began the Bachelor of Environmental Design degree or the Bachelor of Science in Architectural Engineering at the University of Kansas between 1969 and 1979. Only beginning freshmen were included in the analysis. The sample consisted of 571 students. Three groups were defined: (1) graduates, (2)

voluntary withdrawals and (3) academic dropouts. Nineteen variables, including size of high school class, were collected for each of the individuals in the study. The researchers concluded that, "The best single discrimination among the three groups was the high school grade point average followed by the graduating high schools' class size" (p. 24).

In order to clarify the salient points cited in the literature review concerning the relationship of high school size to collegiate success, this researcher summarizes those points in Table 1.

In-State Studies

While no in-state studies addressed high school size as a variable to college graduation, a number of studies investigated related problems. One study analyzed high school graduation class size and grade prediction (Slaughter, 1971). Three studies considered college dropouts and school size (Hamilton, 1962; Aubert, 1963; Boyd, 1969). Two studies examined curriculum and high school size (Currie, 1961; Daniels, 1968) and one study investigated school size and high school student's achievement (Kimble, 1974).

Two studies (Hamilton, 1962; Boyd, 1969) noted a twenty percent attrition rate among freshman students attending Montana State University in the early 1960's. Hamilton pointed out in his study that a disproportionate number of the dropouts came from smaller schools.

Table 1. Summary of Salient Points Cited in Review of Literature Concerning the Relationship of High School Size to Collegiate Success

Author	Salient Points															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Aiken, L.			X	X		X	X			X	X	X				
Alexander, N. & Woodruff, R.	X											X				
Altman, E.			X	X								X				
Anderson, L. O.			X	X									X	X		X
Ayres, Q. C.	X			X									X	X		X
Bayer, A. E.			X	X	X	X	X	X	X			X				
Benz, H. E.	X			X				X					X			X
Bertrand, J. R.			X	X						X		X				
Bledsoe, J. C.			X	X									X			X
Bou, I. R. & Stovall, F. L.			X	X				X					X			X
Boyd, J. D.			X	X	X							X				
Brown, R.	X			X	X								X			X
Cashem, V.			X	X												X
Chase, C. I.			X	X								X				

*(1) Studies conducted up to 1935, (2) Studies conducted from 1936-1949, (3) Studies conducted 1950 - present, (4) Descriptive information, i.e., distributions, scattergrams, means, standard deviations, (5) Correlations (zero order), (6) Partial or multiple correlations, (7) Regression equations, (8) Considered effect of other variables on collegiate success, (9) Treated sexes separately, (10) Treated one sex only, (11) High school rank of major importance, (12) Size of school not significant, (13) Size of school significant, (14) Small schools best, (15) Medium schools best, (16) Large schools best.

Table 1 (continued)

Author	Salient Points															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Clark, E. L.	X			X	X							X				
Cope			X	X			X						X			X
Doner, D. E. & Johnson, A. E.			X	X			X	X					X			X
Douglass, H. R.	X			X	X	X	X	X	X			X				
Downey, R. J.			X	X								X				
Dwyer, P. S.		X		X	X								X			
Feder, D. D.		X		X	X	X						X				
Fisher, J. L.,				X	X		X	X					X			X
Ford, P.				X	X			X					X			X
Garrett, H.		X		X			X	X					X			X
Garnett, R.	X			X					X				X			X
Gowan, J. W. & Gooch, M.	X			X		X						X				
Gray, A. L.				X	X	X	X		X	X			X			
Haviland, M. & Shaw, D.				X	X		X	X	X	X			X			
Hoyt, D. P.				X	X		X	X		X				X		
Jackson, G. L.	X			X									X			
Kiesling, H.				X	X	X		X					X			
Lathrop, I. J.				X	X	X		X					X			
Lemon, A. C.	X			X	X	X		X								
Linds, L. J., Abel, A. & Hutchins, H. C.				X	X			X	X				X			

Table 1 (continued)

Author	Salient Points															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Lins, L. J.			X	X				X					X			X
Little, J. K.			X	X				X					X			
Manson, G. E.	X			X	X								X			X
Nelson, T. L.	X			X	X			X				X				
Pettengill, T. E.	X			X	X	X							X			
Pittenger, B.	X			X				X	X	X			X			X
Powell, C.				X	X			X					X			
Remmers, H. H. & Stalnaker, J. M.	X			X				X	X				X			X
Sanford, T.				X	X			X	X	X			X			X
Saupe, T.		X		X					X				X			
Seyler, E. C.		X		X	X	X	X	X	X					X	X	
Shaw, M. C. & Brown, D. J.				X	X			X					X			
Slocum, W. L.				X	X	X	X	X					X			
Somer, G. T.	X			X	X	X	X	X					X			
Stalnaker, J. M. & Remmers, H. H.	X			X				X	X	X			X			X
Upshall, C. C. & Masters, H. V.	X			X									X			X
Thornberg, L. H.	X			X					X				X			X
Watley, D. J.				X	X	X	X	X		X			X			X

Aubert (1963) concurred with Hamilton's (1962) findings regarding freshman dropouts, but he also concluded from his research that not only do small schools (0-125 school enrollment) graduates dropout in a disproportionate number, but that a smaller percentage of small high school graduates attend college.

In 1961, Currie concluded that a minimum of 40 academic units exclusive of activities should be provided by high schools in order to "provide a general education and obtain some depth in all areas" (p. 11). Currie noted that the range of offerings for all schools in Montana was 20 to 74 subjects with the average offering of 36.2 which fell short of the minimum 40 academic units required to meet general education standards. He further noted that 77 of the 83 class "C" schools in Montana were deficient in academic units offered, while only two of the 13 class "A" and class "AA" schools failed to meet this criterion.

Daniels (1968), in his study of schools with a total enrollment of 0-100 students, found that the "average number of full-time secondary teachers . . . was 2.8" (p. 24). Daniels concluded that the instructional program in the small schools identified for his study "provided the student with the minimum requirements for graduation and little more" (p. 37).

Slaughter (1971) conducted a study on the effect of high school graduating class size in predicting future academic performance. He noted that "high school graduating class size

could contribute significantly to the prediction of freshman college grade point average, when included . . . with other independent variables such as high school grade point average and standardized test score" (p. 36). He concluded from his study, however, that "the practical value of high school class size in a prediction equation was so slight as not to justify the collection of the data" (p. 37).

Kimble (1974) conducted a study on educational achievement in rural Montana high schools. The study concluded that school size was not a significant factor in student achievement. He further noted that "the rural student seems to do about as well as the urban student, yet the variables influencing achievement differ for the rural student" (p. 87). Those variables included grade point average, cars in the family and school activities.

Studies Related to Student Perceptions of High School Preparation

A secondary purpose of this study was to determine if Montana State University freshman students' perceptions of their high school preparation and adjustments to college life were dependent upon the size of high school attended. An extensive review of the literature, including a thorough ERIC computer search, revealed that although some studies have been conducted on student perceptions of high school preparation and their adjustments to college life, none of these studies used the size of high school as a variable. This section of this chapter will review the most recent studies, conducted from 1976 to present, which addressed

student perceptions of high school preparation and adjustments to college life.

In 1976, Blai conducted a study using a questionnaire designed to identify areas in which participants believed that their high school preparation had been insufficient to enable them to cope with college study. Seventy-three percent of the freshman class at Harcum Junior College completed the questionnaire. Insufficient high school preparation in various academic skills areas was the most frequently mentioned deficiency.

Leelan (1977) conducted a study at Indiana University to determine common adjustment problems of students enrolled in the Education Opportunity Program (GROUPS). Survey results showed that attitudes ranged from most positive to least positive in the following order: social/personal area, support service area, resident life area, and academic area.

A study conducted in 1978 (Keller) researched the factors affecting the poor academic achievement of first-term freshmen at Miami University. Freshmen who received less than a 2.0 grade point average during their first semester at college were asked to indicate on a written questionnaire the extent to which 68 factors were or were not the reason for their poor academic performance. Freshmen placed the greatest responsibility for their low grades on their own lack of motivation, proper study habits and attention to school work. Many students felt that their lack of preparation in English contributed to their problems.

A 1981 study conducted by Leong surveyed freshman students entering the University of Maryland. The total sample consisted of 1,454 entering freshmen. Over 80 percent of the incoming freshmen indicated that they sometimes felt anxious about succeeding in college. Studying efficiently, budgeting time wisely and selecting a field of study were considered to be the hardest parts of adjusting to college life.

Another study conducted in 1981 (Coles) at State University of New York researched characteristics of freshmen associated with retention. This four-year follow-up study of the freshman class was conducted to determine the relationships between student perceptions/characteristics of incoming freshmen and their retention status. A total of 1,666 entering freshmen completed the self-perception questionnaire. Four years later 976 students or 59 percent were persisters. Those who had dropped out were the least satisfied with their high school academic experience and the least enthusiastic about attending college. Compared to persisters, the dropouts rated themselves lowest on such traits as dependability, self-discipline and competitiveness.

Summary

In this chapter, this researcher has reviewed research efforts conducted on the relationship of high school size to college success and the incidence of college graduation. A summary of the salient points in the investigations was presented in Table 1. All of the writers used descriptive methods, such as scattergrams,

tables of means or standard deviations, and distributions. Less than half of the researchers used statistical methods such as zero-order correlations, partial or multiple correlations or regression equations.

Approximately one half of the researchers indicated that size of high school had no effect on college academic success; whereas the remaining one half indicated a significant effect.

Studies varied in groups and sample size. Some of the researchers studied groups in school for one quarter, others examined groups who remained in college a varied number of quarters or semesters or who completed a certain number of credit hours.

Three research studies gave attention to graduates only. Three of the studies looked at only those who dropped out of college. Eleven of the studies treated sexes separately, whereas three of the studies were confined to either female or male students.

This chapter also reviewed previous studies related to high school size conducted in Montana. None of these studies specifically addressed the rate of college completion among students from high schools of different size in Montana.

Two studies (Slaughter, 1971; Kimble 1974) found no significant relationship between high school size and student achievement, although other studies related to high school size and curriculum and freshman college attrition rates demonstrated

significant differences among students from high schools of different size.

Finally, this chapter reviewed current studies conducted on student perceptions of their high school academic preparation and their attitudes toward adjustments to college life. It should be noted that this researcher was unable to identify or locate any studies which related student perceptions to the size of high school attended; therefore, the literature review is related in nature but not specific to high school size. Poor high school academic preparation was the most cited perception of students for failure to succeed in college.

Chapter 3

Procedures and Methodology

The major problem of this study was to determine the relationship between high school size and college graduation. For the secondary problem the researcher examined the perceptions of the entering 1983 freshman class at Montana State University as to the adequacy of their high school preparations and their perceptions of their social and academic adjustments to college life.

This chapter includes a description of the population, the data collection process, the hypotheses, and the statistical procedures applied in the analyses of the data.

Population of the Major Problem

The population identified for the major problem was made up of the freshman students who graduated from Montana public high schools in the spring of 1978 and entered Montana State University in the fall of 1978.

The stratum of the high school size was established by the researcher. Six classes, based upon 1978 student enrollment figures recorded in the Directory of Montana Schools, 1978-79, comprised the stratum. The six classes were 0 - 50, 51 - 100, 101 - 200, 201 - 400, 401 - 900, and 901 - 2300. The stratum, the

