AN ABSTRACT OF THE THESIS OF

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in Agricultural Education (Major) presented on April 27, 1967 (Date)

Title: A COMPARISON OF HIGH SCHOOL AND COLLEGE GRADES

Signature redacted for privacy.

Abstract approved _____
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The demand for college graduates is becoming increasingly apparent. The fields of industry, business, and agriculture offer unlimited opportunities for those who are qualified to assume positions of leadership. In the field of agriculture, many new areas of technology have been developed in recent years. In some of these new fields many positions go unfilled because of the lack of properly trained personnel.

As the technology of our nation becomes increasingly complex, requiring highly trained and skilled workers, the pressures of attaining a higher education are greatly multiplied. The disheartening fact that many students enter college only to be frustrated and over-whelmed by the magnitude of the work that is beyond their capacity emphasizes the need of this study.

The purpose of this study was to make a comparison of the high school and college grade point earned by students in the School of

Agriculture at Oregon State University.

The specific objectives were to compare (1) high school average grades with college average grades in the same subject areas, (2) the effect of high school preparation compared to college achievement in the same subject areas, and (3) students from various sized high schools in accordance with grades received.

The data for this thesis was obtained from transcripts in the office of the Dean of Agriculture and from the student files in the Registrar's Office.

Only those students who enrolled in the School of Agriculture as fall term (1962) freshmen were considered in this study. The high school subjects considered were Mathematics and/or Algebra, English, Chemistry, and Biology. These high school subjects were compared with college courses in Mathematics, English Composition, General Chemistry, and either General Botany or General Science, or General Zoology.

Between 35 and 40 percent of those students who achieved (3.00 and above) in high school went on to achieve in the same subject areas in college.

Of those students who did not achieve in high school between four and 28 percent went on to achieve in the same subject areas in college.

Sixty-one to 83 percent of those students who received average or above grades (2.00 and above) in high school went on to do average

or above work in college.

About two-thirds of those students who did below average work in high school went on to do average or above in college. Only nine percent of the below average high school English students were able to do average work in college English.

The grade point average in the selected fields dropped an average of .43 grade point between high school and college. The greatest drop occurred in Science and English with a drop of a minus .62 and .61 respectively. Mathematics dropped a minus .46 and Chemistry dropped the least with a minus .03.

Students from schools under 200 enrollment grade point dropped a minus .76 in the select study areas whereas students from school size of 200-499, 500-999, and over 1000 students dropped a minus .27, .49, and .47 respectively.

A Comparison of High School and College Grades

by

Harry Lee Lyda

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Master of Science

June 1967

APPROVED:

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Date thesis is presented April 27, 1967

Typed by Clover Redfern for Harry Lee Lyda

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INTRODUCTION

Our complex and abundantly productive civilization needs the constructive and creative talents of all its citizens. The happiness of every individual depends upon the self realization of his or her potential talents. For these reasons, it is important to identify and to develop to their fullest degree the talents of every youth in our schools.

The demand for college graduates is becoming increasingly apparent. The fields of industry, business, and agriculture offer unlimited opportunities for those who are qualified to assume positions of leadership. In the field of agriculture alone, many new areas of technology have been developed in recent years. In these areas many positions go unfilled because of the lack of properly trained personnel. The schools of agriculture, within the colleges and universities across the nation, have realized the need for properly trained people in all phases of agriculture. The faculty members of the agricultural schools have been shocked and many times disappointed because so many promising young people fail to meet the minimum requirements of most agricultural colleges. The following paragraph was taken from the general statement of the agriculture section of the 1963-64 Oregon State University Catalog: (23, p. 201)

> Because of ever-increasing technical developments in agriculture, all students regardless of major interest, should come to college prepared to study basic sciences, particularly chemistry, bacteriology, botany, zoology, and entomology. In many programs of study, physics is essential. Each student should possess a good understanding of fundamental principles of grammar and be able to demonstrate these principles through effective oral and written expression. He should also be able to demonstrate a reasonable degree of competence in arithmetic, algebra, and geometry. Study in agriculture requires an ability to perceive, analyze, and work with problems involving surface areas, configurations, volumes, and equations in which at least one unknown exists. The ability to work with problems involving fractions, percentages, and proportions is necessary. Students in agriculture should be completely familiar with weights and measures in the metric system. The ability to read rapidly with good comprehension and to study effectively is extremely valuable.

Each year many students drop out of school or are suspended because they are unable to meet the minimum grade requirement. Why are these students doing so poorly? The writer of this thesis believes that the problem should be attacked by making an analysis of the grades received in high school. By making a comparison of these grades, it may be determined whether the student has comprehensive understanding of the subject.

Statement of Problem

Aikin (1, p. 132) writes the purposes of the school cannot be determined apart from the purposes of the society which maintains the school. The purposes of any society are determined by the life

values which the people prize. As a nation we have been striving always for those values which constitute the American way of life. Our people prize the individual human personality above everything else. We are convinced that the form of social organization called democracy promotes, better than any other, the development of worth and dignity in men and women. It follows, therefore, that the chief purpose of education in the United States should be to preserve, promote, and refine the way of life in which we as a people believe.

High school teachers for years have been faced with the problem of counseling prospective students as to whether he or she should continue their education on a college level. As the technology of our nation becomes increasingly complex, requiring highly trained and skilled workers, the pressures to attain a higher education are greatly multiplied. The counsel and advice given to prospective college students needs to be based on a thorough understanding of the student's ability. The disheartening fact that many students enter college only to be frustrated and overwhelmed by the magnitude of work that is beyond their capacity emphasizes the need of this study. In giving advice to students, the counselor must be aware of the influence that subject background and grade point achievement may have in relation to academic success in college.

Purpose of Study

The purpose of this study is to make a comparison of the high school and college grade point earned by students in the School of Agriculture at Oregon State University.

The specific objectives of this study will be to compare:

1. High school average grades with college average grades in the same subject areas.
2. The effect of high school preparation compared to college achievement in the same subject areas.
3. Students from various sized high schools in accordance with grades received.

The scope of this paper will be aimed at arriving at some conclusions or indication as to the value of using high school grade points in predicting academic success in the School of Agriculture at Oregon State University.

Limitations of Study

Because of the time factor involved, and the scope and nature of this study, certain limitations will be made.

1. Only students who have enrolled in the School of Agriculture at Oregon State University for three or more terms will be considered.

2. Only students entering Oregon State University Fall term 1962 will be considered in this study.

3. The high school subjects to be studied will be:

    1. Mathematics and/or Algebra
    2. English
    3. Chemistry
    4. Biology and/or Science

    These subjects will be compared on a grade point basis, with the following subjects offered at Oregon State University:

    1. College Algebra (Mth 101 or equivalent)
    2. English Composition (Wr 111, 112, 113)
    3. General Chemistry (Ch 101, 102, 103, or 201, 202, 203)
    4. General Botany (Bot 201, 202, 203) or
       General Science (GS 101, 102, 103) or
       Zoology (Z 201, 202, 203)

4. High schools are grouped according to size of enrollment, Group I - under 199; Group 2, 200-499; Group 3, 500-999; and Group 4, over 1000.

Definition of Terms

To give a clear meaning of what the author is discussing, several terms have been defined in the following paragraphs.

1. Decile Rating. A placing into tenths of the frequency curve by performance; ten decile meaning that performance in the top ten percent of the curve and one decile being in the lower ten percent of the distribution.
2. College Grade Point. Grade points are computed on the basis of 4 points for each term hour of A grade, 3 points for each term hour of B, 2 points for each term hour of C, 1 point for each term hour of D, and 0 points for each term hour of F grade (23, p. 27).
3. Grade Point Average. The quotient of total points divided by total term hours in which A, B, C, D, and F are received (11, p. 27).
4. Term Hour. The unit of credit representing one or more hours of the student's time each week for one term. This time may be assigned to work in classroom or laboratory or to outside preparation (24, p. 26).
5. Course. A subject, or an instructional subdivision of a subject, offered through a single term (24, p. 26).
6. Sequence. Closely articulated courses extending through more than one term.
7. High School Grade Point. Grade points earned in high school will be determined in same manner as grade points at Oregon State University.

8. High School Unit. A measurement of the amount of material in one subject field successfully completed in high school during one academic year. Chemistry, for example, offered for one year earns one unit.

9. Honor Roll. Receiving a grade point average of 3.5 or higher with 12 or more terms hours accepted.

10. Grade Point Achievement. Receiving a grade point average of 3.00 or higher in any of the subjects compared on either the high school or college level. The terms achievement, achieved, and academic success will be used interchangeably throughout this thesis.

11. Mathematics 100. Intermediate Algebra - four term hours. Functions and graphs, linear equations in two unknowns, quadratic equations, negative and fractional exponents, radicals, pregressions, binominal theorem, logarithmic computation (24, p. 116).

12. Mathematics 101. College Algebra - four term hours. Number systems, mathematical induction, determinants, theory of equations (24, p. 116).

13. Remedial Mathematics. Mathematics 10-three term hours. Fundamental operations with polynomials and rational fractions, linear equations, and stated problems. Credit not counted towards graduation (24, p. 116).

14. Writing 111, 112, 113, English Composition. Three term hours each. Frequent written compositions with emphasis on clarity and accuracy. Courses must be taken in sequence. Prerequisite: English placement examination (24, p. 64).

15. Remedial English. Writing 49 - Corrective English. Three term hours. Refresher course in English fundamentals (24, p. 64).

16. Chemistry 101, 102, 103. General Chemistry, three term hours each. For students who have had no previous training in Chemistry and for those whose college aptitude test scores indicate need for a more elementary approach (24, p. 106).

17. Chemistry 201, 202, 203. General Chemistry, three term hours. Service course covering basic principles of general Chemistry. Prerequisite: one year of high school Chemistry and acceptable college aptitude scores (24, p. 106).

18. Botany 201, 202, 203. General Botany, three term hours each. How plants get their food, grow, differentiate, and reproduce. Botany 201: seed plants; Botany 202: lower plants; Botany 203: identification of native plants; use of keys, floral morphology (24, p. 102).

19. General Science 101, 102, 103. General Biology - four hours each term. Biological principles applied to both plants and animals)24, p. 99).

20. Zoology 201, 202, 203. General Zoology - three hours each term for Zoology majors and premedical, predental, prenursing, pharmacy, physical education, psychology, fisheries and wildlife students, and others (24, p. 133).

Procedures

The data for this thesis will be obtained from transcripts in the office of the Dean of Agriculture and from the student files in the Registrar's Office. Grades will be taken from the college transcripts and compiled on individual data cards. College grades that are entered on data cards will only be for the subjects of Mathematics, English, Chemistry, and Science. The same procedure will then be followed in recording the high school grades of the above subject.

Treatment of Data

The data that will be collected on the group of students are: The high school and college grades of previously mentioned subjects, the over-all high school decile ranking, the cumulative college grade point, registration number, high school, size, and year of high school graduation. Both the high school and college grade points will be

figured by the same method that is used by Oregon State University. Tables will be developed to give an analysis of the comparisons that were made for each subject studied.

Characteristics of Students Studied

The group of students studied is the incoming class of 1962 in the School of Agriculture at Oregon State University. The incoming class of 1962 will be used rather than the graduating class 1966. This is done to eliminate transfer students from other colleges or returning students. The procedure provides a control over the uniformity of the group of students and the uniformity of the subjects that they studied.

REVIEW OF RELATED LITERATURE

Predicting scholastic success in college has been the subject of numerous studies. In attempting to stay within the scope of this paper, only literature that is of particular importance to the problem of this study has been cited.

Douglass (6) in a study made in 1931 at the University of Oregon concluded from a review of the literature that many good students are not allowed to enter college because of restricted entrance requirements. He, therefore, recommended that students should be allowed to enter on the basis of aptitude rather than upon a particular type of college preparatory course of study.

He supported his recommendation by concluding that there was no significant correlation between the number of units of credit earned in high school in any subject matter field and scholastic success in college.

Many factors play an important part in the success or failure of students in high school. The Eight Year Study brought forth some principles that related to this study. There was a great indication that high school grade point average is one of the most valid single factors in predicting college success.

Thirty high schools of various types, were selected with 25 colleges to participate in the study. The colleges expressed their

willingness to admit from these high schools, students who seemed competent to carry on college work successfully. There were no specific requirements for admission. The high schools were allowed to change their curricula whenever they felt it was necessary.

Instead of a lesson to be learned, the problem solving approach was used in most of the 30 high schools. To evaluate the college success of the students who graduated from the 30 schools, each student was matched with a comparable student who did not graduate from one of the participating high schools. Altogether 1475 pairs of students were studied. The committee conducting the study found the following to be true concerning graduates of the 30 high schools (1, p. 110-115).

1. They earned a higher total grade average.
2. They received slightly more academic honors in each year.
3. They had about the same problems of adjustment as the comparison group, but approached their solution with greater effectiveness.
4. They more often demonstrated a high degree of resourcefulness in meeting new situations.
5. They were more often judged to possess a high degree of intellectual curiosity and drive.
6. They were more often judged to be precise, systematic, and objective in their thinking.

7. They earned in each college year a higher percentage of non-academic honors.

A follow-up study of Corvallis High School graduates who studied General Chemistry at Oregon State College (30) found a coefficient of correlation between college chemistry and high school chemistry grade point averages of .71, and between college chemistry and high school total grade point averages of .67.

The Committee on Student Preparation at Oregon State College has issued a report on a study that attempted to determine what factors are useful in predicting student success in college.

Eleven factors were studied by the committee to determine which combination of the factors would be most useful in predicting student success. These factors were studied for the college as a whole and for the individual schools of the college (22, p. 2).

A. High School Records
   1. High School G.P.A.
   2. High School English points
   3. High School Mathematics points
   4. High School Science points

B. College Placement Tests
   5. "Q" score of the ACE Test
   6. "L" score of the ACE Test
   7. English test (Mechanics of Expression) score
   8. English test (Reading) score
   9. Mathematics test score
   10. Nature Science test score
   11. Social Science test score

The criteria of students' success used were the students' first-term grade point average and the students' cumulative grade point average.

The study revealed that all of the 11 factors, where used individually, were useful in predicting student success. However, when the factors were combined to obtain best combination of factors, only the high school grade point average made any essential contribution toward predicting student success.

The committee found that the high school grade point average predicted the first-term college grade point average with an 80.0 percent accuracy.

The Oregon State study was made from records of 1016 students who entered Oregon State in the fall of 1952 and graduated in 1956. It found that 611 students attained a 2.00 grade point average or better out of a total of 717 students who were predicted to do so. This left 106 students who did not do 2.00 or above work as predicted. Two hundred ninety-nine students were predicted to do below 2.00 work. Of this group, 158 students did fail in attaining a 2.00 grade point average. This left 141 students who were predicted to fail in attaining a 2.00 grade point average but who did 2.00 or better work. This fact helps point out that if colleges were to adopt a policy of

of admitting students on a basis of prediction from high school records, there would be some students who would be unjustly denied entrance. The study also pointed out that ten percent of the students who graduated were required to take at least one remedial course in English. Over 30 percent of the group had to take at least one course of remedial Mathematics. Excluding Mathematics 100, roughly 35 percent of the graduates had to take remedial Mathematics or English or both. The committee concluded the study by making the following recommendations: (22, p. 3)

1. If selective admission by a single measure is to be used by Oregon State College, the measure should be high school grade point average. Additional factors such as preparation in English and Mathematics may also be used.
2. Students denied regular admission should be allowed to make up deficiencies and earn a chance to demonstrate their ability to do college work.
3. High school students who wish to go to college should be well prepared in English, Mathematics, and Science.
4. The value of remedial courses should be carefully studied.
5. A continuing study and evaluation should be made of student records in relation to admission policies.

Long (18) in 1958 conducted a study to determine whether a vocational agriculture background in high school had any influence on students enrolled in the School of Engineering at Oregon State College. Only those students who enrolled in the School of Engineering and who completed three or more terms were included in the study. Some conclusions reached were:

1. The grade point average earned by the vocational agriculture students in freshmen Engineering was 2.57, and the mean for the all-freshmen group of engineers was 2.36.
2. Remedial Mathematics was taken by 68 percent of the vocational agriculture group and 39 percent of the all-freshmen group.
3. Nineteen percent of the vocational agriculture students registered in corrective English; 12 percent of the all-freshmen group enrolled in corrective English.

Long concluded that there was no basis for discrimination against the Vocational Agriculture program as preparation for scholastic work in the School of Engineering at Oregon State University.

Pedersen (25) in 1958 conducted an investigation to determine if there were any differences in first-year college performance in the School of Agriculture at Oregon State College between students who had a vocational agriculture background and those students who did not have a background of vocational agriculture. The grade point at

the end of the freshman year was used to measure scholastic performance, and the American Council of Education Psychological Examination and the high school decile were used as measures of intelligence and ability. In the analysis of the data, the difference in scholastic performance of the two groups of students was found to be small and it was considered, for the purpose of his study, to be no difference at all. The grade point averages of the two groups at the end of the freshmen year were nearly the same. The vocational agriculture group seemed to be slightly superior when grade point averages of the students were classified into class-intervals on a frequency distribution table.

Schmidt (28) conducted a study in 1959 comparing high school grades and college academic success, or achievement, in certain subject areas. The group of students studied was the incoming freshmen class of 1956 in the School of Agriculture at Oregon State College.

Conclusions reached from the comparisons made in this study were:

1. Only a small percentage of students who achieved (3.00 or above) in high school subjects of Mathematics, English, Chemistry, Biology or General Science, went on to achieve in the same subjects in college. It was indicated in his study that the percentage of students who go on to achieve in college was between 25 and 38 percent.

2. The students who did not achieve in the above subjects in high school have very little chance of achieving in the same subjects in college. It was indicated in his study, that the percentage of students who did not achieve in high school but went on to achieve in college was between nine and 33 percent.

3. The students who earned average or above grades (2.00 or above) in high school subjects of Mathematics, English, Chemistry, Biology and General Science, have a very good chance of earning average or above in the same subjects in college. It was indicated in his study that between 72 and 83 percent of the students who did average or above work in high school went on to do average or above work in college.

4. The students who do below average work in the above subjects in high school have a fair chance of attaining average or above grades in the same subjects in college. It was indicated in his study that over 50 percent of the students who did below average work in high school went on to do average or above in the same subjects in college.

5. The over-all high school decile rating was found to be one of the most accurate factors in predicting academic achievement in college. Achievement and a decile rating in the

upper ranks were found to be closely related. It was found in his study that between 64 and 90 percent of the students who achieved in the four subjects studied, were ranked in the top three decile ratings of eight, nine, and ten.

6. The students who had inadequate backgrounds in Mathematics and had to take remedial courses, performed just as well in the regular college courses of Mathematics as did students who were not required to take remedial courses.

7. The students who had inadequate backgrounds in English and who had to take remedial courses, did not perform as well in the regular college courses of English as did those students who were not required to take remedial courses.

8. High school preparation or background had little influence on the performance of students in the subject of Chemistry. This study gave definite indications that the students who did not take Chemistry in high school performed just as well in college Chemistry as those who took high school Chemistry. With the exception of the indications given by the remedial courses, it could not be determined in the subjects of Mathematics, English, and Botany whether high school preparation or background had any influence on performance in the same subjects in college. This was due to the fact that almost all of the students took these courses

in high school.

Entering freshmen at the State University of Iowa and Iowa State University were evaluated as to their performance in college in relationship to their high school grade point average. Scannell (27) found a correlation of .669 between college and high school grade point average. The study also evaluated the students as to the size of the high school they graduated from. Schools with over 200 students had a correlation of .698 whereas students from high schools of under 100 enrollment had a correlation of .633 high school grade point average with college grade point average.

A major problem faced by the admission offices of colleges and universities is the selection of students who are able to profit from higher education. High school guidance counselors have been equally concerned in planning with high school students in order that those going to college might have adequate preparation. In many institutions students are admitted on the strength of their high school grades, or their psychological test scores, or a combination of both. These practices have been supported in part by the results of several studies that have indicated statistically significant relationships among grades students obtain in high school, their test scores, and the grades they earned in college (30).

Phase II of Sharp's (30) study of college achievement sought answers to a series of questions concerned with relationships between

amount of high school study in a particular subject area and first year college grades in the same area when level of placement test score in that area is controlled. The criterion variable for answering these questions was grade point average received in the respective college courses. Control variables were amount of high school study and level of placement test score for each subject area. Analyses of variance for the factors of amount of high school study in a particular subject (English, Social Studies, Science, and Mathematics) and first year college grades were summarized and no relationships that were significant at the five percent level were found for the four subject areas.

According to the 1962 publication of the Joint Committee on School-College Relations of AACRAO and NASSP, most of the prediction studies demonstrate a consistent validity of certain prediction variables. The correlation between general college freshmen achievement and high school achievement is about 0.56 (12).

Michael and others (21) conducted a study to determine the predictive validity of high school grade point average, verbal scores, mathematics scores, and total (unweighted scores of the Scholastic Aptitude Test of the College Examination Board 'CEEB'), both individually and collectively, relative to a criterion of grade point average earned by 209 men and 233 women during their 1960-61 freshmen year in the College of Letters, Arts, and Science at the University of

Southern California. Their findings were in part:

1. For both sexes high school grade point average is more predictive of success in college than either part scores or total scores of the CEEB.
2. A least square linear combination of high school grade point average and CEEB total scores or of high school grade point average and differentially weighted verbal and quantitative CEEB scores yield a higher predictive validity than does anyone predictor.

Endler's and Steinberg's (9) study of the student population of a newly established liberal arts university in Ontario revealed several interesting results. The groups were divided by sex.

For the male sample the Grade 13 high school average had the highest correlations with English, Political Science, Psychology, Sociology, Geography, and French. For the Female sample the high school average had the highest significant correlations with English, Philosophy, Sociology, and French. - males .49 females .84.

Jex (16) obtained a similar result in his study.

Vick and Hornaday (32) studied the predictive validity of a battery of three standardized college entrance tests and high school ratings against a criterion of freshmen grade point averages. They found a correlation of .63 between high school grade point average and college grade point average, which was higher than the .477

correlation founded by Guisti in his study.

Guisti's (14) analysis of 397 men and women students who graduated from accredited high schools and who entered the College of Education of the Pennsylvania State University not more than three months after graduation in 1960 presented some interesting correlations.

The high school records were studied with respect to six variables: High School Index (HSI) or High School grade point average, and five high school subject matter fields. The grade point averages of each of these variables were standardized according to the grade point average system employed at the University. The college grade point average for the freshmen year was selected as the criterion.

Table 1. Intercorrelations, means, and standard deviations or predictor and criterion variables (N=397).

	Variables	CGPA	X_1	X_2	X_3	X_4	X_5	X_6
X_1	HSI	.477						
X_2	English	.401	.777					
X_3	Math	.338	.686	.410				
X_4	History	.342	.708	.524	.358			
X_5	Science	.274	.485	.352	.245	.348		
X_6	Language	.334	.683	.537	.409	.450	.317	
	Means	2.50	3.07	3.20	2.84	3.18	2.84	2.77
	Standard deviations	.51	.45	.51	.67	.55	.81	.83

r .113 significant at 5 percent level of confidence
r .148 significant at 1 percent level of confidence

Source:14, p. 816.

Although high school grade point was the best single indicator, intercorrelations between English and high school grade point average, and college were very high at . 777.

McCormick and Acher (19) investigated singularly and in combination the value of certain aspects of the high school record for predicting the grade point average of students completing the first semester of work in several colleges. The factors selected for study included the Otis Test of Mental Maturity, the Scholastic Aptitude Test of the College Entrance Examination Board, the School and College Ability Test, the high school grade point average, and the grades earned in five curriculum areas during three years of senior high school. The results were as follows:

Table 2. Intercorrelation matrix of Variables.

	Curriculum Areas						
	1	2	3	4	5	6	7
	English	Math	Science	Social Science	Foreign Lang.	H.S. G.P.A	F.S. G.P.A.
1.		.533	.361	.663	.696	.807	.469
2.			.629	.533	.659	.791	.580
3.				.458	.499	.572	.412
4.					.636	.749	.544
5.						.845	.575
6.							.593
7.							

Source 19, p. 700.

The correlations obtained for Mathematics and Foreign Languages, . 580 and . 575 respectively, are among the top three correlations found in the intercorrelation matrix. As a single measure high school grade point average is the one best predictor of the first semester grade point average.

Table 3. Summary of correlations of high school grade averages with college grade point averages.

	Date	Investigator	Institution	Time	Correlation
1.	1931	Douglass	University of Oregon	3-5 quarters	.56
2.	1933	Edds & McCall	Millegan College	1 semester	.65
3.	1935	Jones & Laslett	Oregon State College	3-4 years	.65
4.	1936	Gladfelter	Temple University	1 year	.68
5.	1936	Read	Wichita University	1 year	.67
6.	1937	Schmitz	St. Benedict's	1-2 semesters	.64
7.	1940	Dyer	University of Michigan	1 year	.44
8.	1941	Brown	University of California	2 years	.67
9.	1950	Cochran & Davis	George Peabody CT	1-3 semesters	.63
10.	1952	Frederiksen & Schrader	"Colleges"	1 year	.43 to .68
11.	1953	Webb & McCall	Emory University	1 year	.54
12.	1958	Carlson & Melstein	University of Oregon	1 quarter	.62
13.	1959	Henderson & Masten	Hofstra College	1 semester	.59
14.	1960	Scannel	Iowa State College & State College of Iowa	1-4years	.63 to .69
15.	1963	Endler & Steinberg	York University	1 year	.48 to .84

FINDINGS

The college academic performance of the incoming class of 1962 was studied by using the comparisons previously outlined. Each subject studied was organized into separate tables. These tables made up the following catagories:

Over-all consideration of the subject; the comparison between the high school students who achieved and college students who achieved in a particular subject; the comparisons between the high school and college students who did average and below average work in a particular subject; the comparison between students having or lacking subject background and achievement in a particular subject; and grade point average of the students in both high school and college in a particular subject area. Over-all consideration is given to size of high school and achievement in college.

The students were divided into four groups: Group I included students from schools with enrollment below 199, Group II's enrollment was 200-499 students, Group III's enrollment was 500-999 students, and Group IV's enrollment was 1000 students and over.

The student's over-all college grade point average was 2.31 compared with a high school grade point average of 2.83, which represents a drop of .52 grade point between high school and college.

Students from schools with an enrollment below 199 had the

highest high school grade point average but also had the greatest drop in grade point average between high school and college, 3.00 and 2.279 respectively or a drop of .72. Group II's high school grade point was 2.768 compared to a college average of 2.307 or a drop of .46. Group III's students grade point average dropped from a 2.85 to a 2.27 in college or a difference of .58. Group IV's students had the least difference between high school and college grades, 2.796 and 2.369 respectively or a drop of .43.

Eighty-nine of the students studied were graduated from Oregon high schools. Six students were California students, two were from Hawaii, and one each from Alaska, Montana, Indiana, and Washington.

Performance of Mathematics Students

Over-all Considerations

The general aspects of Mathematics students as summarized in Table 4 are self-explanatory. It should be noted that two of the students studied did not take high school Mathematics and only one student did not take college Mathematics.

Table 4. Comparisons of high school and college Mathematics by school size.

	Size of School				
	199	200-499	500-999	1000+	Total
Total number of students studied	9	30	31	31	101
Total number of high school Math students	9	29	30	31	99
Number of high school students 3.00 and above	6	9	10	12	37
Number of high school students below 3.00	3	20	20	19	62
Number of high school Math students 2.00 and above	9	23	22	28	82
Number of high school Math students below 2.00	0	6	8	3	17
Total number of Math 101 students	6	24	27	26	83
Number of college students who did not take Math 101	3	6	4	5	18
Number of college students who took other Math	8	25	24	23	80
Number of college students who took no Math	0	0	1	0	1
Number of Math 101 students 3.00 and above	1	9	10	6	26
Number of Math 101 students below 3.00	5	15	17	20	57
Number of Math 101 students 2.00 and above	5	22	19	20	66
Number of Math 101 students under 2.00	1	2	8	6	17
Number of college students who failed Math 101	0	0	1*	1	2
Total number of Math 100 students	6	22	22	23	73
Total number remedial Math	3	7	6	6	22

*Took class over and received a B

Table 5 shows a comparison between those students who achieved in high school Mathematics and those who achieved in college Mathematics 101. Eighty-three comparisons were made in Mathematics where the student took both high school Mathematics and college Mathematics 101. Of the 32 students who achieved in high school, 16 went on to achieve in college Mathematics 101. If it had been predicted that those who achieved in high school Mathematics would also achieve in college Mathematics 101, the prediction would have been 50 percent correct. Of the 51 students who did not achieve in high school Mathematics 80 percent did not achieve in college Mathematics 101.

It is shown that 16 students did not do as well in college Mathematics 101 as they did in high school Mathematics, however, 10 did better in college Mathematics 101 than in high school Mathematics.

Table 5. A comparison of students who achieved in high school and college Mathematics.

	Size of School				
	199	200-499	500-999	1000+	Total
High school Math 3.00 and over, College Math 101, 3.00 and over	1	5	6	4	16
High school Math 3.00 and over, College Math 101 under 3.00	3	3	4	6	16
High school Math under 3.00 College Math 101, 3.00 and over	0	4	4	2	10
High school Math under 3.00, College Math 101 under 3.00	2	12	13	14	41
Total number of usable comparisons	6	24	27	26	83

A comparison is shown in Table 6 between average students in college and the average students in the subject of college Mathematics 101. The Table also shows the total performance of all high school and college Mathematics 101 students. If it had been predicted that those students who did average or above in high school Mathematics would do average or above in college Mathematics 101, the prediction would have been 83 percent correct. Eleven students did below 2.00 work in high school Mathematics. Of these 11 students, 7 did average or above in college Mathematics 101. Thus Table 6 tends to indicate that those students who earned less than 2.00 in high school Mathematics have better than 66 percent chance of attaining 2.00 or above in college Mathematics. It is possible the factors of motivation and interest may have had a bearing on the performance of these particular students.

Table 6. A comparison of average and above, and below average students in high school and college Mathematics.

	Size of School				
	199	200-499	500-999	1000+	Total
High school Math 2.00 and over, college Math 101, 2.00 and over	5	19	16	19	59
High school Math 2.00 and over, college Math 101, under 2.00	1	1	7	4	13
High school Math under 2.00, college Math 101, 2.00 and over	0	3	3	1	7
High school Math under 2.00, college Math 101 under 2.00	0	1	1	2	4
Total number of usable comparisons	6	24	27	26	83

In Table 7, three comparisons are actually made. The first comparison is between adequate background and achievement in college Mathematics 101. The second comparison is between those who took college Mathematics 100 and their achievement in college Mathematics 101. The third comparison is between those students who took remedial Mathematics 10 and college Mathematics 101. To determine if a student's background was adequate, the assumption was made that the Mathematics A.C.E. test was a valid indication of Mathematics background and ability. To develop assumptions further, it was assumed that those students who had to take remedial Mathematics 10 or Mathematics 100 had inadequate backgrounds for college Mathematics 101. It was also assumed that those students who did not take Mathematics 10 or 100 had adequate background for college Mathematics 101. In Table 5 there were 22 students who took no remedial or intermediate Mathematics. Of these 22 students, 11 achieved in Mathematics 101. Also shown in Table 7, 61 students took intermediate Mathematics 100. Of these 61 students, 16 achieved in college Mathematics 101. Of the ten students who took remedial Mathematics, only two achieved in college Mathematics 101, but seven students received 2.00 or above and only one failed college Mathematics 101.

It appears that the Mathematics A.C.E. test is reasonably adequate as shown by the fact that 50 percent of those whose score allowed them to take college Mathematics 101 without additional background

achieved a 3.00 or better.

Table 7. A comparison of high school Mathematics background and achievement in college Mathematics.

	Size of School				
	199	200-499	500-999	1000+	Total
Total number of students who took college Math 100 and 101	5	19	20	17	61
Number of students who took Math 100 and achieved in college Math 101	1	6	6	3	16
Number of students who took Math 100 and failed college Math 101	0	0	1	1	2
Total number of students who took no Math 100 and took college Math 101	1	5	7	9	22
Number of students who took no Math 100 and achieved 3.00 or above in Math 101	0	4	4	3	11
Number of students who took remedial Math and Math 101	0	3	4	3	10
Number of students who took remedial Math and achieved in Math 101	0	1	0	1	2
Number of students who took Math 10, and college Math 101, students 2.00 and above	0	3	2	2	7

High School Mathematics Grade Point Average Versus College Mathematics Grade Point Average

Table 8, compares the high school Mathematics grade point average with college Mathematics grade point average. Also compared is the high school and college grade point average of those

students who took intermediate Mathematics 100, then Mathematics 101. Another comparison was made of their over-all high school and college grade point average.

Of the students who only took college Mathematics 101, their high school Mathematics grade point average was 2.94 and college Mathematics grade point average was 2.41. Those students taking Intermediate Mathematics 100 first then college Mathematics 101 had a high school Mathematics grade point average of 2.48 and a college Mathematics grade point average of 2.02. For both groups the college Mathematics grade point average dropped approximately .5 of a grade point from their high school Mathematics grade point average.

There is some indication that the more able student as measured by his grade point average is able to more successfully complete Mathematics 101 without the benefit of Mathematics 100.

Table 8. A comparison of grade point average received by high school and college students in Mathematics.

	Size of School					
	199	200-499	500-999	1000+	Average	Total
I. Number of students taking Math 101	1	5	7	9		22
High school Math grade point average of those students taking Math 101 only	3.5	2.89	2.93	2.91	2.94	
College Math 101 grades of these students	2.0	2.71	1.93	2.63	2.41	
High school grade point average over-all	3.35	3.09	2.98	3.12	3.08	
College grade point average over-all	1.80	2.39	2.09	2.67	2.32	
II. Number of students taking Math 100 and then Math 101	5	19	20	17		61
High school Math grade point average of those taking Math 100 and then Math 101	2.95	2.46	2.43	2.43	2.48	
College Math 101	2.00	2.23	2.05	1.78	2.02	
High school over-all	3.15	2.64	2.83	2.69	2.76	
College over-all	2.45	2.35	2.35	2.38	2.37	
III. Total average high school Math grade point average	3.04	2.55	2.56	2.60	2.60	
IV. Total average college Math grade point average	2.0	2.33	2.02	2.07	2.14	
Difference (III-IV)	1.04	.22	.54	.53	.46	

Of the students included in this study, those from school with over 1000 enrolled appeared to be the best prepared to take college Mathematics 101 without further background needed. Students from schools of 200-499 enrollment had the least variation between high school and college Mathematics grade point average.

Summary of Mathematics

1. Fifty percent of those students who achieved in high school Mathematics achieved in college Mathematics 101.
2. Eighty percent of the students who did not achieve in high school Mathematics did not achieve in college Mathematics.
3. Eighty-three percent of the students who did average or above in high school Mathematics also earned average or above grades in college Mathematics 101.
4. Sixty-three percent of the students who earned below a 2.00 in high school Mathematics earned a 2.00 or above in college Mathematics 101.
5. The greatest difference between high school and college grades was with students from schools under 199 students.

Performance of English Students

Over-all Considerations

As indicated in Table 9, all 101 students studied were enrolled in high school English.

Table 9. Comparisons of high school and college English by school size.

	Size of School				
	199	200-499	500-999	1000+	Total
Total number of students studied	9	30	31	31	101
Number of high school students 3.00 and above	3	7	7	5	22
Number of high school students below 3.00	6	23	24	26	79
Number of high school students below 2.00	0	4	4	4	12
Total number of college English students	9	29	27	27	92
Number of college students who did not take English 111, 112, 113	0	1	4	4	9
Number of college students 3.00 and above	0	4	4	3	11
Number of college students below 3.00	9	25	23	24	81
Number of college English students under 2.00	5	13	11	13	42
Number of college students who failed:					
English 111	0	0	1	0	1
English 112	0	1	1	0	2
English 113	0	2	1	2	5

Table 10 shows a comparison between those students who achieved in high school English and those students who achieved in college English. This table also shows the total performance of all the college and high school English students who were compared. The usable comparison consisted of those students who took both high school English and college English 111, 112, and 113. If it had been predicted that those who achieved in high school English would also achieve in college English, the prediction would have only been 37 percent correct. This table also reveals that 96 percent of the students who did not achieve in high school English did not achieve in college English.

Table 10. A comparison of students who achieved in high school and college English.

	Size of School				
	199	200-499	500-999	1000+	Total
High school English 3.00 and over, college English 3.00 and over	0	2	3	3	8
High school English 3.00 and over, college English under 3.00	3	5	4	2	14
High school English under 3.00, college English 3.00 and over	0	2	1	0	3
High school English under 3.00, college English under 3.00	6	20	19	22	67
Total number of usable comparisons	9	29	27	27	92

Table 11 is a comparison of average high school English students with average college English students. If it had been predicted that those students who did average or above work in high school English will do average or above in college English, the prediction would have been 61 percent correct. It is indicated that 91 percent of those students who failed to do average or above in high school English will not do average or above in college English.

Table 11. A comparison of average and above, and below average students in high school and college English.

	Size of School				
	199	200-499	500-999	1000+	Total
High school English 2.00 and over, college English 2.00 and over	4	16	16	13	49
High school English 2.00 and over, college English under 2.00	5	9	7	10	31
High school English under 2.00, college English 2.00 and over	0	0	0	1	1
High school English under 2.00, college English under 2.00	0	4	4	3	11
Total number of usable comparisons	9	29	27	27	92

High School English Grade Point Average Versus College English Grade Point Average

Table 12 compares high school English grade point average and college English grade point average. Also comparisons are shown of high school over-all grade point averages with college over-all grade

point averages. As shown in Table 12 there is a drop of grade point average from 2.56 to 1.95 or a .61 decrease in grade point between high school and college grade point average in English. This is more than the .46 grade point drop recorded with Mathematics students similarly compared.

Table 12. A comparison of grade point averages received by high school and college students in English.

	Size of School				Aver-	
	199	200-499	500-999	1000+	age	Total
Total number of usable comparisons	9	29	27	27		92
High school over-all grade point average	3.00	2.77	2.86	2.80	2.80	
College over-all grade point average	2.28	2.31	2.27	2.37	2.31	
Difference	.72	.46	.59	.43	.49	
High school English grade point average	2.82	2.56	2.57	2.46	2.56	
College English grade point average	1.82	1.93	1.99	1.98	1.95	
Difference between college and high school English	1.0	.63	.58	.48	.61	

Of the students compared, in all cases, all groups showed a decrease in grade point average between high school English and college English. The widest margin occurred in the school below 199 students, this being a full grade point drop. The difference became progressively smaller as high school size increased, with schools over 1000

students enrolled showing a decrease of .48 of a grade point.

When compared with results obtained in the Mathematics section, the school size below 199 students also dropped one full grade point between high school and college Mathematics.

Summary of English

1. Thirty-seven percent of the students who achieved in high school English achieved in college English.
2. Ninety-six percent of the students who did not achieve in high school English did not achieve in college English.
3. Sixty-one percent of the students who did average or above in high school English also earned average or above in college English.
4. Ninety-one percent of the students who did below average in high school English earned below average grades in college English.
5. The greatest difference was noted in the students from schools under 199 enrollment. They dropped one full grade point in college English from their performance in high school English.

Performance of Chemistry Students

Over-all Considerations

Of the 86 students who completed high school Chemistry, 29 did not take college Chemistry or complete a sequence of General Chemistry 101, 102, 103 or 201, 202, 203. Only 57 comparisons were available in Chemistry.

Table 14 draws a comparison between those students who achieved in high school Chemistry and those students who achieved in college Chemistry. Table 14 also shows the performance of all of the college and high school students compared. Of these 57 students, 25 achieved in high school Chemistry. Of these 25 students, 10 achieved in General Chemistry in college. If it had been predicted that those who achieved in high school Chemistry would also achieve in college Chemistry, the prediction would have been 40 percent correct. Of the 32 students who did not achieve in high school Chemistry, 9 or 28 percent achieved in college Chemistry.

Table 13. Comparisons of high school and college Chemistry by school size.

	Size of School				
	199	200-499	500-999	1000+	Total
Total number of students in study	9	30	31	31	101
Total number students in high school Chemistry	7	25	28	26	86
Number of high school students who took no Chemistry	2	5	3	5	15
Number of high school students 3.00 and over	4	9	11	10	34
Number of high school students below 3.00	3	16	17	16	52
Number of high school students below 2.00	3	6	3	3	15
Total number of college Chemistry students	6	28	25	25	84
Number of college students who did not take the General Chemistry 101, 102, 103 or 201, 202, 203 sequence	5	6	8	10	29
Number of college students who took other Chemistry	2	4	2	4	12
Number of college students who took no Chemistry	3	2	6	6	17
Number of college Chemistry students 3.00 and over	0	9	8	7	24
Number of college Chemistry students below 3.00	6	19	17	18	60
Number of college Chemistry students under 2.00	2	8	7	12	29
Number of students who failed college Chemistry	0	0	1	0	1

Table 14. A comparison of students who achieved in high school and college Chemistry.

	Size of School				
	199	200-499	500-999	1000+	Total
High school Chemistry 3.00 and over, college Chemistry 3.00 and over	0	4	3	3	10
High school Chemistry 3.00 and over, college Chemistry under 3.00	2	3	6	4	15
High school Chemistry under 3.00, college Chemistry 3.00 and over	0	4	3	2	9
High school Chemistry under 3.00, college Chemistry under 3.00	1	8	6	8	23
Total number of usable comparisons	3	19	18	17	57

Table 15 compares the average students in high school and the average students in college in the subject of Chemistry. The table also shows the total performance of all of the high school and college Chemistry students who were compared. Of the 48 compared students who did average or above work in high school Chemistry, 36 did average or above work in college Chemistry. If it had been predicted that students who did average or above work in high school Chemistry, would also do average or above in college Chemistry, the prediction would have been 75 percent correct. There were 9 students who earned below a 2.00 in high school Chemistry and of these 9 students, there were 7 who earned 2.00 or above in college Chemistry. From

these figures, however small, there is an indication that students who earned below average in high school Chemistry have a 78 percent chance to earn average or above grades in college Chemistry.

Table 15. A comparison of average and above, and below average students in high school in college Chemistry.

	Size of School				
	199	200-499	500-999	1000+	Total
High school Chemistry 2.00 and over, college Chemistry 2.00 and over	2	13	12	9	36
High school Chemistry 2.00 and over, college Chemistry under 2.00	0	1	4	7	12
High school Chemistry under 2.00 college Chemistry 2.00 and over	1	4	2	0	7
High school Chemistry under 2.00 college Chemistry under 2.00	0	1	0	1	2
Total number of usable comparisons	3	19	18	17	57

There are no remedial courses in Chemistry at Oregon State University. Therefore, background was determined by a student taking or not taking Chemistry in high school. In Table 16, two comparisons are made. The first comparison is between Chemistry background and achievement in General Chemistry. The second comparison is between no Chemistry background and achievement in college Chemistry.

There is a definite indication that those students who did not

have high school Chemistry performed just as well in General Chemistry as those students who had taken high school Chemistry. As so shown in Table 17 there was only .07 of a grade point difference favoring those who had taken high school Chemistry.

Table 16. A comparison of high school Chemistry background and achievement in college Chemistry.

	Size of School				
	199	200-499	500-999	1000+	Total
Total number of students who took high school Chemistry and college Chemistry	3	19	18	17	57
Number of students who took high school Chemsitry and achieved in college Chemistry	0	8	6	5	19
Number of students who took high school Chemistry and failed college Chemistry	0	0	1	0	1
Total number of students who took no high school Chemistry and took college Chemistry	1	4	2	5	12
Number of students who took no high school Chemistry and achieved in college Cehmistry	0	1	2	1	4
Number of students who took no high school Chemistry and failed college Chemistry	0	0	0	0	0
Number of students who took no high school Chemistry and took college Chemistry 2.00 and above	0	1	2	4	7
Number of students who took high school Chemistry and college Chemistry 2.00 and above	3	17	18	9	47

High School Chemistry Versus College Chemistry

On 57 usable comparisons, the average Chemistry grade point average dropped only .03 of a point from high school to college General Chemistry. This very slight drop in grade point between high school and college Chemistry is in sharp contrast to the .61 point drop in English and the .46 point drop in college Mathematics. Students not taking high school Chemistry did just as well in college General Chemistry as those who had taken high school Chemistry.

Size of High School Versus Success in College General Chemistry

Table 17 compares size of high school with success in college General Chemistry. Students from schools over 1000 showed the greatest drop from high school Chemistry to college General Chemistry. Also this group had the poorest college grade point average for college Chemistry. The students from schools in the 200-499 student grouping actually improved upon their Chemistry grade from high school to college.

More students took college Chemistry 201, 202, 203 from the group of students from large high schools, which indicates that their high school preparation was sufficient to qualify for the higher level sequence.

Table 17. A comparison of grade point averages received by high school and college Chemistry students.

	Size of School				
	199	200-499	500-999	1000+	Total
Number of usable comparisons	3	19	18	17	57
High school grade point average--Chemistry	2.50	2.37	2.50	2.50	2.46
College Chemistry grade point average	2.45	2.64	2.35	2.24	2.43
Difference	.05	+.27	.15	.26	.03
Number of college Chemistry students who took no high school Chemistry	1	4	2	5	12
College Chemistry grade point average of those students who did not take high school Chemistry	1.33	2.02	3.50	2.40	2.36

Summary of Chemistry

1. Forty percent of those students who achieved in high school Chemistry also achieved in college Chemistry.
2. Seventy-two percent of the students who did not achieve in high school Chemistry did not achieve in college Chemistry.
3. Seventy-five percent of the students who earned average or above grades in high school Chemistry, earned average or above grades in college Chemistry.
4. Seventy-eight percent of the students who earned below average grades in high school Chemistry, earned average or

above in college Chemistry.

5. The students who did not have high school Chemistry performed just as well in college Chemistry as those who had taken high school Chemistry.
6. Students from schools with 200-499 students earned college Chemistry grade .27 of a point higher than their high school Chemistry grades.

Performance of Science Students

Over-all Considerations

Few high schools offer Botany, therefore, the courses General Science and Biology have been used to compare with college Science. Out of 101 students, only two did not take either Biology or General Science in high school. There were 25 college students who did not take college Science. College Science courses included Botany 201, 202, 203; General Science 101, 102, 103; and Zoology 201, 202, 203.

The courses taken in high school and college, Biology, Botany, General Science, and Zoology will be referred to as high school Science and college Science respectively.

Table 18. Comparisons of high school and college Science by school size.

	Size of School				
	199	200-499	500-999	1000+	Total
Total number of students studied	9	30	31	31	101
Total number of high school Biology and Science students	9	29	31	30	99
Number of high school students who did not take Biology or Science	0	1	0	1	2
Number of high school students 3.00 and above	5	12	17	21	55
Number of high school students below 3.00	4	17	14	9	44
Number of high school students 2.00 and above	9	27	29	29	94
Number of high school students below 2.00	0	2	2	1	5
Total number of college Science students	9	28	27	29	93
Number of college students who did not take Science	0	2	4	2	8
Number of college students 3.00 and above	2	7	7	6	22
Number of college students below 3.00	7	21	20	23	71
Number of college students 2.00 and above	5	22	16	26	69
Number of college students below 2.00	4	6	11	3	24

Table 19 compares those students who achieved in high school Science and those who achieved in college Science. Also shown in Table 19 is the total performance of all high school and college Science

students. There were 53 students who achieved a 3.00 or better in high school Science. Of these 53 students, 13 also achieved in college Science. If it had been predicted that those students who achieved in high school Science would achieve in college Science, the prediction would have been 24 percent correct. There were 38 students who did not achieve in high school Science, of this number seven achieved in college Science. Therefore, it could be predicted that 82 percent of those who do not achieve in high school Science would not achieve in college Science.

Table 19. A comparison of students who achieve in high school and college Science.

	Size of School				
	199	200-499	500-999	1000+	Total
High school Sciences 3.00 and over, college Science 3.00 and over	1	3	5	4	13
High school Sciences 3.00 and over, college Science under 3.00	4	9	11	16	40
High school Science under 3.00 college Science 3.00 and over	1	3	2	1	7
High school Science under 3.00, college Science under 3.00	3	12	9	7	31
Total number of usable comparisons	9	27	27	28	91

A comparison between average students in high school Science and the average students in college Science was made. Of the 91 usable comparisons, 88 students did average or above average work in

high school Science. Sixty-four or 73 percent of these 88 students did average or above in college Science. Only three students who did not do average work in high school Science took college Science. Of the three students, two did average or above work in college Science.

Table 20. A comparison of average and above, and below average students in high school and college Science.

	Size of School				
	199	200-499	500-999	1000+	Total
High school Science 2.00 and over, college Science 2.00 and over	5	20	14	25	64
High school Science 2.00 and over, college Science under 2.00	4	5	12	3	24
High school Science under 2.00, college Science 2.00 and over	0	1	1	0	2
High school Science under 2.00, college Science under 2.00	0	1	0	0	1
Total number of usable comparisons	9	27	27	28	91

High School Size Versus Performance in College Science

Table 21 compares high school and college Science grade point average with the size of high school. Students from schools with enrollment less than 199 students dropped .97 of a grade point. This drop corresponds with similar drops experienced in Mathematics and English. The students from schools with 500-1000 enrollment grade

point drop was .71, followed by decreases of .52 and .51 for schools over 1000 and 200-499 students respectively. It appears that on the average, high school students drop about two-thirds of a grade point between high school Science and college Science.

Table 21. A comparison of grade point averages received by high school and college students in Science.

	Size of School				Aver-	
	199	200-499	500-999	1000+	age	Total
Total usable comparisons	9	27	27	28		91
Difference between high school and college over-all grade point average	.72	.46	.59	.43	.49	
High school Science grade point average	2.80	2.72	2.96	3.00	2.89	
College Science grade point average	1.85	2.21	2.24	2.45	2.27	
Difference between high school and college grade point average	.97	.51	.72	.55	.62	

Summary of Science

1. Twenty-four percent of those students who achieved in high school Science also achieved in college Science.
2. Eighty-two percent of those students who did not achieve in high school Science did not achieve in college Science.
3. Seventy-three percent of the high school students who did average or above in high school Science, did average or

above in college Science.

4. College Science grade point dropped .62 point from high school Science grade point average.

5. Students from high schools under 199 students lost .97 of a grade point in college Science.

1. Only a small percentage of the students who achieved (3.00 and above) in high school subjects of Mathematics, English, Chemistry, Biology and General Science went on to achieve in the same subjects in college. It was indicated in this study that the percentage of students who go on to achieve in college was between 35 and 40 percent.
2. The students who did not achieve in the above subjects in high school have very little chance of achieving in the same subjects in college. It was indicated in this study, that the percentage of students who did not achieve in high school and went on to achieve in college was between four and 28 percent.
3. The students who earned average or above grades (2.00 or above) in the high school subjects of Mathematics, English, Chemistry, Biology and General Science have a very good chance to earn average or above grades in the same subject areas in college. It was indicated by this study that the percentage of students who go on to receive average or above grades in college is between 61 and 83 percent.
4. The students who do below average work in the above subjects, excepting English, in high school have a fair chance of attaining average or above grades in the same subjects in college. It was indicated in this study that two-thirds of

the students who do below average work in high school subjects of Mathematics, Chemistry, Biology and General Science do average or above work in college. Only nine percent of the students who earned below average high school grades in English do average or above in college English.

5. The grade point average between high school subjects of Mathematics, English, Chemistry, Biology and General Science and the college classes in the same subject area dropped .43. The largest drop being Science and English with a minus grade point average of .62 and .61 respectively. Mathematics dropped .46 and Chemistry .03.

6. The average high school grade point average of the 101 students studied was 2.82 for all work done in high school. The same student's over-all college grade point at the time of the study was 2.31. This indicates a decline of .51 between high school and college for all work taken.

7. Students from schools with enrollments under 200 had an over-all grade point drop of .72 whereas their grade point average for the selected subjects studied dropped .76.

8. Students from schools with enrollments of 200-499 had an over-all grade drop of .46 from high school to college,

whereas their grades dropped only .27 in the selected subjects studied.

9. Students from schools with enrollment from 500-999 had an over-all grade point drop of .58 between high school and college whereas their grades dropped .49 in the selected subjects studied.
10. Students from schools with enrollments of over 1000 had an over-all grade point drop of .43 between high school and college, whereas their grades dropped .47 in the selected subject areas.
11. The study indicates that school size has little to do with success in college, but it does indicate the small school (under 199 students) gives their students higher grades.

Recommendations

The following recommendations based on the conclusions made in this study are:

1. High school teachers who counsel prospective college students should become familiar with the student's grades. This knowledge of the student's ability and potential, based on grades, will give the high school personnel a sis for constructive counseling and advice.
2. High school personnel should be aware of the student's

strong and weak areas. With this information, the counselor can point out to the student what problems he can expect to have in college.

3. The school's size has very little to do with success in college, although high school students from small schools have higher initial high school grade point averages. Therefore, it is recommended that teachers and school personnel in small schools challenge their students more.
4. The colleges and universities continue to select their students by a combination of high school grade point averages and entrance examinations.

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