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The Relationship of the High School Grade Point Average and the Washington Pre-College Differential Grade Prediction Test to Academic Achievement of Varsity Athletes at Central Washington State College

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THE RELATIONSHIP OF THE HIGH SCHOOL GRADE POINT AVERAGE

AND THE WASHINGTON PRE-COLLEGE DIFFERENTIAL GRADE

PREDICTION TEST TO ACADEMIC ACHIEVEMENT

OF VARSITY ATHLETES AT CENTRAL

WASHINGTON STATE COLLEGE

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by

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CHAPTER I

INTRODUCTION AND STATEMENT OF THE STUDY

I. INTRODUCTION

Freshmen students who enter Central Washington State College are admitted into school on the basis of their high school grade point averages. As enrollments have increased, four year colleges in the State of Washington have found it necessary to limit the number of students in attendance. They are attempting to accomplish this by raising the minimum high school grade point average requirement.

Since 1958, Central Washington State College, at Ellensburg, Washington has required that all entering freshmen students take the Washington Pre-College Differential Grade Prediction Test. This test has been used primarily for guidance purposes, and determination of the strengths and weaknesses of the student in the various areas of the school program.

II. STATEMENT OF THE STUDY

The purpose of this study was to determine the accuracy of high school grade point averages, and the Washington Pre-College Differential Test in determining the academic achievement of varsity athletes at Central Washington State

College.

High school grade point averages have been used traditionally as a method of forecasting academic success in college. One purpose of this study was to determine the accuracy of high school grade point averages in predicting academic success in college by relating them to the college cumulative grade point averages.

A second purpose of this study was to compare the student's Washington Pre-College Differential Prediction Test score with his cumulative college grade point average to determine the accuracy of prediction.

III. DEFINITION OF TERMS

High School Grade Point Average

The student's high school grade point average is an average of all grades received in high school. An **A** receives four grade points (4.0) for each hour of credit; a **B**, three grade points (3.0); a **C**, two grade points (2.0); a **D**, one grade point (1.0); and a failing grade, no grade points (0.0). The total number of grade points is divided by the number of credits earned, and the resulting average is referred to as the grade point average or the high school GPA. If the high school student should graduate with a 3.50 grade point average, his GPA on a four point scale would be:

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0          1          2          3          4
                                        *
_____
                                       3.5
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College Cumulative Grade Point Average

The college cumulative grade point average for this study was determined by the students' grades as of June 15, 1965. The college GPA is computed in a manner quite similar to the high school GPA; however, the total number of points is divided by the number of quarter hours attempted, and this determines the college cumulative GPA.

Washington Pre-College Differential Prediction Test

The Washington Pre-College Differential Prediction Test is a battery of tests given to high school seniors to predict the chance of academic success in the subject areas of the college curriculum. The GPA for each high school subject is added to the test score in predicting academic success in the similar college subject area. The Washington Pre-College Differential Prediction Test also makes general predictions of the student's over-all grade point average.

IV. STATEMENT OF THE HYPOTHESES

The minimum grade point average for freshmen seeking admission to Central Washington State College is now a two point (2.0) on the basis of high school grades. In future

years, as increased enrollment results in crowded facil-
ities Central Washington State College will find it nec-
essary to limit, even more, the incoming freshmen. As it
appears now this will be accomplished by raising the grade
point requirement. This is an important decision, and a
study of the accuracy of the predictive value of the high
school grade point is indicated; as well as, a determination
of the validity of the Washington Pre-College Differential
Prediction Test.

The following hypotheses will either be verified or
rejected as a result of the findings of this study:

The high school grade point average is not accurate
in predicting academic success of varsity athletes at
Central Washington State College.

The Washington Pre-College Differential Grade Predic-
tion Test lacks validity in predicting academic success
of varsity athletes at Central Washington State College.

CHAPTER II

REVIEW OF LITERATURE

More than one million high school graduates are seeking admission to the nation's colleges each fall. The colleges are becoming over-crowded, and it has become necessary to limit the number of entering freshmen. The minimum grade point average for high school graduates who desire to attend Central Washington State College is a two point (2.0), and in future years it will be raised.

College authorities have a responsibility to admit the best qualified students, and traditionally the high school GPA has been used as the criterion for selection. In today's world it is becoming more important that all qualified young people receive a college education. For many years authorities in education have proclaimed the validity of the high school GPA in determining academic ability.

Some studies have indicated that tests given before the senior year have validity in predicting college achievement. In 1935, Byrns and Henmon stated that they could predict college academic success from a combination of the tenth-grade average, and an intelligence quotient measure obtained as early as the fourth grade (3:587-590).

Stone reported that the most effective predictors of scholastic aptitude were the high school grade point average,

some measure of scholastic aptitude, and an objective measure
of high school achievement (11:108-109).

Hanford, in defending college entrance procedures
reports:

> If a college could use only one thing to help it
> predict performance in college, it would be the grades
> a student got in high school. In other words, grades
> alone predict better how kids will do in college than
> test scores alone. But when you put the two together
> you get a better prediction than from the GPA alone
> (6:19-20).

In 1963, Willingham stated that the student's cumula-
tive grade point average is probably most often regarded as
the best single indicator of ultimate success or failure in
college work (14:389).

In a study of freshmen students at the University of
California, it was reported that in general, the high school
GPA was a significantly better predictor than the College
Qualification Test which is a multi-score aptitude test (7:49-50).

In a similar type of study, the freshmen students at
the University of Southern California from 1956 through 1961
were tested. The study was based on the student's GPA, and
test score on the Scholastic Aptitude Test. Michael and Jones
reported, after the conclusion of the study, that the high
school record was consistently a better predictor (9:376-377).

In more recent years, some authorities in education
have challenged the predictive validity of the high school
GPA in determining academic success in college.

In a follow-up of the study by Michael and Jones, it was reported that with progressive restrictions in the range of measures in various selective devices, reduction in the variance in predictors may be expected in colleges that require from year-to-year higher minimum standing. Correspondingly, a device in the size of predictive validity coefficients may be anticipated; although the relative importance of each predictor may remain essentially invariant (9:378).

Stroup states that the only change that has taken place in the GPA in the last thirty years was concerned with speeding up the operation of computing. She continues that in September 1962, almost a million well-screened and carefully selected high school graduates entered college, and many of the students became casualties by the end of the school year. There is something intrinsically tragic about any casualty, and the tragedy is compounded when a dismissal student is the victim of the overworked, and inaccurate instrument used by most colleges for identifying academic failures. As enrollments increase, more institutional decisions regarding students have to be made. Under pressure for uniformity and objectivity the GPA has become, not the basis for decisions, but virtually the decision maker. Indiscriminate use of the GPA is often due more to its availability than to its suitability (12:13-14).

Many colleges in the United States have constructed prediction tests, and in some states these are being used in determining freshmen admission. There is an apparent realization by leaders in education that new methods are needed in the areas of prediction, counseling, and dismissal.

Stroup says, society has the right to expect colleges to develop and to use the most precise instruments possible when identifying students for admission or dismissal (12:14-15).

The Washington Pre-College Differential Prediction Test prepared at the University of Washington is used primarily for counseling purposes, but it also makes a prediction of general college success.

In evaluating the Washington Pre-College Differential Prediction Test, Angell states that the predictor selection techniques employed by Horst, and reported by Mills and others does the best job of differentially predicting the academic success of college students and does the best job, in general, of predicting each of the relevant subject criteria (1:418-419).

The principal purposes of the Washington Pre-College Differential Prediction Testing Program are:

1. To provide students and their counselors, teachers, and administrators information about students to be considered in educational and vocational planning.

2. To assist high school and colleges in providing a common program of testing for multiple uses.

3. To provide a testing and research program in which research is a fundamental and integral part directed toward providing more effective methods and data for testing and guidance.

4. To assist students and high school personnel in determining the type of education or training desired after graduation from high school.

5. To assist colleges in the classification of students.

6. To provide information and norms useful in evaluation and research (5:1).

Testing is just one aspect of the program. The information furnished by the program does not itself become a counseling and guidance program. Its purposes can be attained only within an effective guidance program directed by qualified personnel. The state-wide program also serves as a common testing program for various uses by different colleges within the state. Rather than varying tests for different purposes, colleges may now have tests for multiple use. As an example, data from the Washington Pre-College Prediction Testing Program is used at Washington State University in selecting students for the University honors program as well as placement in specific areas. Other institutions also make varying use of the data from the program for multiple purposes, thus avoiding a costly and burdensome testing program for each use made of the testing data. The testing program also serves as a valuable research source in studying students, testing instruments, predictions, and

other related subjects. By providing basic data for a
multiple number of students and academic grades, the coun-
selor has better information relative to educational planning.
Time is saved by providing this basic data, and costly small
testing programs are eliminated (5:6).

The student's data report in the Washington Prediction
Test contains the expected grade average for that student in
forty-two college subject areas, and for all his college
courses combined. These are predictions of the grades the
student will attain in college. As such, they represent the
best possible estimate that we are able to make using the
data. Although they are the best predictions that can be
made they are, like all predictions of college grades, not
highly accurate (5:10).

In the conclusion of his doctoral dissertation, "A
Follow-Up Study of the Washington Pre-College Differential
Guidance Tests at Seattle University," Dr. Herbert D. Reas
states:

> A comparison of the means and standard deviation in
> the achieved grades showed few and small differences
> between the two Universities (Seattle University and
> the University of Washington). There were much greater
> differences between mean grades assigned in different
> departments in the University of Washington and in
> Seattle University than there were in the same depart-
> ments at the two Universities. Also, the correlations
> between predicted grades and achieved grades of students
> in corresponding departments in the two Universities
> were very similar (5:14-15).

In the conclusion of his doctoral dissertation, "An

Evaluation of the Accuracy of the Differential Prediction
Test Battery in Predicting Grades for Students at Western
Washington State College," Dr. James R. Lounsberry reports
the following:

1. A close relationship existed between the educa-
tional and grading standards at Western
Washington State College and the University
of Washington.

2. The predictions of the Washington State Pre-
College Differential Guidance Program were
relatively as accurate at Western Washington
State College as the University of Washington.

3. A group of predictors developed from data at
one institution can be used with comparable
accuracy at a second institution (5:15).

The Washington Pre-College Testing Program gives pre-
dictions in forty-two areas of college study. The norms that
have been established give estimates based on validity coef-
ficients that range from .26 in Architecture to .66 in Biology.
The all-college validity is .64. (5:17).

It appears that the consensus of researchers is that
the high school grade point average is the best single pre-
dictor of academic success in college. Generally they agree
that the addition of variables would add to the validity.

CHAPTER III

PROCEDURES

The purpose of this study was to determine the accuracy of high school grade point averages, and the Washington Pre-College Differential Grade Prediction Test in predicting academic success of varsity athletes at Central Washington State College.

This study was based on a sample that included the one-hundred fifty athletes at Central Washington State College for the 1964-65 school year. The group consisted of Freshmen, Sophomores, Juniors, and Seniors in attendance during the school year.

One-hundred forty students had recorded high school grade point averages. There were Washington Pre-College Differential Prediction Test scores for ninety of the students in the sample. All one-hundred fifty students had on file cumulative college grade point averages. These numbers resulted in a reduction of the original sample of one-hundred fifty that was to be used in computing correlations.

The high school grade point averages and the college cumulative grade points of the students were taken from the transcripts in the Office of the Registrar at Central Washington State College.

The scores for the Washington Pre-College Prediction Tests for the individual students were taken from the students' folders on file in the Office of the Dean of Students.

The next step was to arrange the data into categories. Each student's high school grade point average, Washington Pre-College Prediction score, and college cumulative grade point as of June 15, 1965 was recorded after his name. Correlations were then made in four areas of study that are listed below. In studies one, three, and four information on the same ninety students was used. In the second study, data on one-hundred forty students was correlated. The four correlations were:

1. Between the high school grade point average and the college cumulative grade point average.

2. Between the high school grade point average and the college cumulative grade point average. This study included one-hundred forty students instead of ninety as in the previous study. The additional fifty students were those for *whom no prediction score could be obtained.*

3. Between the Washington Pre-College Differential Prediction Test and the college cumulative grade point average.

4. Between the high school grade point average and

the Washington Pre-College Differential Prediction Test.

CHAPTER IV

ANALYSIS OF DATA

The Pearson Product Moment method used in machine calculation was the formula used for determining the correlation between two variables.

The formula:

$$r = \frac{N\Sigma XY - \Sigma X \cdot \Sigma Y}{\sqrt{\left[N\Sigma X^2 - (\Sigma X)^2\right]\left[NXY^2 - (\Sigma Y)^2\right]}}$$

The results of the four studies are listed below:

1. The correlation between the high school grade point average and the college cumulative grade point average was .43 (90 students).

2. The correlation between the high school grade point average and the college cumulative grade point average was .43 (140 students).

3. The correlation between the Washington Pre-College Differential Prediction Test and the college cumulative grade point average was .57 (90 students).

4. The correlation between the high school grade point average and the Washington Pre-College Differential Prediction Test was .65 (90 students).

CHAPTER V

RESULTS AND CONCLUSIONS

I. RESULTS

One of the current problems facing Central Washington
State College is the over-crowded conditions that are pre-
venting many new students from being admitted. Authorities
in education have traditionally stated that the high school
GPA is the best predictor of academic success in college. As
a result, college officials have used the high school GPA as
the means of selecting freshmen students who will be success-
ful as college students. The Washington Pre-College Dif-
ferential Prediction Test is being used primarily for
counseling purposes, but it too makes predictions of college
success.

The first hypothesis was that the high school GPA is
not accurate in predicting academic success of varsity
athletes at Central Washington State College.

The second hypothesis was that the Washington Pre-
College Differential Prediction Test lacks validity in predic-
ting academic success of varsity athletes at Central
Washington State College.

To determine the validity and accuracy of these
measures of predicting success, a series of correlations

were processed.

In determining correlations, for a sample of ninety students to be significant at the .01 level an r of .267 must be obtained. With a sample of one-hundred forty students an r of .228 is considered significant at the .01 level. In the four studies that were made, the .01 level of significance was achieved in each instance.

The coefficiency of dependability was determined for each r in the study. The formula used to arrive at this determination was:

$$E=1- \sqrt{1-r}$$

The results were:

1. E= .10   High school GPA and the college cumulative GPA (90 students).

2. E= .10   High school GPA and the college cumulative GPA (140 students).

3. E= .18   Washington PCDPT and the college cumulative GPA (90 students).

4. E= .24   High school GPA and the Washington PCDPT. (90 students).

II. CONCLUSIONS

In evaluating the results, the study suggests the following conclusions:

1. The first correlation indicates that the high school GPA can accurately predict academic success only 10 per cent better than chance. These figures suggest that this present method of predicting academic success lacks validity. It also indicates that the admission of freshmen into college on the basis of the high school GPA lacks predictive validity.

2. The second correlation was identical to the first except the sample was enlarged by fifty students. The results of the two were the same, so the accuracy of the initial study was substantiated.

3. The third correlation suggests that the Washington Pre-College Differential Prediction Test can accurately predict academic success in college 18 per cent better than chance. It was expected that this result would be higher than the first correlation because the high school GPA is included in the prediction test. Nevertheless, this test also lacks predictive validity.

4. The fourth correlation suggests that the high school GPA can predict the score of a student taking the Washington Pre-College Differential Prediction Test only 24 per cent better than chance. The converse is also true.

In summation, the results of the study indicate that the hypotheses are true. The study also suggests that predictive and admission procedures need additional variables to assure validity.

An additional study that would include all Central Washington State College students might also be indicated.

BIBLIOGRAPHY

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1. Angell, Melvin A. "Multiple Differential Prediction..
      Significance for College Academic Counseling,"
      Personnel and Guidance Journal, 37:418-23, September-
      May, 1958-59.

2. Berdie, Ralph F., and others. Counseling and the Use of
      Tests. Minnesota: University of Minnesota, 1959.
      178 pp.

3. Byrns, Ruth and V. A. Henmon. "Long Range Prediction of
      College Achievement," School and Society, 41:887-890,
      June 29, 1935.

4. Connor Tom. "Varsity Athletes Make Good Scholars,"
      School Coach, 24:56-57, November, 1954.

5. Counselors Manual. Washington Pre-College Testing Program.
      Seattle: University of Washington, 1964-65.

6. Hanford George H. "In Defense of College Entrance Tests,"
      The PTA Magazine, 57:18-20, October, 1962.

7. Kirk, Barbara A. and others. "College Qualification Tests
      and Differential Guidance with University Freshmen,"
      Personnel and Guidance Journal, 42:47-51, September,
      1963.

8. McCormack, James and William Asher. "Aspects of the High
      School Record Related to the First Semester Grade
      Point Average," Personnel and Guidance Journal,
      42:699-704, March, 1964.

9. Michael, William and Robert A. Jones. "Stability of
      Predictive Validity of High School Grades and of
      Scores on the Scholastic Aptitude Test of the
      Entrance Examination for Liberal Arts Students,"
      Education and Psychological Measurement, 23:375-78,
      Summer, 1963.

10. Samenfield, Herbert W. "Predicting College Achievement,"
      Journal of Higher Education, 24:432-33, November, 1953.

11. Stone, Joics B. "Differential Prediction of Academic Success at Brigham Young University," The Journal of Applied Psychology, 38:109-110, April, 1954.

12. Stroup, Francis. "The Grade Point Average is Obsolete," Journal of Higher Education, 34:10-15, January, 1963.

13. Super, Donald E. Appraising Vocational Fitness. New York: Harper and Brothers, 1949. 727 pp.

14. Willingham, Warren W. "Erroneous Assumptions in Predicting College Grades," Journal of Counseling Psychology, 10:389-94, Winter, 1963.