STUDENT PERFORMANCE ANALYSIS USING BIVARIATE CORRELATION FOR HIGHER ACADEMIC SUCCESS IN ELECTRONICS ENGINEERING PROGRAM

Gulden KOKTURK
Dept. of Electrical&Electronics Eng., University of Dokuz Eylul, Izmir, TURKEY
gulden.kokturk@deu.edu.tr

Guven SAGDIC
Dept. of Electrical&Electronics Eng., University of Dokuz Eylul, Izmir, TURKEY

Abstract: In this work, we established a statically connection between age, college entrance score and student performance, and between basic science courses of first year like physics, calculus etc. and student performance. We calculated this relationship using bivariate correlation analysis. For all data, score transformation was computed with linear transformation method. Data was extracted from undergrade classes in Electronics Engineering program. We investigated the student performance for all and classifying data with correlation analysis.

Introduction

Researchers and educators have been interested in determining factors related to student academic success. Student performance analysis has historically been used as predictors of school success by establishing correlation method in which to compare school achievement with similar schools.

The purpose of this work was to determine the effect of student age, college entrance score with relationship between them and average scales on student achievement courses. The courses examined in this work were as follows: physics I (first year, first semester course), physics II (first year, second semester course), calculus I (first year, first semester course), calculus II (first year, second semester course), chemistry (first year, first or second semester course), first year-first semester average scale and first year-second semester average scale. The study question, therefore, addresses to what extent these student enrollment status are related to student grades in courses.

Bivariate correlation was used to analyze the relationship between the student enrollment status and last semester average scale, and between lecture grades and semesters average scales. This analysis examines the correlations between these items to determine the prediction of factors that best predict student scores.

There are several researches on correlation. Patrica Plympton et al. (2000) have recently proposed effects of daylighting on student performance. Sherry and Jesse (2001) were investigated student solving talent with correlation. Another research (Tinto, 1995) has been studied on overall degree progression of the students.
Bivariate Correlation

In this study, bivariate correlation analysis was conducted on several variables related to college student’s demographic and enrollment status and their student grade performance. All data consisted of all students' grades in courses, were extracted from the University’s student record system. Specifically, as you known that status variables included age (in years), college entrance score, and grades in courses. Grades were obtained on a 4 point-to-point average scale. After data was analyzed, they were classified as first, second, third and last grades. Then correlation coefficients calculated for all and classified data.

As a simple fact that the correlation is association between two quantitative variables (Borden, 1998). In this project, we used correlation for our maximum likelihood estimator (Mendenhall et al., 1990). It was seen that the correlation among some variables in the study is large in age than in the school entrance score. However, correlation between age and last semester average scale is small. Because of the positivity in it, age has smallest correlation with last semester scale. Calculus II score had the largest correlation with last scale. The positive correlation indicating that students who attained a math grades in their high school class tent to attain higher college grades. It is noted that first year-first semester and first year-second semester average scale is highly related with last average scale. This is indicated that first year-first and second semester courses are the most important in student achievement. For each class, correlation is presented for some courses in this work. It is shown the correlation of the basic courses grades with last average scale for each class. All correlation coefficients are positive. In this situation, the largest correlation is in physics course. When it is calculated the relation between age and entrance score with last average scale for class-to-class, age to last scale in first and second years of University life is negatively related with each other. This means that younger students tented to lower average scale.

Conclusion

Bivariate correlations demonstrated that variables; age, school entrance score, first and second semester basic courses, first year-first semester average scale and first year-second semester average scale were the most highly correlated with last average scale and all positive correlates. However, the two predictors which age and entrance score are negatively correlated in some classes suggesting that their impact on last average scale might be mitigated.

The statistical relationship uncovered in this analysis, is qualified by the very large sample size. That is the large size makes it possible to uncover very weak associations.

References