

SEMESTER SCORES AS PREDICTORS OF THE ACADEMIC ACHIEVEMENT AMONG THE SCIENCE STUDENTS OF COLLEGE OF EDUCATION

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Abstract

The study investigated semester scores (GPA) as predictors of the academic achievement among the science students of College of Education, Ikere-Ekiti. A sample of 150 students was randomly selected from five departments: Biology, Chemistry, Computer Science, Integrated Science and Physics using stratified random sampling technique, 30 students in each department. The instrument used was the semester scores (GPA) of the students in 2002/2003, 2003/2004 and 2004/2005 academic sessions. Pearson Product Moment Correlation and Multiple Regression Statistics were used for data analysis. The result showed that there were very high and positive significant relationships between the predictors and the criterion variable (final GPA) of the students in science at the college. The result also showed that first semester part I and first semester part III were the potent predictors of the students' grade point average in sciences while second semester part I showed a negative contribution to the final grade point average of the students in science. Based on these findings, senior lecturers should be involved in teaching of part I so that the academic performance of the students will be enhanced based on the accumulated experiences of these lecturers.

Introduction

In line with the National Policy of Education (1981), Nigeria Certificate in Education (NCE) programmes are geared towards training of grade "A" teachers for primary schools and Junior Secondary Schools. The overall aim is to train the would-be-teachers in line with the Common National Standards. Science teaching at this level was designed to make students functional and self-reliant. To achieve these objectives, such factors as the students' general level of preparedness contribute to their academic achievement. Studies, Cowen and Fiori (1991); Troutman (1978) and Hendel and Doyle Jr. (1978), indicated that the best predictor of students' academic achievement was their performance on Scholastic Assessment Test Score (SAT) and students' effort. While Yoloye (1982), Agbonifo and Dimowo (1985), Abe (2003) and Ayodele (2004), showed that previous knowledge and semester scores contributed significantly to the academic achievement among students. American College Testing (ACT) (1999) examined a number of variables and academic success of students and the results indicated that ACT scores were the potent predictors of the College Grade-Point Average (CGPA) than other factors. Noble and Sawyerr (1989), Ajogbeje (1998); Okwilagwe (2001) and Abe (2003), showed in their studies that SSCE results are a good predictor of undergraduate academic achievement as it has a direct and significant positive influence on undergraduate Grade Point Average (GPA). Myers and Pyfes (1992), also, examined a number of variables such as high school grades, ACT Scores, College Grades and Academic achievement of students. They, however, concluded that the relationships were statistically significant. Gay (1996) showed that high school grades were good predictors of College Grades.

McDonald and Gawkoski (1979), showed in their studies that there was a moderate predictive validity in the verbal and mathematics portion of the College Board Scholastic Aptitude Test (SAT-V and SAT-M) on High School Grade Point Average. In a related study, Paszczyk (1994), discovered that there was a significant correspondence between high ACT scores and student's final Grade Point Average (GPA). While Bontekoe (1992), examined ACT scores, high school GPA and students' achievement at a sectarian institution. He found out that, high school GPA was a better predictor of the college. Findings of Adeyemi (2005) and Al-Shorayye (1995) showed that SSCE/GCE results were the best predictor of the university achievement. While WAEC (1992) reported that the SSCE results have a fair predictive power on the academic achievement of students. In other words, this study examines the semester scores as predictors of the academic achievement among the science students of College of Education, Ikere-Ekiti.

Purpose of the Study

This study is designed to find out how semester scores predict the academic achievement among the science students of College of Education, Ikere-Ekiti, Ekiti State.

Research Questions

The following research questions were raised to guide this study.

1. Are there any relationships between semester scores and the final grades (CGPA) of students in science?
2. Are the semester scores a predictor of the final grades (CGPA) of students in science?

Research Method

This study is an ex-post facto research design in which the researcher does not have direct

control on the dependent and the independent variables and there was no manipulation of data collected. The population of the study consisted of all the graduated science students in the school of science, College of Education, Ikere-Ekiti, in 2002/2003, 2003/2004 and 2004/2005 academic sessions. A total of 150 students were randomly selected as follows:

- i. 30 students from Biology Department
- ii. 30 students from Chemistry Department
- iii. 30 students from Computer Science Department
- iv. 30 students from Integrated Science Department
- v. 30 students from Physics Department

using stratified random sampling technique. Pearson Product Moment Correlation and Multiple Regression Statistics were used to analyse the data.

Results

Table I: Correlation Matrix of the Predictors and the Criterion Variable (GPA)

Variable	X1	X2	X3	X4	X5	Y
X1	1					
X2	0.939	1				
X3	0.939	0.967	1			
X4	0.933	0.964	0.984	1		
X5	0.574	0.564	0.587	0.591	1	
Y	0.907	0.931	0.958	0.964	0.582	1

Where X1 First Semester GPA Part I
 X2 - Second Semester GPA
 X3 Part 1
 X4 First Semester GPA Part II
 X5 = Second Semester GPA
 Y Part II
 From First Semester GPA Part III (Final CGPA) Second Semester GPA
 Table between: X1X2, Part III

1 it shows that there were very high and positive significant relationships X_1X_4 , X_2X_3 , X_2X_4 , X_3X_4 and $X1Y$, X_2Y , X_3Y and X_4Y at $PO.05$. Also, there were moderate and positive significant relationships between: $X1X_5$, X_2X_5 , X_3X_5 , X_4X_5 , and X_5Y at $P<0.05$.

Table 2a

Summary of the Regression analysis on the Data Sampled

Multiple R	0.966
R ²	0.933
Adjusted R Square	0.930
Standard Error =	0.22244

Table 2a shows, that all the predictor variables jointly contributed 93.30% to the total final GPA of students in science, that is, only 93.30% of the predictor variables could be explained while 6.70% of the total variations cannot be explained by the total CGPA. This implies that there are other factors which also contributed to the students final GPA other than the predictor variables. While the multiple R of 0.966 shows that there was a significant positive relationship between the predictor variables and the criterion variable.

Table 2b

Analysis of variance between the predictor and the criterion variables (GPA)

Source of Variation	SS	df	Ms	Fc	Ft	Result
Regression	98.859	5	19.772	399.611	2.29	*
Residual	7.125	144	0.049			
Total	105.984	149				

$P<0.05$ significant

The result in Table 2b shows, that $F_c > F_t$; which imply that there was a significant influence between the predictor variables and the criterion variable (GPA).

Table 2c:

Relation Contribution of the Predictor Variables and the Criterion Variable (GPA)

Variables	B	SEB	BETA	t
XI -First Semester GPA Part I	2.136E-02	0.061	0.024	0.351
X2=Second Semester GPA Part I	-7.866E-02	0.090	-0.082	-0.878
X3=First Semester GPA Part II	0.333	0.127	0.350	2.627
X4=Second Semester GPA Part II	0.666	0.125	0.668	5.314
X5=First Semester GPA Part III	1.065E-02	0.119	0.015	0.555
Constant	0.184	0.066	2.772	0.006

Dependent Variable Y=(Final CGPA) Second Semester GPA Part III

Table 2c shows that only four of the predictor variables contribute positively to the final GPA of the students in science that is, XI, X3, X4 and X5 while (X2) second semester part I scores has a negative contribution to the final GPA. Thus, the regression equation derived from the table shows that:

$$Y = 0.184 + 2.136X_1 - 7.866X_2 + 0.333X_3 + 0.666X_4 + 1.065X_5$$

Where XI = First Semester GPA Part I
X2 = Second Semester GPA Part I
X3 = First Semester GPA Part II
X4 = Second Semester GPA Part II
X5 = First Semester GPA Part III
Y (Final CGPA) Second Semester GPA Part III

The result shows that first semester scores of part I (X₁) were the most potent predictor of the students' final grade point average in science followed by (X₅) first semester scores of Part III, (X₄) second semester scores of Part II and lastly (X₃) first semester scores of part II.

Discussion

The result of this study shows, that 93,0% of the students' variability in academic achievement among the science students in the college could be attributed to a linear combination of the five variables at the College Level. While there was a positive significant relationship between the predictor variables and the criterion variable (GPA) of the students in science. The performance level was high in all the semesters except the GPA of the Part I second semester which seems to be ineffective and had a negative influence on the student's final GPA. These findings are in agreement with the findings of Bontekoe (1992); Myers and Pyles (1992), ACT (1996); Rose (1999); Abe (2003), Ayodele (2004) and Ilugbusi (2005).

The result also shows that the first semester scores of Part One (GPA) were the most potent predictor followed by the first semester (GPA) Part III. This is also in consonance with the findings of Yoloye (1982); Cowen and Fiori (1991) and Abe (2002). While second semester GPA Part I did not contribute significantly to the academic achievement of the College students in science. These findings however, agree with the findings of Ajogbeje (1998) and Abe (2003). It is evidently clear that first semester Part III scores and first semester Part I scores were the most reliable predictors of the students' Grade Point Average than other variables. Based on the findings of this study, it is therefore, suggested that experienced lecturers in the school of sciences should be involved in teaching part I courses so that proper orientation would be given to these students at this level.

Conclusion

Based on the findings of this study, it is concluded that the best predictor of the students' academic achievement is their semester scores. As far as these scores are concerned, there is a clear positive and linear relationship between the high semester scores and the overall final GPA. This study therefore, suggests that achievement on the overall final GPA is a function of the students' semester scores and the level of preparedness. Therefore, there is the need for students to intensify efforts on their lectures.

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