

Impact of Attendance on Students' Academic Performance in ICT Related Courses: Faculty of Engineering, Osun State Polytechnic, Iree.

Adegoke, B.O.^{1*}, Salako R. J². and Ayinde, L. A².

1. ^{*}Department of Computer Science and Engineering, Ladoke Akintola University of Technology, Ogbomoso, Nigeria.
2. Department of Mathematics and Statistics, Osun State Polytechnic, Iree, Nigeria.

* E-mail of the corresponding author: adegokebo@yahoo.com

Abstract

The impact of lecture attendance on student's academic performance was investigated based on student's total score and frequency of class attendance of 598 randomly selected students. Attendance were marked by the lecturer at the end of each contact with the students, Data from the selected students were analyzed using regression and correlation statistical tools. The result of the analysis revealed a positive correlation between class attendance and students performance in the examination. It was finally recommended that attendance register should be marked by lecturers during contact periods. Moreover, a minimum requirement of 70% attendance should be enforced as a prerequisite for writing any end of semester examination.

Keywords: Class attendance, student's performance, student's score

1. Introduction

Evaluation of learning is a widely debated topic in education generally. Vincenzo identified the same problem with assessment of Economics students [1]. However, despite the common assumption that undergraduate students benefit from attending lectures, until 1990s there was little evidence about attendance and its effects on students' learning. In line with Romer's discovery [2], a number of recent studies has found positive effects of attendance on performance, leading some authors to call for policies to increase or even mandate attendance. Adegoke employed attendance as an integral part of his artificial neural network model for controlling corruption in academic assessment for higher school of learning [3].

Agboola and his research group identified the fact that numbers of contacts affect both students and class performance in an Information and Communication Technology (ICT) related courses in Osun State Polytechnic, Iree [4]. If there are sufficient contacts, does students attendance in ICT related courses affect performance of a student? Many literatures emphasized importance of class attendance as it is related to student performance. Lucas emphasized that lecture and class attendance affect academic performance of any students [5]. Denver Classroom Teachers Association (DCTA), (1999) identified mobility as another factor which affects class attendance, as one of the major factors that contributes to students' academic performance [6]. Harb and El-shaarawi, opined that students who participate in class and classroom discussion and those on leave outperform other students [7]. In 1993, Romer found that class attendance reflected significantly on students' Grade Point Average (GPA). Ellis *et al.*, in their study on the factors affecting student's performance in principles of economics, found that the likelihood of a student making a grade of A or B significantly decreases as the number of his/her absences in class increases; when the student is a member of fraternity or sorority; and as the number of credit hours carried by the student during the semester increases, his performance dwindles [8]. Vincenzo *et al.*, (2008) in analysis of their survey data collected for an Introductory Economics Course, found a positive and significant effect of attendance on academic performance of students.

Devadoss and Foltz found that after taking into account motivational and aptitude differences across students, the difference in exam performance between a student with perfect attendance and a student attending only half of the classes is, on average, a full letter grade [9]. Chan and his research group examined the relationship between class attendance and academic performance between class attendance and academic performance in two sections of a Principles of Finance course. After correcting for the selectivity bias due to student withdrawals by using Tobit and Heckman's two-stage models, they find that a positive effect of attendance on performance [10]. They also find that a mandatory attendance policy would not significantly enhance course grade. Marburger (2001) applies an original approach to identify the "pure" effect of absenteeism on exam performance in a small size Principles of Microeconomics course. Student's absences records over the semester are matched with records of the class meetings when the material corresponding to each question of three multiple-choice exams was covered [12]. Results from a probit regression show that missing class on a specific day significantly increase the likelihood to respond incorrectly to a multiple-choice question based on the material covered that day compared to students who were present. This finding suggests a negative relationship between absenteeism

and academic performance. Rodger found a small but statistically significant impact of attendance on academic performance in a sample of 167 students enrolled in her Introductory Statistics class [13]. Using a sample of 371 first year Italian Economics students, Bratti and Staffolani (2002) find that, after controlling for the number of study hours, the positive and significant effect of attendance on performance is not robust to the inclusion of self-study [14]. Kirby and McElroy based their analysis on 368 of first year economics students in Ireland. They find that class attendance is significantly affected by hours worked and travelled time to the university [15]. On the other hand, tutorial attendance appears to enhance examination performance more than class attendance [13].

2. Methodology

The research was conducted among three departments (Computer Engineering, Electrical Electronics and Civil Engineering) of faculty of engineering, Osun State Polytechnic, Iree, Nigeria. The attendances were taken at each class held in each of the five (5) courses used in the research. Each student's attendances were considered against the total score of the student. Statistical research tools used are Regression and Correlation analyses. Our goal is to investigate the nature and strength of relationship existing between examination scores and attendance.

2.1 Population and sampling technique

The target population for this research work is students from Osun state Polytechnic, Iree, Osun state Nigeria. A simple random sample of Five hundred and ninety eight (598) students was collected and their examination scores against their respective frequency of class attendance in five different courses were also recorded. The Examination scores was represented by 'Y' which is the explained or dependent variable while class attendance was epitomised by 'X' explanatory or independent variable.

2.2 Data type

The data used for this study is a secondary data. The examination scores were extracted from institutional Board of Studies approved result, while the attendance data was extracted from the attendance register of the lecturer who handled the five courses.

Regression analysis

A simple regression analysis is the study of relationship between two variables represented by:

$$Y = a + bx + ei \quad (1)$$

$$b = \frac{\sum xy - \frac{1}{n} \sum x \sum y}{\sum x^2 - \frac{1}{n} [\sum x]^2} \quad (2)$$

$$a = \bar{y} - b\bar{x} \quad (3)$$

Where b is the regression coefficient or slope of the relationship.

Correlation analysis.

Correlation analysis was used to measure the degree of relationship between scores and attendance. Pearson's moment correlation coefficient is represented by:

$$r = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sqrt{\sum(x - \bar{x})^2 \sum(y - \bar{y})^2}} \quad (4)$$

$$-1 \leq r \leq +1$$

Test statistic on r:

$$t_{cal} = r \frac{\sqrt{n-2}}{\sqrt{1-r^2}} \quad (5)$$

with n-2 degree of freedom

Analysis of data.

The bulk of the data could not be displayed due to space limitation. The analysis was done using Number Cruncher Statistical System (NCSS).

Descriptive Statistics

Table 1 shows the descriptive statistics of population employed in the research. A total of 598 students, mean attendance of 6.68, standard deviation of 2.796, minimum attendance of 0 and maximum attendance of 10.

Correlation Matrix

Correlation matrix is shown in table 2. Correlation coefficient is 0.297725 depicting a weak positive relationship between scores and attendance.

Hypothesis:

$$\begin{aligned} H_0 : \rho &= 0 \\ VS \\ H_1 : \rho &\neq 0 \end{aligned}$$

From equation (5)

$$t_{cal} = 0.297725 \frac{\sqrt{598-2}}{\sqrt{0.297725^2}}$$

$$t_{cal} = 7.61364$$

$$t_{0.25} = 0.088$$

Decision:

Since $t_{cal} = 7.61364$ is greater than $t_{0.25(596)} = 0.088$, H_0 is rejected and it is therefore concluded that $\rho \neq 0$

Regression Equation

Table 3 shows the regression value on the data.

R-Squared 0.088640

Hypothesis:

$$\begin{aligned} H_0 : \beta &= 0 \\ VS \\ H_1 : \beta &\neq 0 \end{aligned}$$

Decision:

Since P-Value (0.0002627) is less than 0.05, H_0 is rejected and it is concluded that the regression coefficient significant on the regression plane.

The model

$$Y = 35.97048 + 1.87867 X \quad (6)$$

The model indicates that if a student fails to attend any lecture, he can still manage to score 36% which is a fail score.

$$\begin{aligned} H_0 : \beta &= 0 \\ VS \\ H_1 : \beta &\neq 0 \end{aligned}$$

Decision: Since probability level (0.00627) is less than 0.05, H_0 is rejected, and a conclusion is reached that the model can be used for prediction.

3. Results and discussion

Descriptive statistics section in Table 1 showed an average attendance of seven (7) and average examination score of 48.5 per student.

Table 2 displayed correlation matrix for the two variables. The correlation strength is 0.297725 depicting a weak positive relationship between scores and attendance. The objective and inferential test of significance on correlation coefficient showed that the correlation coefficient is significant, though not very strong. This is a strong indication that attendance of class has positive impact on students' performance in examination.

Tables 3 and 4 displayed the estimated parameters for the regression. The hypothesis $H_0 : \beta = 0$ was rejected which implies that attendance is a good predictor of students' academic performance. The model for the relation; $Y=35.97048+1.87867X$ revealed that a student can manage to score 36% even if he fails to attend any lecture and must have a minimum attendance of two to have a pass mark.

4. Recommendations

Having critically examined the results obtained during analysis, it was discovered that a student must only attend lecture twice to have a pass mark, hence it is recommended that lecturers should always mark attendance and minimum attendance requirement of 70% must be met for a student to qualify to sit for a semester examination.

References

[1] Vincenzo A., Rosaria D'Addazio and Carlos Velasco, (2008). Class Attendance and Academic Performance among Spanish Economics students, Economic Series (38).

- [2] Romer, D., (1993). Do Students go to class? Should they? *Journal of Economics Perspectives* 7(3): 167 – 174.
- [3] Adegoke, B.O., (2009). Artificial neural Network Model for Control of Academic Corruption In Higher School of Learning. *Journal of The School of Arts and Soci Sciences, Osun State College of Education Ilesa*, 1(3):244 - 255, Nigeria.
- [4] Agboola, J.O, Adegoke, B.O. and Adegbite, I. O., (2013). Impact of Contact Hours on Students' Performance in Nigeria Higher Institution of Learning. *International Journal of Academic Research, Journal of Education and Sociology*. 4(1), pp. 9-14.
- [5] Lucas Stanca, (2006). "The Effects of Attendnace on Academic Performance: Panel Data Evidence for Introductory Microeconomics" *Journal of Economic Education*, Helen Dwight Reid Foundation, vol. 37(3), 251-266.
- [6] Denver Classroom Teachers Association, (1999). Merit Pay Plan for Teachers Needs More Study Research.
- [7] Harb, Nasri and El-shaarawi, Ahmed, (2006). Factors Affecting Students' Performance, Munich Personal RePEC Archive.
- [8] Ellis, L., G. Durden, and P. Gaynor, (1998). Evidence on the Factor that influence the probability of a good performance in the principles of economics courses. University of West Georgia.
- [9] Vincezo *et al.*, 2003.
- [10] Devadoss, S. and Foltz, J. (1996). Evaluation of factors influencing student class attendance and performance. *American Journal of Agricultural Economics*, 78(3), 499-507.
- [11] Chan, K. C., Shum, C. and Wright, D. J. (1997). "Class attendance and student performance in principle of finance", *Finance Practice and Education*, Fall/Winter, pp. 58-63.
- [12] Marburger, D. R., (2001). "Absenteeism and undergraduate examination performance", *Journal of Economic Education*, Spring, 32(2), 99-109.
- [13] Rodger, J. R., (2001). A panel-data study of the effect of student attendance on university performance, *Austrialian Journal of Education*, 45(3), 284-295.
- [14] Bratti. M. and Staffolani, S., (2002). "Student time allocation and educational production functions", *Quaderni di ricerca, dipartimento di Economia- Universita'di Ancona*.
- [15] Kirby, A. and McEkoy, B. (2003). The effect of attendaceon grade for first-year Economics students in University College Cork. *The Economic and Social Review*, 34 (3), 311-326.

Table 1: Descriptive statistical

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
ATTENDANCE	598	6.68	2.795668	0	10
SCORES (100%)	598	48.52	17.64091	0	81

Table 2: Correlation matrix of the data

	Attendance	Scores (100%)
Attendance	1.000000	0.297725
Scores (100%)	0.297725	1.000000

Table 3: Regression value on the data

Independent Variable	Regression coefficient	Standard error	T-value (H0: B=0)	Probability level	Decision 5%	Power 5%
Intercept	35.97048	4.403187	8.1692	0.000000	Reject H0	1.000000
Attendance	1.87867	0.6085094	3.0873	0.0002627	Reject H0	0.863674

Table 4: ANOVA of the data

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (5%)
Intercept	1	21541.228	21541.224			
Model	1	17801.217	17801.217	36.881	0.000627	0.863674
Error	596	287669.133	482.66633			
Total (Adjusted)	597	185787.3552	311.2016			

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage:

<http://www.iiste.org>

CALL FOR JOURNAL PAPERS

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. There's no deadline for submission. **Prospective authors of IISTE journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> The IISTE editorial team promises to review and publish all the qualified submissions in a **fast** manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Recent conferences: <http://www.iiste.org/conference/>

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

