

Determinant of Students' Academic Triumph via Class Attendance

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ABSTRACT

The study investigated the influence of students' attendance for lecture on their academic performance and the interactive effect of students' IQ on students' academic achievement. The study adopted a true experimental treatment design. 30 computer science students and 50 educational technology students were purposively sampled. Four educational technology lecturers from the department of educational technology, University of Ilorin validated the lesson plan and the performance test that covered the content on a selected Educational Technology concept. Mean and percentage were used to answer the research questions. For hypothesis testing, pearson product moment correlation (PPMC) was used to test hypothesis one while Hypothesis two was analyzed using ANCOVA. All hypotheses were tested at 0.05 level of significance. The findings established that there was significant influence of class attendance on their academic performance but there was no significant interactive effect of students' IQ on students' academic achievement. The study concluded that students who attended class regularly perform better than those who do not.

KEYWORDS

Intelligence quotient; determinant; students' Academic Triumph; class attendance; interactive effect.

INTRODUCTION

Students' learning is an indispensable investment which will be used, reused and even transferred to those of less knowledge. Therefore, any society who refuses to venture into education adequately could be refusing a better foundation for its building. Research publication is a component of job effectiveness of university lecturers and increase in research publication as encouraged by universities as a bench mark for promotion is a good strategy for enhancing lecturers' job effectiveness (Effiong & Effanga, 2018). Thus, the effectiveness and competence of a facilitator or tutor has a long way to go in influencing their learners' performance. education is an indispensable means of unlocking and protecting human rights since it provides the environment required for securing good health, liberty, security, economic well-being, and participation in social and political activities (Shittu, 2019). There are several factors which contributes to the output of any particular task with students' accomplishment inclusive. In addition, University lecturers have various tasks to accomplish and these range from teaching, research and publications, making of test and examinations, supervising students' research activities, supporting students through advisory roles, attending conferences and providing community service among others (Akpan, 2014).

Amosa (2016) stated that, education connotes knowledge or skill acquired or developed through a learning process. It involves the transmission of knowledge, skills, attitude, culture, and other values from generation to generation. With education, there is transition and transfer of knowledge, skills, acts and others from a subject of higher endowment to a person of lower or less endowment. Education is a social medium and process of acquisition of relevant knowledge, skills and attitudes for survival in a changing world (Sanni, Amosa & Danmaigoro, 2017). Moreover, application of Information and Communication Technology (ICT) in education is a ground for achieving the stated aims of education. The innovatory that is taking place in ICT has positive effects on the way Universities carry out the functions of teaching, learning and research, more especially on the creation, dissemination and application of knowledge

The use of ICT enables easy communication with instructors and students on online through discussion board, classrooms or an interactive white board, facilitate distance education; manage grades and provide the grade results to the students through internet facilities, create appropriate contexts for critical thinking, decision making or problem-solving activities and provision of CD-Roms for students note instead of printed materials (Salome & Chukwunwendu, 2014). Use of ICT in education also helps students learn and teachers to teach more effectively by supplying teaching and learning aid to teachers and learners. However, the technologies alone may not solely determine the students' retention of lesson, others factors like learners' participation, students' involvement, learners' appearance and others could influence the performance of the students either positive or negative.

There exist numerous evidences that there are so many factors affecting students' performance at all levels of education although these factors may be more pronounced at any particular levels and particular group of students. While those factors are appropriate and relevant for all the countries, the most immediately relevant factors for developing countries have not yet been captured (Obrentz, 2012). The failure to focus on these factors undermines all the investments on education in the under-developed countries, developing countries as well as the developed countries, which they mainly receive as foreign loans. While the various factors are related to the increased academic performance, the specific mechanisms through which those factors exert their influence on a child's academic performance are not yet fully understood (Topor, Keane, Shelton, & Calkins, 2010). The alarming rate of poor performance in science subjects coupled with the low educational standard in the country are parts of the major reasons why most students shy away from the study of science. Singh, Malik and Singh (2016) argues that academic performance of students has a direct impact on the socio-economic development of a country. Similarly, Farooq, Chaudhry, Shafiq and Behanu (2011), asserted that students' academic performance serves as a bedrock for knowledge acquisition and the development of skills. This negative attitude had encouraged poor performance and low participation of students in the higher science subjects like physics, chemistry and biology (Omoifo, 2012). All these problems mentioned have been conclusively blamed on basic science and its teaching without investigating whether the poor performance could be channelled to students who do not attend class regularly.

The term academic performance is one of the most abundant terms used in educational research, it is amorphous in nature. There are several authors who use the term academic performance interchangeably with academic achievement and academic success (Ali, Haider, Munir, Khan & Ahmed, 2013; York, Gibson & Rankin, 2015). Academic performance refers to the manner in which learners react to stimuli in their academic activity or the academic behaviour of an individual or groups of individuals. Academic achievement refers to the quality and quantity of a students' work or the act of achieving academic or the state or condition of students having achieved or accomplish their learning ambition. On the

other hand, academic success can be regarded to as the correct or desired result of an academic attempt or the favorable or desired learning outcome or the attainment of wealth, favor or learning eminence. In general, academic performance refers to a student's success in achieving educational goals and reflects how well students achieve the standards set by an academic institution or by the local educational authorities (Steinmayr, Meißner, Weidinger, & Wirthwein, 2014).

There are numerous studies to support the view that students' academic performance is affected by so many factors. In order to limit the scope of this conceptual paper, it is vital to classify those factors into sub categories but it will be limited to class attendance which this study focused on. Earlier research on science achievement had focused on cognitive factors such as IQ ability and other measures of innate aptitude. But recent research has found that IQ only explained about 25% of the variance in achievement (Jensen, 2018). Intelligence is a very important factor to determine the student's academic performance in school. Intelligence is cognitive potentiality which helps to increase the learning abilities in the students. Every Curriculums aim is to test the intelligence level in this way both intelligence and academic achievements are inter related subject (William, 2012). Thus, the intelligence quotient of each students could determine the levels at which their non-attendance could affect their academic performance of a particular task given to them which be measured scientifically.

This findings of Stanca (2010) who established that class attendance has a statistically significant impact on academic performance. Thus, when students attend their lectures regularly, they could soar in their learning but could drop in their performance if there is low class attendance rate. School environment enhancement include its use for school administration and management, teaching and learning of ITC related skills for enhancing the presentation of classroom work, receptive tasks of intellectual thinking and problem-solving skills, stimulating creativity and imagination for research by teachers and students (Dixit & Kaur, 2015). However, the school environment should be designed as such that it attracts student's attention thereby motivating them to never want to miss classes. Use of ICT brings communicative classroom and greater interactivity; it also has the ability to change teaching and learning processes from greatly teacher-piloted to student-centered (Alharbi & Drew, 2014). But the technologies will be irrelevant if students are not available to use it. Therefore learners, learn as they do and whenever appropriate, work on real life problems in-depth, making learning less abstract and more relevant to the learner's life (Emmanuel & Ngozi, 2014). Thus, students can learn new task, relearn that which has not been judiciously acquired and unlearn irrelevant and inappropriate digestion. Gender influence IQ test of students in favor of the female students. According to Maric and Sakac (2014), students' factors that affects their academic performance could be classified into Internal and social factors including gender. There is difference in the academic performance of the male and female students in favor of the female students. There are some studies who focus on factors that affect students' performance but not on the influence of class attendance on students' academic achievement in the locale of this study. This is the need for the study.

The purpose of this study is to investigate the academic performance of undergraduate students; how often did they attend classes; influence of class attendance on their exam scores; and the interactive effect of students' IQ on students' academic achievement. However, the following hypothesis were tested in this study. (i) There was no significant influence of class attendance on their academic performance. (ii) There was no significant interactive effect of students' IQ on students' academic achievement.

METHOD

The study adopted a true experimental treatment design. The independent variables in this study is the students class attendance records. The dependent variable is the examination performance of the students in the group. The moderating variable is the IQ of students in the study. The population for this study includes all the students of the University of Ilorin in Kwara State. The target population for this study consist of all the 200 Level students in the department of Educational technology in Kwara State which were purposively assigned to the experimental groups. The sample size includes the 200 level computer science students and educational technology students of the university. 30 computer science students and 50 educational technology students were purposively sampled. The choice of the 200 level students was based on the following criteria: (i) the author was the lecturer who took the course (ii) the concepts treated in this study are some of the 200 level courses. Four research instruments were used by the researcher to gather relevant information for this study. The instruments are: The Treatment Instrument: (i) Lesson plan, (ii) The course content. The Test Instrument: (iii) Students' performance test on Educational Technology concepts (EDT 217: Internet in Education), (iv) the marking guide

The lesson plan consists of six topics which was sub-divided into 15 lessons of 2hours each. The topics were extracted from Educational Technology student's handbook used in the University. The lesson plan was prepared by the researcher using the main educational technology recognized textbooks from the University, resources for Educational Technology students, university of Ilorin, materials from the Internet and contributions from the course lecturers. The selected concepts are: The concept of Internet and World Wide Web; Its use in the Educational settings; Strategies for effective use of Internet by students and teachers; Implementation of Email, Web browsing and Video Conferencing; Ethics and Issues on the Use of Internet in Classroom Settings; and Alternatives in Web Development. The performance test was extracted from the six concepts that was taught for the 15 weeks using the guide. Five examinations essay questions were developed for the students out of which they were required to answer four out of the five. The questions represent every aspects of the lesson taking regarding the course. The educational technology performance test was administered to the experimental groups as posttest respectively. While their continuous assessment test was used as their pre-test performance, this was also used to establish their IQ level. The assessment was done under strict supervision and coordination.

Four educational technology lecturers from the department of educational technology, University of Ilorin validated the lesson plan and the performance test that covered the content on a selected Educational Technology concept. The lecturers also examined all the items in the instrument with reference to the: appropriateness of the contents, the extent to which the content covered the topics they were designed to cover. Finally, comments, opinions and suggestions of the lecturers were effected appropriately. The examination questions were thereafter vetted by the external examiner to the department which is a professor of a related discipline from another university in Nigeria. Mean and percentage were used to answer the research questions. For hypothesis testing, pearson product moment correlation (PPMC) was used to test hypothesis one while Hypothesis two was analyzed using ANCOVA. All hypotheses were tested at 0.05 level of significance. The statistical tool of the Statistical Product for Service Solutions (SPSS) was used to code and analyse the data.

RESULTS

Out of the 80 students who initially registered for the course, 78 were available for the examinations and were thus used for the study.

Research Question One: How often did the students attend lectures?

Table 1. Attendance Records of the Respondents

Attendance Records	Frequency	Percent	Cumulative Percent
Poor Attendance	12	15.0	15.0
Fair Attendance	13	16.3	31.3
Good Attendance	30	38.8	70.0
Excellent Attendance	15	18.8	90.0
Low Attendance	8	10.0	100.0
Total	78	100.0	

As indicated in table 1, 19% of the students who registered for the course attended all the lecturers scheduled. While 15% of the students who registered for the course have low or no attendance on the lecturers scheduled. This established that 19% of the respondents attended the class regularly.

Research Question Two: What is the IQ rating of the students?

Table 2. Intelligent Quotient of the Respondents

IQ	Frequency	Percent	Cumulative Percent
High	13	16.3	16.3
Average	21	26.3	42.5
Low	46	57.5	100.0
Total	80	100.0	

The intelligence quotient of the respondents was investigated and the result was shown in table 2. It showed that 16% of the students who registered for the course have high intelligence quotient, 26% of the respondents have average or medium intelligence quotient while 58% of the respondents have low intelligence quotient. This study affirmed that majority of the respondents are of low intelligence quotient.

Research Question Three: What is the academic performance of the students after the examination?

Table 3. Academic Achievement of the Respondents

Post Test	Frequency	Percent	Cumulative Percent
Poor	17	21.3	21.3
Fair	21	26.3	47.5
Good	19	23.8	71.3
Very Good	16	20.0	91.3
Excellent	7	8.8	100.0
Total	80	100.0	

The academic performance of the students after the lecture was further analysed and the result presented in table 3. 9% of the respondents had excellent performance (70% and above), 20% of the respondents had 60% to 69% score, 24% of the respondents scored 50% till 59% score, 26% of the respondents had scores which range from 45% to 49% while 21% of the experimental group had a score less than 45% thereby failing the course. This thus inferred that 78% majority of the respondents passed the course.

Hypothesis One: There was no significant influence of class attendance on their academic performance

In other to examine whether class attendance significantly influenced students' academic performance. Analysis of variance (ANOVA) was used because the data and the variable of concerned are parametric in nature and covariate was not introduced.

Table 4. Analysis of Variance on Influence of Class Attendance on Academic Output

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	66.783 ^a	4	16.696	21.440	.000
Intercept	389.717	1	389.717	500.459	.000
Attendance	66.783	4	16.696	21.440	.000
Error	58.404	75	.779		
Total	703.000	80			
Corrected Total	125.188	79			

a. R Squared = .533 (Adjusted R Squared = .509)

Table 4 showed that there was no significant influence of class attendance on their academic performance, $F(79) = 16.70$, $p = .000$. That is, the significance value (.000) was found to be less than the alpha value (0.05). Therefore, the null hypothesis which states that there is no significant influence of class attendance on their academic performance was rejected. This mean that the students' class attendance significant influence the students' academic performance. Thus, those who comes to school regularly performed better and vice versa. The direction of the differences was further analyzed with post-hoc analysis as revealed in table 5.

Table 5. Waller-Duncan Post Hoc Analysis on the difference based on Class Attendance

Class Attendance	N	Subset			
		1	2	3	4
Poor Attendance	12	1.00			
Low Attendance	8	1.88	1.88		
Fair Attendance	13		2.38	2.38	
Good Attendance	32			3.09	3.09
Excellent Attendance	15				3.87

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square (Error) = .779.

a. Uses Harmonic Mean Sample Size = 13.049.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c. Type 1/Type 2 Error Seriousness Ratio = 100.

Waller-Duncan Post hoc analysis was conducted and the results presented in table 5 exposed that there is difference between the score performance of respondents with regular class attendance were more than those with less class attendance. The plot in figure 1 further describes this.

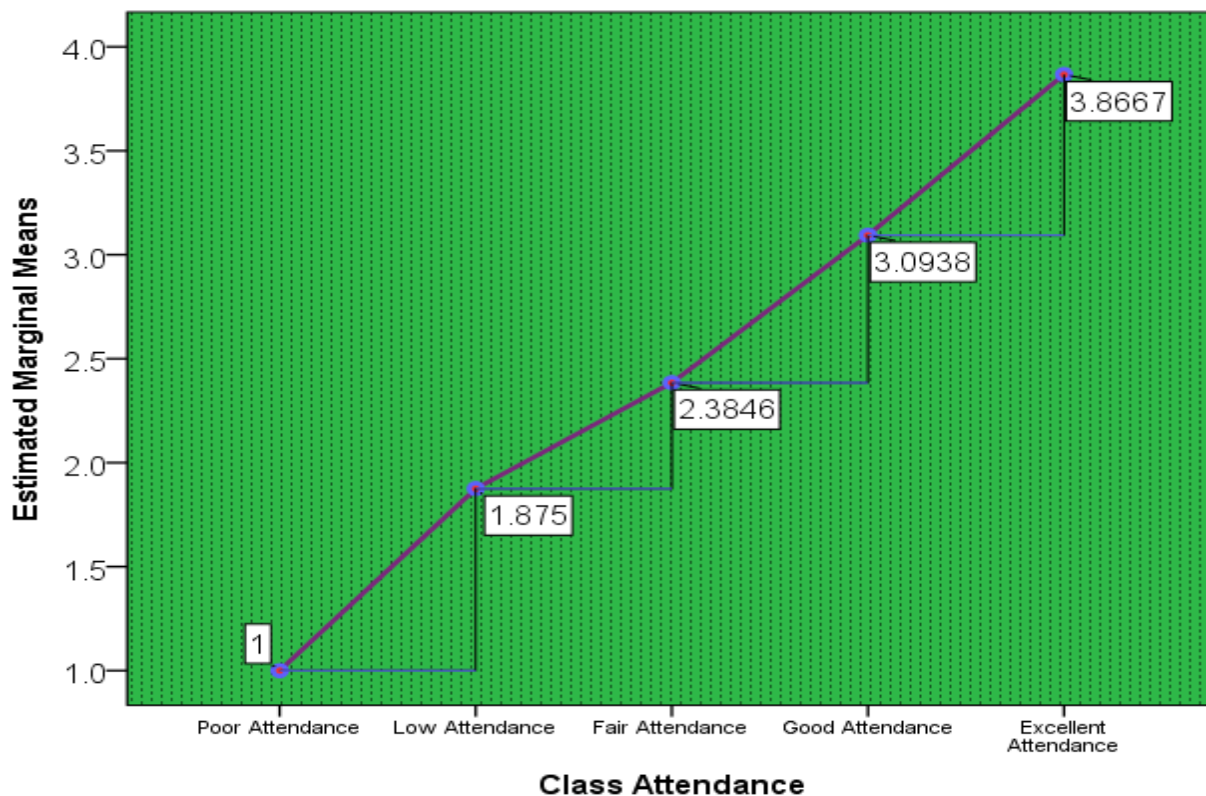


Figure 1. Estimated Marginal Means of the difference in Performance based on Class Attendance

The marginal means in figure 1 showed that the frequent the students’ attendance in class, the better their academic performance.

Hypothesis Two: There was no significant interactive effect of students’ IQ on students’ academic achievement.

In other to examine whether students’ IQ significantly interact with the class attendance effect on students’ academic performance. Analysis of Covariance (ANCOVA) was used because the data and the variable of concerned are parametric in nature and covariate was introduced.

Table 6. Analysis of Covariance on Interactive Effect of IQ on Students' Academic Performance

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	67.988 ^a	5	13.598	17.591	.000
Intercept	3.246	1	3.246	4.200	.044
IQ	1.204	1	1.204	1.558	.216
Attendance	9.977	4	2.494	3.227	.017
Error	57.200	74	.773		
Total	703.000	80			
Corrected Total	125.188	79			

a. R Squared = .543 (Adjusted R Squared = .512)

The significant interactive effect of students’ IQ on their academic achievement was determined and the result presented in table 6. It showed that $F(79) = 1.56, p = .22$. That is,

the significance value (.216) was found to be greater than the alpha value (0.05). Therefore, the null hypothesis which states that there is no significant interactive effect of students' IQ on their academic achievement was not rejected. This means that the students' IQ does not significantly interact with the effect of students' class attendance on their academic achievement.

DISCUSSION

This study established that 19% of the respondents attended the class regularly. Steinmayr, Meißner, Weidinger, & Wirthwein (2014) deduced that academic performance refers to a student's success in achieving educational goals and this replicates how well students accomplish the learning values. Majority of the respondents are of low intelligence quotient. Intelligence quotient arouse the disciplined application of information for the reason of enhancing learning and overall performance (Kurt, 2016). The issue of mental and social aspects of implementing learning environment in classroom would be a positive step towards an effective classroom that will positively influence the students' academic performance (Adeleke & Sofowora, 2013). In addition, majority of the respondents passed the course. This finding is consistent with the findings of prior studies which Fazal (2019) shows that there was an improvement in the post-test scores of the students exposed to Blended learning. Furthermore, there was significant influence of class attendance on their academic performance. This is in support of the study of Stanca (2010) who established that class attendance has a statistically significant impact on academic performance.

These findings are consistent with the findings of prior studies which Brodersen and Daniel (2017) which indicated that there was an improvement in the post-test scores of the groups but the Blended learning had a higher mean gain score than the other group. There was no significant interactive effect of students' IQ on their academic achievement. This corroborates with the study of Jensen (2018) who deduced that IQ only explained about 25% of the variance in achievement. Emily, Charles and Cecil (2018) which showed that there's no difference in the student performance between online modalities teaching strategy though it generally emphasizes collaboration, stress openness to change, and help students work independently, which are important components of learning.

CONCLUSION

The study concluded that few of the students who attended their class regularly performed better in their academic performance. Although the class attendance influences students' performance but the students with high IQ and attendance class regularly had the best performance. Thus, the miserable is miserable to the normal and normal to the miserable. The normal is also normal to the normal and miserable to the miserable. Any normal students who want a best performance should attend class regularly otherwise a miserable score is achievable.

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