PUBLICATIONS OF THE ICMCS: Volume 5, Pages 169–177 (2012)



ISBN-978-37246-4-9. Printed in Nigeria.

# Effect of Attendance on Performance in Postgraduate Courses in Science and Engineering

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## Abstract

Most postgraduate students in developing countries like Nigeria are working class students that have to shuttle between their workplaces and classes. Reason being that there few or no sponsors for postgraduate programmes exist in the country. Therefore, most students are self sponsored. Furthermore, most postgraduate courses in Nigeria are full time programmes. There are some core courses that require strict attendance in classes. However, it is seen that this is not always the case as the students have to attend to their jobs as well; otherwise they might lose the jobs and have no fund to continue. The programmes considered in this study are those in Statistics and Petroleum Engineering. This study therefore looks at the effect of students' attendance in postgraduate classes

to their performances, and also proffers solutions to its long-term effects on the industrial and economic developments.

## 1 Introduction

This paper examines the impact of class attendance and paid employment on the academic performance of postgraduate students in Nigeria. A significant fraction of students fail to attend course lectures, which are traditionally the primary means by which educational material is presented to students. Past estimates place the rate of student absenteeism as high as 40 percent (Romer, 1993). Why do students willingly forego a substantial portion of classroom time, and what price do they pay? From a labor market perspective, the answer to this question is not trivial. The private returns to college performance are potentially high, for instance if firms view good grades as a signal of future productivity.

A growing literature has attempted to understand the causes and consequences of skipping class. Past studies have found a uniformly robust positive relationship between class attendance and performance. A commonly encountered problem in the literature is the difficulty in disentangling the causal effect of class attendance from unobserved factors such as a student's intrinsic motivation or interest that are almost surely correlated with both attendance and class performance.

## 2 Prior research

There have been few studies identified that examine the relationship between students' attendance in classes and participation in paid employment in relation to their academic performance in a given postgraduate programme. Gul and Fong (1993) conducted a Hong Kong study on some accounting students,



and found predictors of academic achievement to be personality type, grades achieved at the school certificate in mathematics and accounting, and previous knowledge of accounting. A Welsh study by Gracia and Jenkins (2003) considered gender, prior year performance and students' application to study and their relationship to student performance. Gracia and Jenkins argue that academic failure creates both emotional and financial costs for students, and that significant cultural differences may be attributed to academic success. This study found that if students are actively committed to self-responsibility for their studies, they tend to do well in formal assessment. They argued that the work experience allows students to get finances thereby reducing the need for them to earn money while studying, thereby reducing financial and time management pressures.

Nonis and Hudson (2006) note that the Higher Education Research Institute at UCLA's Graduate School of Education has found that since 1987 the time students spend studying outside of class has declined each year, with only 47% spending six or more hours per week studying outside of class compared with 34% in 2003. Nonis and Hudson (2006) identify a need for empirical research to determine the impact of student work on academic performance, and its impact on the design of academic programs. Their study found a lack of evidence for a direct relationship between times spent working and academic performance. However, Sullaiman and Mohezar (2006) reveiewd studies conducted by McClure, Wells and Bowerman (1986), Schellhardt (1988) and Dreher and Ryan (2000) which found positive relationship between work experience and academic performance, and studies by Dreher and Ryan (2000, 2002 and 2004) Dugan et al. (2006) and Graham (2001) and Peiperl and Trevelyan (1997) which found no relationship between students working and their grade point average. (These authors reviewed by Sullaiman and Mohezar, though, were not reviewed by us).

Hutcheson and Tse (2006) at the University of Technology Sydney found that on average students who attended more than half of the tutorials obtained a higher final mark than students who did not, and that this was particularly so for international students. This begs for further research as to why, when students pay high fees for classes, they do not attend. This paper identifies the need to investigate whether the need to work is one possible reason for this finding. De Zoysa and Rudkin (2007) undertook a pilot study examining the relationship between academic performance and student socio-economic circumstances, which did not find a direct significant relationship between the number of hours of paid employment and student academic performance. However, a significant positive relationship between shift workers and academic performance was found.

Ajiboye and Tella (2006) also found that there was a significant influence of students' level of attendance on their academic performance. Ledman and Kamuche (2002) found further that students with better attendance not only scored higher test performance but also demonstrated more knowledge, at least of the course material, in learning. In a subsequent study, Marburger (2006) reported a mandatory attendance policy which confirmed significant reduction in absenteeism and improvement in examination performance. Similar correlations between class attendance and student performance were found in more recent studies in Engineering Education. Purcell (2007) has shown that every 10% increase in class attendance was seen to improve examination performance by about 3%. Naher, Brabazon and Looney (2008) also found that students with higher attendance achieved better performance in the School of Mechanical and Manufacturing Engineering. Similarly, St. Clair (1999) pointed out that compulsory attendance policy could not guarantee high academic achievement and emphasized that class context is important and motivation to attending class would be more beneficial. A series of work on motivating students to attend



class has emerged. Sleigh and Ritzer (2001) recommended policies to focus on rewarding good attendance rather than penalizing poor attendance.

## 3 Methodology

This study uses the advantage of cause and effect relationship of the usual regression analyses. Since the motive of the study is to address the effect of class attendance on academic performance of postgraduate students, the independent variable is the class attendance, while the dependent variable(s) considered are continuous assessment (CA) and examination results. The regression model used is the linear model given as

## 4 Results and discussion

The result of the correlation analysis shows that student's attendance is highly correlated at 99.1% with continuous assessment. But the correlation with examination result is 78.3%, while with final grade is 88.1%. These results portrays the fact that most students due to inability to attend classes for reasons such as employed jobs finds it difficult to attend to continuous assessments. The result with examination is a little different as most students actually prepare for examinations only. However, since the final grade is a combination of the continuous assessment and examination score, it shows also that final grade has a lot to do with class attendances.

The result of the fit of the model shows a 98.2% for (while is 98%). This means that we can use the model for predicting students' continuous assessments.

The regression result shows that for every unit of the unexplained continuous assessment, we have attendance explaining the performance of a student's continuous assessment by 1.75 units. That is, 175% of attendance explains the

performance of the continuous assessment. The statistic is also significant at 5%.

The result of the fit of the model shows a 61.3% for (while is 57.4%). This means that the model is marginally capable of predicting students' examination scores.

The regression result shows that for every unit of the unexplained examination performance, we have attendance explaining the performance of a student's examination scores by 3.389 units. That is, 338.9% of attendance explains the performance of a student in the examination. The statistic is also significant at 5%.

The result of the fit of the model shows a 77.6% for (while is 75.4%). This means that we can use the model for predicting students' final grade (TOTAL).

The regression result shows that for every unit of the unexplained final grade, we have attendance explaining the performance of a student's final grade by 5.139 units. That is, 513.9% of attendance explains the performance of a student's final grade. The statistic is also significant at 5%.

The result of the correlation analysis shows that student's attendance is highly correlated at 96.7% with continuous assessment. But the correlation with examination result is 66.2%, while with final grade is 75.7%. These results portrays the fact that most students due to inability to attend classes for reasons such as employed jobs finds it difficult to attend to continuous assessments. Just like our initial findings, the result with examination is a little different as most students actually prepare for examinations only, while the final grade has a lot to do with class attendances as well.

The result of the fit of the model shows a 93.4% for (while is 92.9%). This means that we can use the model for predicting students' continuous assessments.

The regression result shows that for every unit of the unexplained continuous assessment, we have attendance explaining the performance of a student's continuous assessment by 1.429 units. That is, 142.9% of attendance explains the performance of a student's continuous assessment. The statistic is also significant at 5%.



The result of the fit of the model shows a 43.8% for (while is 39.1%). This means that the model is not strong enough for predicting students' performance in the examination.

The regression result shows that for every unit of the unexplained examination performance, we have attendance explaining the performance of a student in the examination by 4.921 units. That is, 492.1% of attendance explains the performance of a student in the examination. The statistic is also significant at 5%.

The result of the fit of the model shows a 57.3% for (while is 53.8%). This means that the model can marginally predict students' final grade (TOTAL).

The regression result shows that for every unit of the unexplained final grade, we have an attendance explaining the performance of a student's final grade by 6.351 units. That is, 635.1% of attendance explains the performance of a student's final grade. The statistic is also significant at 5%.

## 5 Conclusion and recommendations

Our attention in the current paper has focused on the causal impact of class absence on student performance. It could be observed from the findings that class attendance is a mediating factor in student's performance in a postgraduate programme. This result confirms some other previous findings on the importance of class attendance and students' performance in college (Biegel, 2000; Chung, 2004). Frequent absenteeism of a student from classes will deny such student opportunity of benefiting from the teachers instruction. Where this is persistent, it leads to corresponding poor achievement as it has been shown in this

study.

Perhaps, one major implication of this finding is the need to design a remediation approach that will take care of students with low attendance. This category of students will require a one-on-one approach with the tutors. Ordinarily, this approach may be effective in those institutions where course enrolment is low, whereas in those courses with high student enrolment and inadequate technical facilities which characterizes most of African institutions, then this approach suffers in implementation.

The policy implications of the findings in this study include that evidence is consistent with the view that class attendance is a productive activity - the estimated causal effect of missing class is negative.

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