
EFFECT OF MATHEMATICS AND ENGLISH LANGUAGE PROFICIENCY ON ACADEMIC PERFORMANCE OF BUSINESS EDUCATION
STUDENTS IN FINANCIAL ACCOUNTING

By

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ABSTRACT

This paper investigated into the Effect of entry grades on academic performance of students, with particular reference to proficiency in Mathematics and English Language as requisite condition for students' academic performance in Financial Accounting. To achieve this, three research objectives and three research questions were formulated to guide the study. The study adopted a quasi-experimental pre-test post-test design. Three null hypotheses were formulated and tested for significance at 0.05 margin of error, using t-test for testing null hypotheses one and two, analysis of variance (ANOVA) for testing gender difference and academic achievement in Financial Accounting. Results showed that gender differences were significant when effect of Mathematics and English language background on academic achievement was compared in male and female students. Other findings further showed that significant difference occurred when background in Mathematics/English was taken as basis for academic achievement of students in Financial Accounting. It was also found that there was a positive association/relationship between proficiency in Mathematics and English and mean academic performance. The researchers recommended among others, that teachers would need to encourage students in requisite subjects like Mathematics and English as this will aid them in understanding Financial Accounting.

Keywords: Mathematics, English language, Academic Performance, Financial Accounting.

INTRODUCTION

Education is fundamental to the development of human capital and national development of a country. This realization has made nations to place so much premium on education as a bedrock upon which their cultural, political and socio-economic wellbeing rest. In this era of globalization and technological revolution, education is considered as a first step for every human activity. According to Batte and Lewis (2002) in Magaji

(2014), education plays a vital role in the development of human capital and is linked with an individual's well-being and opportunities for better living. Education ensures the acquisition of knowledge and skills that enable individuals to increase their productivity and improve their quality of life (Saxton, 2000 in Magaji, 2014). This increase in productivity also leads towards new sources of earning which enhances the economic growth of a country.

As a hallmark for socio-economic development, each nation of the world, because of the importance it attaches to education, has fashioned out a unique educational system in line with its aspiration and developmental need. In order to satisfy the needs and aspirations of society, educational planners are vested with the responsibility of constantly reviewing the educational systems and school curricula just to enable their countries achieve developmental goals envisioned by the society.

The educational system adopted by Nigeria is the 6:3:3:4 system of education where the child spends 6 years in primary school, 3 years respectively in junior and senior secondary school and 4 years in the university as the case may be. At every stage of the child's education, emphasis is laid on numeracy and English language which is seen as a basis for cognition and a determinant/predictor of student's academic achievement. The argument has been that Mathematics boosts students' arithmetical reasoning and English language for effective communication. These two subject areas are core and a *sin-quo-non* for understanding all subjects taking by the student including Financial Accounting. Numerical ability is associated with intellectual capacity of the individual, hence the emphasis on a credit pass in Mathematics and English language, which serves as pre-requisite or a precondition for admission into Nigerian universities. It is generally believed that, students' academic success is contingent on individual's proficiency in Mathematics and English language and students' who possess credit passes in these core subjects tend to perform better academically.

Previous knowledge and capability of a student in Mathematics and English language is assumed to be responsible for high performance. The universal selection theory conjectures that all knowledge and

knowledge growth are due to a process of cumulative blind variation and selection (Cziko, 1995). In other words, knowledge and knowledge growth are achieved through an aggregate of conscious and unconscious historical activities and choices. In context, students' selection of programmes and university selection criteria give regard to varied factors including previous subject knowledge as these are perceived to be contingent on future knowledge growth and performance. The university admission system in Nigeria and that of many countries is based on this theory.

A number of researches had been conducted on factors that determine the academic performance of students. Investigating the variables associated with educational performance in university has occupied researchers in different disciplines for many years (e.g., Alfa & Othman, 2005; Bergin & Reilly, 2006). They have tried to determine which variables impact student performance in positive and negative direction. Research studies about this subject have been conducted by various academicians in various countries and areas (Mutchler, Turner, and Williams, 1987; Cheung and Kan, 2002; Kruck and Lending, 2003; Borde, 1998) cited in Julius et al. (2013).

Investigating the variables associated with educational performance in university has occupied researchers in different disciplines for many years (Alfa & Othman, 2005; Bergin & Reilly, 2006). While this research stream has permeated the accounting domain and has had some impact on educational practice, there is a need to both replicate prior studies in different settings and at different points in time and to extend existing research to consider the potential impact of a wider set of factors on students' educational success performance (Byrne & Flood, 2008).

Individuals behave differently in similar situations and evaluate conditions differently based on

their unique expectations, values, previous experiences and temperament (DeNeve and Copper 1998, cited in Ahangar 2010)). In his findings, Ahangar (2010) found that 62% of students have good resilience while about 38% of them need assistance in building up their resilience ability. He also added that, such students need to maintain performance and stamina during periods of high demand and should think clearly and logically under pressure. Students' thinking, intuitiveness and systematic nature were highly positively impactful on their resilience.

The concern of educational planners and other stakeholders today, is how to ensure goal attainment in education; this implies achievement of high quality performance by both teachers and students. Educational researchers with every passing day are grappling with the imperative of trying to identify which factors can serve as predictor of students' performance in the classroom. To some of these researchers, a good background in Mathematics and English they say enhances students' cognition and therefore, it is predictor of academic success. Those students who are proficient in these subjects are assumed to perform better than those without a good background. In other word, the overall performance of students in school is said to be gauged by their background of Mathematics and English, this however, has instigated this investigation on the effect of credit pass in Mathematics and English language on students' performance in Financial Accounting in order to find out if academically those students without a good background in these two subjects are under achievers.

RESEARCH OBJECTIVES

The research has the following objectives:

1. To determine the mean difference in the performance scores of male and female

students' who possess the required entry grades (proficiency in Mathematics and English) in Financial Accounting?

2. To determine the mean difference between the performance scores of students' with proficiency in Mathematics and English language in Financial Accounting and those without?
3. To investigate the extent to which entry grades (credit pass in Mathematics and English language) influence the performance scores of Business Education students in Financial Accounting.

RESEARCH QUESTIONS

1. Is there any significant difference between the mean performance scores of male and female students who possess the requisite entry grades (proficiency in Mathematics and English language) in Financial Accounting?
2. Is there any significant difference in the mean performance scores in Financial Accounting between students who possess requisite entry grades?
3. To what extent does entry grade (credit pass in Mathematics and English language) influences the performance scores of Business Education students in Financial Accounting?

RESEARCH HYPOTHESES

1. There is no significant difference between proficiency in Mathematics and English and academic performance of male and female students in Financial Accounting.
2. There is no significant difference between the mean performance scores of students who are proficient in Mathematics and English language

with entry grades in Financial Accounting and those who are not.

3. There is no significant relationship between proficiency in Mathematics and English language and the performance of Business Education students in Financial Accounting.

LITERATURE REVIEW

If there is arguably one subject that promotes national development, it is Mathematics. Mathematics is one subject that pervades all learning areas, it is important in the sciences, technology, social science and Arts. Mathematics provokes critical thinking among its students and serves as a basis for predicting academic achievement of students according to previous researches. According to Tella (2007) today, mathematical methods pervade literally every field of human endeavor and play a fundamental role in economic development of a country.

In our march towards scientific and technological advancement, we need nothing short of good performance in Mathematics at all levels of schooling. Unfortunately performance of students in Mathematics at the end of secondary education has not improved in the past decade as revealed by Umoinyang, (1999) in Tella (2007). Various factors have been adduced for poor performance of students in Mathematics. The interest of students in Mathematics have been related to the volume of work completed, students task orientation and skill acquisition, students personality and self- concept (More, 1973) cited in Tella (2007), feeling of inadequacy (Callahan, 1971), motivation and self-confidence (Aiken, 1976), anxiety (Aiken, 1970), shortage of qualified Mathematics teachers, (Oshuche 1978, Ale, 1989), poor facilities, equipment and instructional materials for effective teaching (Oshibodu, 1984, Akpan 1987, Odogwu, 1994), use of traditional chalk

and talk methods, (Oshibodu, 1988, Edwards and Knight, 1994), large pupils to teacher ratio (Alele-Williams 1988) Mathematics fright/phobia (Georgewill, 1990) cited in Tella (2007). Wentzel (1998) cited in Tella (2007), stated that interest in activities tends to increase the likelihood that individuals formulate goals relating to that activity and invest time and effort to achieve them. Moreover, individual characteristics such as intelligence, cognitive styles, and personality play an important role in learning and instruction as does the context of learning. Other research findings have shown that individual students' characteristics variables such as motivational orientations, self-esteem and learning approaches are important factors influencing academic achievements.

In the effort to improve students cognition and affective outcomes in Mathematics and/or school learning, educational psychologists and Mathematics educators, have continued to search for variables (personal and environmental) that could be manipulated in favour of academic gains. Of all the personal and psychological variables that have attracted researchers in this area of educational achievement, motivation seems to be gaining more popularity and leading other variables (Tella, 2007). All the above stated reasons, for persistent failure in Mathematics, bear relevance in one way or the other to poor performance of pupils in Mathematics. When explaining the illustration above Aremu, (1998) explained that; when pupils express lack of interest in the subject, it affects the way they react or listen to the teacher, and when many of the pupils believe that they cannot pass, the teacher is also affected. This is because aside of the negative response from his/her pupils, the teacher is as well being confronted by a lot of other factors (e.g., low income, low status in society, large teacher-pupils ratio) and so on. These may cause the teacher to resort to the easiest way of disseminating knowledge that is 'chalk and talk'

without the use of instructional materials. He may not also bother to vary his teaching styles to suit individuals; therefore the cycle goes on.

One unfortunate outcome of this is that, the negative attitude towards the subject is passed down from one generation of pupils to another and therefore the cycle keeps enlarging. What then could be done to break such a cycle of failure? This has been the question by many Mathematics educators and researchers (Akpan 1987, Baya'a 1990) in Tella (2007). A lot of new and modified old methodologies have been proposed to improve performance in the subject (e.g., Ande, 1990; Akinsola, 1994; Broussard & Garrison, 2004) in Tella (2007) etc. Instructional materials have also been designed and developed to aid Mathematics teaching and learning (Skemp 1989) cited in Tella (2007). All these are to help break this cycle of poor performance by motivating pupils to learn Mathematics.

The issue of motivating learners is seen as an important aspect of effective learning. In fact psychologists believe that motivation is a necessary ingredient for learning (Biehler and Snowman, 1986). They believe that satisfactory school learning is unlikely to take place in the absence of sufficient motivation to learn (Fontana 1981). The question now, is it possible to motivate pupils to learn Mathematics? And how could this be done? One needs to therefore look at the effect of motivation on learning. The issues of motivation of students in education and the impact on academic performance are considered as an important aspect of effective learning. However, a learner's reaction to education determines the extent to which he or she will go in education. The impact of motivation on education of Mathematics of a child cannot be undermined. That is why Hall (1989) observed that there is a need to motivate pupils so as to arouse and sustain their interest in learning Mathematics. "Motivation raises a

question on why people behave the way they do". An individual could therefore, from psychologists' point of view, be seen as politically, socially and academically motivated depending on the motive behind his or her activities. Based on the foregoing, research on Mathematics academic achievement should be considered a continuous process until there is evidence of improvement in interest and performances of the learners in the subject particularly the secondary school students.

CONCEPT OF ACADEMIC PERFORMANCE

The goal of education is the attainment of educational excellence by students, which is measured by their achievement in classroom. Attainment of excellence implies that teachers give quality instruction and this is reciprocated by exhibiting high quality of learning among students which is commensurate to the intake of instruction given. Academic performance is how students deal with their studies and how they cope with or accomplish different tasks given to them by their teachers. The school has a variety of instruments through which it can measure academic performance; these range from test, examination, assignment grades and projects to mention but a few. Quality education produces productive students who lead to the prosperity of their respective educational institution and subsequently are proved as strong contributors to the national well-being.

Tuckman (1975) in Magaji (2014) defined performance as the apparent demonstration of understanding, concepts, skills, ideas and knowledge of a person and proposed that grades clearly depict the performance of a student. Hence, their academic performance must be managed efficiently keeping in view all the factors that can positively or negatively affect their educational performance. Use of technology

such as internet is one of the most important factors that can influence educational performance of students positively or adversely. Shah et al. (2001) proposed that student users are affected by the internet and this impact is determined by the type of internet usage. They are positively affected by the informative use of internet while having drastic impact of recreational use of internet on them. Also, Oskoueii (2010) proposed that internet is advantageous to both students and teachers if used as a tool of knowledge creation and dissemination.

METHODOLOGY

The study adopted a Quasi Experimental design of pre-test post-test control group, bearing in mind that the researcher does not have direct control over independent variables because their manifestations have already occurred or because they are inherently not to be manipulated by the researcher. The design offered less rigorous experimental control as compared to the true experimental design. The design was specific with non-randomized control group and non-equivalent groups. This was because the subjects were taken as intact groups composed of mixed of low and high achievers. In addition, the design was expected to correct various group differences statistically. The researcher however, examined the effect of students' proficiency in Mathematics/English (independent variable) on undergraduate students' achievement in Financial Accounting (dependent variable).

Population

The population for the study comprised 100 Level students' of Federal Universities in Northern states of Nigeria who run the Business Education programme. Quantitatively the population for the study is 1200 undergraduates from six universities.

Sample and Sampling Procedure

The study's participants were 451 Business Education students drawn from 6 universities in northern states of Nigeria. This sample size concurs with Boyd (2006) that a population of 1200 subjects should have a sample of 451. This sample of students was randomly chosen using stratified random technique.

Instrument of Data Collection

The instrument for data collection was an achievement test tagged Student' Academic Achievement Test (SAAT). The instrument was prepared by the researchers using contents of lectures given before the experiment and problems extracted from Financial Accounting text books.

Reliability of the instrument

To ascertain the reliability of the instrument after modification, it was administered on 30 respondents who were students selected from two universities which were not part of the study sample. The reliability coefficient yielded an $r = 0.86$ through cronbach alpha. All the items in the instrument were very relevant to the content of the study.

Data Collection Procedure

All the 451 participants that made up the sample for the study were subjected to pre-test, post-test to assess Students' mean performance scores in the Financial Accounting test. This was preceded by 14 days of lecture on relevant topic to the research exercise.

DATA ANALYSIS AND RESULTS

Data generated for the study were analyzed using inferential statistics which included; student t-test and analysis of variance (ANOVA) and Pearson Product Moment Correlation to test relationship between

variables of the study. Specifically, the study provided answers to three research hypotheses. The sequence of the presentation of the results is in accordance with that of the hypotheses. In this study, three null hypotheses were tested for significance level at 0.05 margin of error. The results of the study were presented in tables below:

Research hypothesis one

H₀₁ states that there is no significant difference in the mean academic achievement of male and female students who are proficient Mathematics and English in Financial Accounting.

The result of the above hypothesis (H₀₁) is presented in table I below:

Table 1: T-test showing the mean difference in performance in Financial Accounting of male and female students with proficiency in Mathematics and English

Gender	N	X	S.D	Df	t-cal	t-crit	decision
MALE	260	48.3	18.2				
FEMALE	190	33.4	13.6	448	9.4	1.96	S*

S* - Significant at 0.05 probability level.

Research hypothesis two states that: There is no significant difference between academic achievement of

students with proficiency in Mathematics and English in Financial Accounting and those who do not.

Table 2: T-test Showing Mean Difference Summary of Academic Achievement of Students with proficiency in Mathematics and English in Financial Accounting and Students who do not.

Variables	N	X	S.D	Df	t-cal	t-crit	S*
Boys	150	3.93	25.8	44	8.05	1.96	S*
GIRLS	300	10.3	7.8				

S* - Significant at 0.05 significant level.

Table 3: ANOVA Source Table of Summary of Gender Difference and Academic Achievement in Financial Accounting

Source of Variance	SS	Df	Ms	F-ratio	F-critical
Between	271174	1	90391	23.01	3.84
Within	15555	448	39.28		
Total	286729	449			

S*: Significant at 0.05 probability margin.

Table 1 shows the results of the analysis conducted on the effect of entry grades (credit pass in Mathematics and English) on academic achievement in Financial Accounting based on gender. The result clearly, revealed that significant difference exists in the academic achievement of male and a female student in Financial Accounting, this wide disparity can be seen where (t. cal.=9.4; t.crit.1.96; DF = 448; at 0.05 level), going by this result, it then means that null hypothesis 1 (H0), is rejected. The Table 2 revealed that credit passes in Mathematics and English are good predictors of students' academic performance in Financial Accounting. The result revealed that there was significant difference in the academic achievement of

students who had credit in Mathematics and English language and students without with (t. cal. =8.05; t. crit. =1.96; DF = 449 and at 0.05 level).

Research Hypothesis three (H₃)

Research hypothesis states that there is no significant relationship between student's proficiency in Mathematics and English and students' academic achievement.

The calculated f-ratio at (1, 448) is 23.01, which showed a significant difference on gender and academic achievement as clearly stated in the table 1.

Table 4: Pearson Product Moment Correlation between Entry Grades (credit in Mathematics and English) and Students' Performance in Financial Accounting.

Variables	N	X	SD	DF	R	Decision
Entry grades	225	2.59	0.76	189	2.370**	S
Mean performance		2.29	0.99			

** correlation is significant at 0.01 level (2 tailed)

Table 4 indicated that the Pearson Product Moment Correlation Coefficient r was 2.370. Using Choudhury's Range there seem to be a positive correlation between entry grades of students and their performance in Financial Accounting. Therefore, the hypothesis is retained. This means that there is a strong positive association between entry grades and mean performance of Business Education students in Financial Accounting.

DISCUSSION

The result of the first hypothesis, which compared the effect of proficiency in Mathematics and

English language on academic achievement scores of Business Education students in Financial Accounting using gender as a variable of interest, is found to be significant. The findings revealed that credit pass in Mathematics and English had significant effect on academic achievement of students in Financial Accounting as far as gender consideration is concerned. This finding of the study also revealed that there was a significant difference between the mean performance scores of students who were good in Mathematics and English language and those who were deficient in Mathematics and English language. A clear positive association was found between proficiency in

Mathematics and English language and mean performance score of students in Financial Accounting.

CONCLUSION

Entry grades (including credit pass in Mathematics and English language) serve as fundamental predictor of students' performance in all subjects vis-à-vis Financial Accounting. This is because a significant association was revealed between entry grades and performance in Financial Accounting. Therefore, this research showed that Students with proficiency in Mathematics and English language perform better than those without.

Hence the need for teachers to employ simplified methods of teaching that will enhance students' comprehension of core subjects like Mathematics and English language. A highly motivated student by his instructors will develop interest and perform optimally.

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