

Effects of Problem-Based Teaching Method on Students' Academic Performance and Retention in Financial Accounting in Technical Colleges in Anambra State

Prof. Eze TI*, Dr. Ezenwafor JI, Obidile Ifeoma J

Department of Vocational Education, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

***Corresponding Author:**

Prof. Eze T. I.

Email: tylodubaeze@yahoo.com

Abstract: The need to improve students' academic performance in financial accounting necessitated the study to determine the effects of problem-based teaching method (PBTM) on students' academic performance and retention in technical colleges in Anambra State. Two research questions guided the study and four null hypotheses were tested at 0.05 level of significance. The design of the study was quasi-experimental design of pretest, posttest non-randomized control group. Population of the study was all the 168 National Business certificate (NBC) year II accounting students of state owned technical colleges. A sample of 138 was purposively selected from two intact groups. Instrument for data collection was Accounting Achievement Test (AAT) validated by three experts with a reliability coefficient of 0.83. Arithmetic mean was used to analyze data relating to research questions while analysis of covariance (ANCOVA) was used to test the null hypotheses. Findings revealed that students taught financial accounting using PBTM performed better with higher post-test scores than those taught using lecture teaching method. Also there was no interaction effect of treatments and gender on students' academic achievement and retention in financial accounting. Based on the findings, it was concluded that PBTM has the potential to improve students' academic performance and retention in financial accounting. Consequently, it was recommended among others that teachers should use PBTM in teaching financial accounting in order to improve students' academic performance and retention in the subject. Also, school administration should provide opportunities for in-service training for accounting teachers in order to equip them with competencies needed in the use of PBTM.

Keywords: student, academic performance, problem-based teaching method (PBTM).

INTRODUCTION

Education is one of the tools that help to modify the behavior of its recipients to become better citizens and thus contribute positively to the society. One of the goals of education in Nigeria, according to the National Policy on Education as proposed by the Federal Republic of Nigeria [1], is the development of appropriate skills, mental, physical and social abilities and competencies to empower the individual to live in and contribute positively to the society. Such knowledge, skills and attitude are acquired through the training provided in basic, post basic education and career education. One wonders if this objective could be achieved with the rate of decline in performance of students in external examinations, which are meant to assess their level of acquisition of knowledge, skills and attitude [2].

Examination bodies like the National Examination Council (NECO), the West African Examination Council (WAEC), the National Business and Technical Examination Board (NABTEB) are charged with the responsibilities of assessing students' competencies in their final level, after which they would be awarded, the Senior School Certificate (SSC),

West African Senior School Certificate (WASSC) and National Technical Certificate (NTC)/National Business Certificate (NBC) respectively. Technical colleges belong to the post basic education levels that are usually assessed by the aforementioned examining bodies.

Technical colleges were established to provide opportunities for the mastery of knowledge and skills in selected occupations as well as for the development of personality for useful living [1]. Technical college students are taught to develop proficiency in technical and business related subjects for industrial and trade success. Subjects offered in technical colleges are in three groups of compulsory subjects, core subjects and trade subjects (electives). Financial Accounting is one of the core subjects offered under business related subjects.

OBJECTIVES OF TEACHING FINANCIAL ACCOUNTING IN SECONDARY SCHOOLS

Financial Accounting is defined as the classification and recording of monetary transactions and presentation of the financial results of the activities of an entity for decision making [3]. The knowledge of financial accounting is necessary for every individual

and business endeavour. This is because financial accounting deals with records of one's income and expenditure which are very vital in any serious business. This is why Francis [4] posited that every individual irrespective of the class requires the knowledge of financial accounting in handling day-to-day activities. Objectives of financial accounting at the senior secondary school level according to National Examination Council [5] are:

1. To enable senior secondary school students appreciate the basic roles, functions and principles of accounting.
2. To lay proper foundation for further study of accountancy and allied courses at higher level and
3. To enable the students understand basic accounting principles, practice and their applications to modern business activities.

Despite the importance of accounting in daily activities of individuals, businesses and government, the persistent poor performance of technical college students in the subject has not been adequately addressed. Records available showed that there has been a decline in the academic performance level of technical college students in financial accounting. For instance, the percentage of students that obtained pass level in financial accounting in NABTEB examination in 2011, 2012 and 2013 were 33%, 28% and 11% respectively.

Spinath [6] opined that academic performance represents outcome that indicates the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in schools. It is described as the outcome of students' effort in examinations. It could be high, average or low/poor. Abdullahi [8] described poor academic performance as any performance that falls below a desired standard. According to Safo, Ezenwa and Wushishi [7] retention is the ability to keep or retain the knowledge of what is learnt and be able to recall it when it is required. In the context of this study, retention is the ability to recall or remember what has been taught after a given time as a measure of students' progress.

Literature indicates that there are many factors which could hinder effective learning of accounting and bring about poor academic performance. Omotayo [9] and Olarinoye [10] outlined such factors to include lack of qualified teachers, inadequate supply of facilities and equipment, lack of instructional materials and wrong method of teaching. Among all these factors, teachers' method of instruction has been viewed to have direct impact on students' academic performance [11].

METHODS OF TEACHING FINANCIAL IN ACCOUNTING

Many teaching methods and approaches have been in use in the teaching of financial accounting such as lecture and demonstration among others [12]. However, these methods do not seem to be yielding the expected results currently. There are opinions that student-centred methods could improve students' academic performance in different subjects better than teacher-centred methods. Umar, Abdullahi and Hassan [13] advocated for use of student-centred teaching methods in the teaching of accounting yet most teachers at the post basic education still use conventional (lecture) method which is teacher-centred in teaching accounting [14].

According to Ndinechi and Obidile [15], lecture method which has been described as teacher-centred method has been found to make students passive learners and should not be solely used in the teaching of accounting. Azih and Nwosu [17] indicated that student-centred methods which are characterized by active involvement of students in the teaching and learning process could be the important factor for improving students' performance in accounting. Student-centred methods include problem based method, guided discovery method and inquiry method among others [16]. The focus of this study therefore, was to ascertain the effects of Problem-based teaching method (PBTM) on student's academic performance and retention in financial accounting.

RESEARCH QUESTIONS

The following research questions guided the study.

1. What are the differences in the post-test mean achievement scores of students taught financial accounting using lecture teaching method and those taught using problem based teaching method?
2. What are the differences in the mean retention scores of students taught financial accounting using lecture teaching method and those taught using problem based teaching method?

HYPOTHESES

The following null hypotheses were tested at 0.05 level of significance.

1. There is no significant difference between the post-test mean achievement scores of students taught financial accounting using lecture teaching method and those taught using problem based teaching method.
2. There is no significant difference between the mean retention scores of students taught financial accounting using lecture teaching method and those taught using problem based teaching method.

3. There is no significant interaction effect of treatments and gender on students' academic performance in financial accounting.
4. There is no significant interaction effect of treatments and gender on students' retention in financial accounting.

METHOD

The design of the study was quasi-experimental design of pretest, posttest non-randomized control group. The study was carried out in technical colleges in Anambra State in South East Nigeria. The population of the study was 168 (102 males and 66 females) technical college accounting students (NBC II) from all the state owned technical colleges in the state. The sample of the study was 138 technical college students. Purposive sampling technique was used to select four schools for the study based on willingness of teachers to participate.

From the four schools selected, one intact class each was used, giving a total of four intact classes. Simple random sampling was used to assign two intact classes to experimental groups and the other two intact classes to control groups. The groups for the study were coded group A and group B comprising one

experimental class and one control class each. Experimental class (Group A) consisted of 43 students (16 males and 27 females) and Control class (Group A) consisted of 36 students (26 males and 10 females). Experimental class (Group B) consisted of 27 students (15 males and 12 females) while Control class (Group B) consisted of 32 students (25 males and 7 females).

The instrument for data collection was Accounting Achievement Test (AAT) adapted by the researcher based on the NABTEB past questions between 2003 and 2013. It contained 30 multiple choice test items with four options (A-D). The instrument was validated by three experts. Reliability of the instrument was determined by administering it to 32 NBC II accounting students who were not part of the population. Kuder-Richardson Formula 21 was used to analyze the data and a reliability coefficient of 0.83 was obtained. Data collected were analyzed using mean scores to answer the research questions. Analysis of Covariance (ANCOVA) was used to test the null hypotheses at 0.05 level of significance.

RESULTS

Table 1: Mean Achievement Scores of Students in Financial Accounting in Both Control and Experimental Groups

Groups	N	Pre-test X_1	Post-test X_2	Mean gain X_G
Control Groups	68	31.12	32.19	22.72
Exp. Groups	70	30.00	54.91	

Table 1 shows the post-test mean scores of experimental and control groups as 54.91 and 32.19 respectively with a mean gain of 22.72 in favour of the

experimental groups. This means that PBTM had a positive effect on students' performance in financial accounting.

Table 2: Mean Retention Scores of Students in Financial Accounting in Both Control and Experimental Groups

Groups	N	Delayed Post-test X_3	Mean gain X_G
Exp. Groups	70	63.27	33.18
Control Groups	68	30.09	

Table 2 shows the mean retention scores of 63.27 for the experimental groups and 30.09 for the control groups with mean gain of 33.18 in favour of the

experimental groups. This means that PBTM had a positive effect on students' retention in financial accounting.

Table 3: ANCOVA Summary of Effects of LTM and PBTM on Students' Achievement Scores in Financial Accounting

Source	Type III Sum of Squares	Df	Mean Square	F	P-value.	Decision
Corrected Model	26955.492 ^a	2	13477.746	212.695	.000	
Intercept	3314.837	1	3314.837	52.312	.000	
Groups	19305.834	1	19305.834	304.669	.000	
Posttest	9145.514	1	9145.514	144.327	.000	Rejected
Error	8554.487	135	63.367			
Total	299257.000	138				
Corrected Total	35509.978	137				

Table 3 shows that at 0.05 level of significance for 1 df, the p-value is .000 which is lower than the level of significance 0.05. This means that there was significant difference between the post-test mean

achievement scores of students taught financial accounting using LTM and those taught using PBTM. The null hypothesis was therefore, rejected.

Table 4: ANCOVA Summary of Effects of LTM and PBTM on Students' Retention Scores in Financial Accounting

Source	Type III Sum of Squares	Df	Mean Square	F	P-value.	Decision
Corrected Model	51567.362 ^a	2	25783.681	1204.11	.000	
Intercept	634.756	1	634.756	29.643	.000	
Groups	3029.759	1	3029.759	141.491	.000	
Posttest	13586.552	1	13586.552	634.499	.000	Rejected
Error	2890.761	135	21.413			
Total	358267.000	138				
Corrected Total	54458.123	137				

Table 4 shows that at 0.05 level of significance for 1 df, the p-value is .000 which is lower than the level of significance 0.05. This means that there was significant difference in the mean retention scores of

students taught financial accounting using LTM and those taught using PBTM. The null hypothesis was therefore, rejected.

Table 5: Interaction Effect of Treatments and Gender on Students' Achievement in Financial Accounting

Source	Type III Sum of Squares	Df	Mean Square	F	P-value	Decision
Corrected Model	17820.716 ^a	3	5940.239	44.999	.000	
Intercept	221953.722	1	221953.722	1681.348	.000	
Groups	15409.054	1	15409.054	116.727	.000	
Gender	10.672	1	10.672	.081	.777	
Groups * Gender	.057	1	.057	.000	.983	Not Rejected
Error	17689.262	134	132.009			
Total	299257.000	138				
Corrected Total	35509.978	137				

Table 5 shows that at 0.05 level of significance for 1 df, the p-value of .983 is higher than the level of significance 0.05. This means that there was no significant interaction effect of treatments and gender

on students' academic achievement in financial accounting. The null hypothesis was therefore, not rejected.

Table 6: Interaction Effect of Treatments and Gender on Students' Retention in Financial Accounting

Source	Type III Sum of Squares	Df	Mean Square	F	P-value	Decision
Corrected Model	38025.341 ^a	3	12675.114	103.358	.000	
Intercept	253296.902	1	253296.902	2065.492	.000	
Groups	33240.945	1	33240.945	271.061	.000	
Gender	32.615	1	32.615	.266	.607	
Groups * Gender	18.256	1	18.256	.149	.700	Not Rejected
Error	16432.782	134	122.633			
Total	358267.000	138				
Corrected Total	54458.123	137				

Table 6 shows that at 0.05 level of significance for 1 df, the p-value of .700 is higher than the level of significance 0.05. This means that there was no significant interaction effect of treatments and gender on students' retention in financial accounting. The null hypothesis was therefore, not rejected.

The study revealed that students who were taught financial accounting using PBTM achieved higher post-test scores than those taught using LTM. This finding is in line with those of Ajai, Imoko and Okwu [18]; Ogunbowale [19] and Olaoye and Adu [20] which reported that PBTM had significant effect on post-test achievement scores of students. This could be

DISCUSSION OF RESULTS

as a result of practical exercises done by the students taught with PBTM.

Also the study found that students taught financial accounting using PBTM retained more knowledge of the concepts than those taught using LTM. This agrees with the findings of Klegeris and Hurren [21] and Hoidn and Karkkainen [22] which reported that students taught using PBTM retained more knowledge than those taught using LTM.

On interaction effect of teaching methods and gender, the study found no significant interaction effect of treatments and gender on students' achievement in financial accounting. This means that the teaching methods used had no interaction effect on gender with respect to students' achievement in financial accounting. This finding supports those of Olatoye and Adekoye [23] and Ajai, Imoko and Okwu [18] which reported that there was no significant interaction effect of treatments and gender on students' academic achievement.

Regarding interaction effect of teaching methods and gender on students' retention, the study revealed that there was no significant interaction effect of treatments and gender on students' retention in financial accounting. This indicated that the teaching methods used had no interaction effect on gender with respect to students' knowledge retention in financial accounting. This finding agrees with Okoro [24] who reported that there was no significant interaction effect of treatments and gender on students' retention.

CONCLUSION

Based on the findings of this study, it was concluded that problem-based teaching method (PBTM) has the potential of improving students' academic performance and retention in financial accounting.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1. Accounting teachers at post basic education level should use PBTM in teaching financial accounting to enhance performance, mastery and retention by students.
2. Accounting students should be encouraged to use PBTM in the learning of financial accounting since it enhances academic performance and retention.
3. School administration should provide opportunities for in-service training for accounting teachers in order to equip them with competencies needed in the use of PBTM for teaching.

4. Curriculum planners should incorporate PBTM as a strategy for teaching accounting in post basic education level.

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