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EFFECTS OF FLIPPED CLASSROOM TEACHING METHOD ON THE ACHIEVEMENT OF MALE AND FEMALE FINANCIAL ACCOUNTING STUDENTS IN SECONDARY SCHOOLS

BY

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ABSTRACT
This study determined the effect of using "flipped classroom on academic achievement of male and female financial accounting students. One research questions guided the study while one hypothesis was tested. Quasi – experimental research design was adopted. The sample of the study comprised 267 respondents made up of 114 male and 153 female students in Awka Education Zone Anambra State. Simple random sampling technique was used to select two secondary schools from each of the three local government areas in Awka Educational Zone. The pre-test and post test were administered to both the control and experimental group. flipped classroom method (FCM) was used to teach the experimental group while the control group was taught the same lesson using traditional method. Also the researchers developed questionnaire whose reliability index was found to be 0.82 using the Cronbach Alpha formula. Data collected from study were analyzed. The research questions were answered using mean and standard deviation while hypotheses were tested at 0.05 level of significance using ANCOVA. Findings are that achievement grades of students taught financial accounting using FCM method were greater than those taught using traditional method; there was significant effect of gender on the students' mean achievement scores of students taught financial accounting using FCM method. It was recommended among others that FCM should

be formally adopted for instruction in secondary schools in order to improve students' performance.

Keywords: Flipped Classroom and Academic Achievement

Introduction

Educators have been pressing for reforms in teaching and learning, and one major objective has been to move away from the traditional instructional method that leads to passive learning, to other instructional methods that leads to active learning (Biggs, 2003). Evolving a more effective method for teaching the subjects in secondary schools so that the students' performance will be high therefore becomes imperative. The method that comes to mind at this juncture is what is called "Flipped classroom teaching (FCM) method. The 'Flipped Classroom' (Bergman &Sams, 2012) is a blended-learning approach (that is it uses a combination of face-to-face teaching and learning with digital and online learning) that is becoming more widespread in higher education as a way to engage students in their own learning and as an alternative to the 'didactic' lecture (Bishop & Verleger, 2013; Butt, 2014; Tune, Sturek& Basile, 2014; Millard, 2012; Hereld& Shiller, 2013; Enfield, 2013). The traditional lecture is predominantly a passive event for students; they may take notes but valuable face-to-face time is often not used effectively for student learning. Lectures can be made interactive if, for example, questions are asked or multiple choice questions linked to personal response systems ('clickers') are used (Lasry, Mazur & Watkins, 2008; Watkins & Mazur, 2010). In 'flipped teaching' or the 'flipped classroom', traditional lectures are replaced, sometimes entirely, by interactive sessions. Students study material prior to the session; this can take the form of short online screencasts (10–20 minutes), entire recorded lectures or directed reading. The screencasts and recorded lectures can be produced by the lecturer, but there is also a large resource of material available on the web that can be used for this purpose. Flipped classroom Teaching (FCM) can also bedefined as a pedagogical strategy that uses feedback between classroom activities and work that students do at home, in preparation for the classroom meeting (Enwere, 2012, p 4). The goals are to increase learning during classroom time, to enhance student motivation, to

encourage students to prepare for class, and to allow the instructor to fine-tune the classroom activities to best meet students' needs (Enwere, 2012).

From the above, it is obvious that, in FCM the work students do at home or outside the school official hours is used to leverage the time they spend in class. The use of FCM as a teaching method is very simple. The tenets of flipping the classroom are not new, and instructors already use a variety of methods to address learner needs. With flipping, the strategy used to reach learners is important. The instructor carefully selects and utilizes flexible features of learning environments to design instruction that meets diverse learner needs. He or she distinguishes lower-level and higher-level cognitive skills and makes decisions about what to deliver, and how to deliver it in a way that maximizes class time and leads to deep, meaningful learning. This replaces the traditional lecture method and therefore used to develop following exercise that the students would work on in class.

Several studies within the literature coverage reported persistent poor performance in Financial accounting by senior secondary school students in Senior Certificate Examination (Ogunu, 2000). Amongst the factors implicated is students' poor performance in Financial accounting mostly in the Book keeping questions as deduced from the literature, is the predominant use of lecture method (expository method) in teaching financial accounting (Enwere&Enwere, 2014). The lecture method is teacher centered with the teacher acting as repertoire of knowledge while the students are passive listeners or dormant recipients of the lessons. Although the lecture method has the advantages of being less tasking and allows for a wide coverage of content within a short time, and in addition allows for teaching large number of students at the same time. It does not always produce positive learning outcomes in many students. This is because it encourages rote learning (mere memorization of basic rules) which does not enhance meaningful learning or student's academic achievement. The academic achievement of student is a major indicator as to whether or not learning has taken place (Ogunu, 2000). According to Okoli&Egbunonu in Enwere&Enwere, (2014), academic achievement involves observable and measurable performance of students that take place in the presence of a standard for measuring academic excellence. It is generally observed that teachers can

enhance students' academic achievement by employing different teaching method. In teaching Financial accounting (bookkeeping unit), variations in teaching methods are well recognized.

The revolutionary effects of FCM as a teaching method have been documented by a number of authorities such as Simkins and Maier (2004). Marrs and Novak (2004); and Marr, Blake and Garvin (2003). The American society for cell Biology in Enwere and Enwere (2014) for instance has reported the following revolutionary effects of FCM method on students' learning and success: Increase in classroom interactivity; Provision of ongoing formative assessment to students; Improvement in class preparation; Improvement in students study habits.

Furthermore, Cohen, Kulik and Kulik (2009) found that FCM as a teaching method enhanced students performance in mathematics. Fitz-Gibon (2010) found that low achieving students improved better when taught with FCM. Richard (2004) in his study reported the influence of gender on FCM students' achievement.Many researchers among whom are Good and Brophy (1984) have observed that although boys generally receive more praise than girls from their teachers, they also receive more criticism and perform high than girls in class.

Purpose of the Study

The main purpose of this study was to ascertain the effect of using FCM method on students' performance in teaching business subjects in comparison to the conventional methods of teaching the subject. Specifically, this study sought to:

- Determine the effect of FCM on the mean achievement of male and female students in financial accounting.

Research Question

One research question guided the study:

- What is the effect of FCM on the mean achievement of male and female students in financial accounting?

Null Hypothesis

One null hypothesis was tested at 0.5 level of significance.

- There is no significant difference in the mean achievement score of male and female students taught financial accounting using FCM.

Method

The design of the study is quasi experimental, specifically, the pre-test,

post test, non equivalent control design. This was used because intact classes were used since it was not convenient for schools used in this to randomly assign students to experimental and control conditions. Pre-tests were administered to all groups. The sample consisted of two hundred and twenty-five (225) senior secondary schools two (SS II) from sixteen (16) class intact classes randomly sampled from sixteen senior secondary schools in Awka Education Zone of Anambra State. All the students are in two co-educational secondary schools from 3 L.G. As in Awka Education Zone were purposively chosen for the study. One school from each of the 3 L.G. As was randomly selected and assigned to experimental group while one should again from each of the L.G. As was also randomly selected to serve as the control group. The experimental schools were assigned to FCM method of teaching while control schools were assigned to the lecture method of teaching financial accounting. The experimental sample (N = 133) consisted of 60 boys and 73 girls, while the control sample (N = 134) consisted of 54 boys and 80 girls.

The only instruction for the study was a FCM financial accounting achievement Test (FCFAAT). JIFAAT is a 30-item multiple choice test developed by the researcher based on the financial accounting JSS three (3) (basic 9) scheme of work which includes: preparation of trial balance, trading account, profit and loss accounts and balance sheet.

FCFAAT was subjected to both content and face validity. Face validity was established by evaluating of the test item by three experts in test construction from a university and three experienced senior secondary school financial accounting teachers. 30 items (out of the initial draft 0 50 items) were found suitable in terms of discrimination and facility idiocies after careful items analysis. A reliability coefficient of 0.82 was established using Cronbach Alpha.

Control of Extraneous Variables

Nworgu (2006) referred to extraneous variables as independent variables which could exert some influences over the dependent variable but are not themselves being studied. Hence, the following extraneous variables could be identified in this study and was checked or controlled as follow:

Interaction among Students in different Treatment Groups

To minimize the interaction of the treatment groups, the experimental groups were purposively selected in

different location of the area of study and were assigned treatment models randomly.

Interaction between the Actual Treatment Groups and the Control Group

To avoid interaction between the students who are receiving treatment and those students in control group, different secondary schools at a distance were used which were selected purposively as earlier stipulated by the researcher.

Reducing Test Wiseness by the Students

This was checked by changing the colour of the papers for the pre-test, post-test and retention test and rearranging the numbers of the instrument to avoid the students feeling they are being retested. Which if they knew may make them mechanical in their response.

Experimental Mortality

Where the experiment lasts for a longer time incidence of mortality may arise, that is a situation whereby subjects used for experiment might reduce in number before the end of the treatment. Thus, experimental mortality like death, illness, transfer of students to another school or withdrawal weretaken care of by moderate time gap of six weeks used for the treatment. Furthermore, with the use of reinforcement, the students were motivated and did not find the programme boring, rather interesting that at the end of each session the students have this slogan; Auntie we enjoyed your lesson, please come again.

School Location

To avoid the effect of using schools from different socio-economic and socio-geographical locations, students in the same socio-localized secondary schools in Anambra State (Awka Educational Zone) were used for this study.

Pre-test Post-test Interaction

To avoid this extraneous variable, which has to do with, if the two tests are too close, the tendency for the students' answers to be influenced by remembering the answer given in pre-test; and if too long the effect of forgetting what was learnt, the researcher ensured that the gap between the two tests was on the average by using the period of six weeks. This helped to reduce the effect of history and also control the pre- test sensitization.

Selection Biases

The treatment group and the control group were selected purposively. Each of the groups was not aware that another group existed. The researcher did not select SSI students who may not have got enough knowledge for the experimental exercise/activities, or SSIII students who may be busy preparing for their external examinations. Thus, the internal validity of between groups was not threatened. The criterion for selecting the subjects was their year or level of study. Hence any difference between the pretest and the post test results is attributed to the treatment given to the experimental group.

Stability of Instrument

It has been established that the instrument used for this study was not faulty but was found appropriate. The researcher administered the instrument. Correct usage and interpretation of the instrument was established.

Procedure

The regular financial accounting teachers in the selected schools were used for the study. Teachers who participated in the experimental treatment were subjected to rigorous training regimen for a period of three weeks at two hours per week. The teachers were trained on how to conduct instructions in financial accounting using FCM method. This was done to ensure uniformity and mastery of the teaching strategy. In addition, each teacher in the experimental school was given a copy of the validated lesson plan and a copy of the instrument to be used for data collection. The teachers in the control schools did not receive any training. They were required to teach the financial accounting concepts using conventional lecture method of teaching. The researchers vetted the lesson plans prepared by the teachers in the control schools ensure that the lesson plans followed the conventional lecture method. In addition, each teacher in the control schools was given a copy of the instruments to be used for data collection. FCFAAT was administered as pre-test to experimental and control groups before treatment commenced to assess the students' knowledge of financial accounting concepts. Data collected were subject to ANCOVA to determine the homogeneity of the groups.

Results

Mean and standard deviation scores of students on cognitive achievement in FCFAAT was used to answer the research question (Table 1) while ANCOVA was used to test the hypotheses (table 2) at 5% confidence level. ANCOVA analysis on pre-test scores for subjects in the experimental and control groups was used to establish that the two groups were equivalent before treatment began.

Research Question 1.

1. What is the effect of FCM on the mean achievement of male and female students in financial accounting?

Table 1: **Pre-test and Post-test Mean Ratings and Standard Deviation of Male and Female Students taught using FCM.**

Source of Variation	N	Pretest mean	SD	Posttest Mean	SD	Mean Gain	Remark
Male Students	60	0.26	0.24	4.53	1.39	4.27	Positive effect
Female Students	73	0.32	0.56	2.41	1.43	2.09	

The result presented in table 2, showed that pre-test mean score of 0.26 and post-test mean score of 4.53 with mean gain of 4.27 for the male students treated with the FCM method. The table also shows pre-test mean score of 0.32 and post-test means score of 2.41 with mean gain of 2.09 for the female students also exposed to the experimental. This implies that FCM method has differential effect on the male and female students.

Hypothesis Testing

There is no significant difference in the mean achievement score of male and female students taught financial accounting using FCM.

Table 2: ANCOVA Analysis on the Effect of Gender on the Achievement Grades of Student taught on financial accounting using FCM and those in the control group

Source of variation	SS	df	MS	f-cal	f-crit	P ≥0.05
Corrected model	42.40	1	42.40			
Intercept	23.14	1	23.14			
Pre-test scores	44.60	1	44.60	6.14	2.87	S
Error	403.08	33	12.18			
Residual	28496.00	35				
Corrected Total	448.69	34				

In the table 2, it was observed that at 0.05 level of significance, 1 df numerator and 34 df denominator, the F – calculated 6.14 o=is greater than the f-critical 2.87 by the result. Ho is not accepted. According to results in table 2, the use of FCM has very high effect on male students with mean gain of 4.27. The method also has high effect on female students with mean gain of 2.09. This implies that the method has a very high effect on the male students with a mean difference of 2.18 against female students in financial accounting.

Discussion

Effects of FCM method on Gender

One of the variables investigated in the study was the effect of gender on the use of FCM method in teaching financial accounting. Results in Table 1 and 2 shows that gender has a very high positive effect on the academic achievements of students in financial accounting. According to the results in the table, male students have mean gain of 4.27 against female students with mean gain of 2.09.

Again, results in table 2 also indicate that gender has significant effect on the use of FCM method in teaching financial accounting. According to the results in the table, the use of FCM has a very high effect on male students with mean gain of 4.51. The method also has high effect on female students with mean gain of 3.79. Thus, the method has a very high effect on the male students with a mean difference of 0.72 against female students.

The above findings are in agreement with Good and Brophy (1984) who found that boys receive more criticisms in class and perform high than girls in class. Bernard in

Enwere (2012) also corroborated the above findings when he found that female students are under achievers in terms of academic activities.

Conclusion

The predominant use of lecture method in teaching financial accounting in schools is ineffective because it does not enhance achievement for all students and does not promote meaningful learning of the subject. The use of FCM is a powerful innovation in the teaching and learning of financial accounting which is capable of increasing the achievement grades of instruction. It implies that environmental factors (be it a developed or non-developed) do not form any obstruction in the application of this relatively new method of instruction. As such it is strongly recommended for instruction in financial accounting and other related areas, at all levels of education.

Recommendations

1. Based on the findings of this study the following recommendations were made.
2. FCM should be formally adopted in secondary schools in order to improve students' performance.
3. Several workshops and seminars should be organized for teachers on the use of FCM method in order to make it popular among the teachers.
4. Secondary school libraries should be upgraded electronically to give students access to electronic data-base in order to fully utilize FCM in teaching and learning processes.
5. Secondary school teachers should undergo training in computer application so that they can fully utilized FCM method in teaching their students.
6. When utilizing FCM method, teacher should act as facilitators of knowledge in order to maintain the students-centered nature of the method.

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