

COMPARATIVE EFFECT OF GUIDED DISCOVERY AND DEMONSTRATION APPROACH ON STUDENTS' ACHIEVEMENT IN FINANCIAL ACCOUNTING

Umar Inuwa and Abdulmutallib Umar Baraya

Department of Vocational and Technology Education, Faculty of Technology Education, Abubakar Tafawa Balewa University, Bauchi, Nigeria.

Corresponding Author's email: alummari@gmail.com



DOI: 10.29816/sjss.7.1.25

ABSTRACT

This study examines the effect of guided discovery and demonstration approach on secondary school students' achievement in financial accounting in Gombe state, Nigeria. A pre-test-post-test-control group design was adopted where 180 students from nine randomly selected schools participated in the study. The students were divided into three equal groups, viz. Guided discovery, demonstration (i.e., experimental groups) and conventional approach (i.e., the control group), all at random. The instrument used for data collection is the Financial Accounting Achievement Test (FAAT). The study found there was no statistically significant difference in the financial accounting achievement of students who were assigned to the guided discovery, demonstration and conventional teaching approach at the pre-test stage, this suggests that at the start of the experiment the students were equal in terms of their achievement scores. However, after the students were exposed to the treatment, there was a statistically significant difference in the financial accounting achievement of students who were exposed to the guided discovery, demonstration and conventional approach in favor of guided discovery approach. The finding suggested guided discovery approach as an effective approach to enhance the financial accounting achievement of the secondary school students. It is, therefore, recommended that government should encourage both curriculum planners and secondary schools' teachers to adopt the guided discovery approach as an instructional approach for teaching financial accounting in secondary schools to improve students' achievement in the subject.

Key words: guided discovery, demonstration, students' achievement, financial accounting

1.0 Introduction

Financial accounting goes beyond recording and keeping of business transaction. It also involves recordkeeping system, preparation, analysis, and communication of financial information (Francis, 2014). It is among the vocational subjects taught in secondary schools in Nigeria to enable students to

acquire the relevant skills and knowledge that are necessary for national growth and development (Seyi, 2014). The purposes of teaching this subject in secondary schools in Nigeria includes: to enable the students to appreciate the basic accounting practices, principles, and their application in the

contemporary business activities, and to prepare them to advance their study in the field of accounting (NECO, 2004). Thus, financial accounting subject is imperative to the Nigerian economy as it provides the basis for preparing future entrepreneurs, accountants, managers, and other financial controllers (Francis, 2014).

Despite the fact that financial accounting has a tremendous impact on the Nigerian economy, the secondary school students' achievement in this subject persistently remains unimpressive over the years, especially in the national examination (Adeleke, Binuomote, & Adeyinka, 2013; Ezeagba, 2014; Mohammed, 2011). It is argued that the poor achievement of students in the national examinations is as a result of the teaching method used by the secondary school teachers and predominant use of the conventional approach of teaching (Afolabi & Akinbobola, 2009; Aremu & Soka, 2003; Ezeagba, 2014; Mohammed, 2011).

However, conventional teaching approach disregards the experiential learning and focuses completely on the intellectual learning (Salako, Eze, & Adu, 2013). In addition, Previous studies have argued that conventional approach is not effective for improving students' achievement because the students are not fully involved in the learning process (Abimbola & Abidoye, 2014; Hossain & Tarmizi, 2013; Majoka & Khan, 2011). Akintelure (1998) on the other hand, stated that financial accounting requires full involvement of students in the learning process because it is not learned by simple memorization of basic accounting rules and principles. So, the use of predominant teaching approach (i.e., conventional teaching approach), which involves reading, telling, and memorizing of concepts, has failed to address the poor achievement among secondary school students (Kohle, 2002). Similarly, Adeyemi (2008) and Bilesanmi-Awoderu

(2006) suggested that the quality of instructional approach used by the secondary school teachers has an influence on students' achievement. Hence, an appropriate instructional approach for teaching financial accounting in secondary schools needs to be sought in order to address the poor students' achievement in the subject, especially in the national examination.

Even though, previous studies (see, for example, Bamiro, 2015; Udo & Etiubon, 2011) on the effect of guided discovery approach on secondary students' achievement have suggested that future studies should be conducted to examine the effect of guided discovery approach on students' achievement in other subject areas other than chemistry and mathematics. On the other hand, Ja'afar-furo, Abdullahi, and Badgal (2014) examined the effect of demonstration method on University students' achievement in Agricultural science and they found that the approach was not effective on University students' achievement. Therefore, Ja'afar-furo et al. (20014) suggested that demonstration approach could be appropriate for teaching primary and secondary school students. However, at present, no published study was found to have focused on the effect of guided discovery and demonstration approach on secondary school students' achievement in financial accounting. In view of this, this paper, therefore, compares the effect guided discovery and demonstration approach on secondary school students' achievement in financial accounting in Gombe state, Nigeria. Specifically, the study aimed to examine whether the guided discovery and demonstration approach will enhance the secondary school students' achievement in financial accounting more than the conventional approach. Moreover, the study aimed to find out which of these approaches is more effective in teaching financial accounting in secondary school.

The expected outcome of this study will be of great significance to financial accounting students in the sense that good teaching method has a positive influence on the students' success. Specifically, the study's findings are expected to be relevant to stakeholders, especially government, curriculum planners, and financial accounting teachers of secondary schools, in terms of the benefits of adopting the most effective approach for teaching financial accounting and how the approach could be used to enhance their students' achievement. It is hoped that the poor achievement of financial accounting students of the secondary schools may be reduced and their grade in the subject be improved.

2.0 Literature Review

2.1 Guided Discovery Approach

Guided discovery approach is an instructional approach in which a teacher provides clarifying learning materials for learners to study on their own under the guidance of a teacher (Akinbobola & Afolabi, 2010). A number of studies have observed a significant effect of guided discovery approach on students' achievement in different subjects. For example, Bamiro (2015) in his study of the effects of guided discovery and think-pair-share instructional approach on chemistry achievement of secondary schools students have proved that guided discovery approach has the potentiality for improving the achievement of secondary students in chemistry. Similar findings were reported by Fatokun and Eniayeju (2014) and Udo (2010). The studies observed the effectiveness of guided discovery in facilitating the chemistry achievement of secondary schools students. Moreover, Akanbi and Kolawole (2014) focused on the effect of guided discovery and self-learning on biology achievement of secondary schools students. They found that guided discovery approach is capable of

enhancing the biology achievement of secondary students because the learners are more likely to recall what they have discovered by themselves.

In a related study, the effectiveness of guided discovery over conventional approach on students' mathematics achievement was found in the studies of Akanmu and Fajemidagba (2013); and Matthew and Kenneth (2013). Akanmu and Fajemidagba argued that the approach was effective in stimulating the high, medium and low achieving student to perform better in mathematics. A similar finding was observed by Akinbobola and Afolabi (2010) in physics. They found that guided discovery was effective in facilitating the physics achievement of the student through hands-on activities. Equally, Uside, Barchok, and Abura (2013) revealed in their study that there was existence of a significant difference in the achievement of physics' students who were exposed to the discovery method and that of those who were exposed to the conventional approach in favor of discovery approach. This is because the approach instilled confidence and improved knowledge retention of students.

2.2 Demonstration Approach

Demonstration approach is an approach in which the teachers are the role players while the students observe with the aim of acting subsequently. In this approach, the lesson is presented and explained step-by-step with clear and simple examples (Ekeyi, 2013). Previous studies have examined the effect of demonstration approach on students' achievement. For instance, Ameh and Dantani (2012) reported in their study of the effect of demonstration and lecture method on students' achievement in chemistry that demonstration approach was effective in enhancing the achievement of secondary school students in chemistry, as the approach

allows the students to actively participate in the lesson. Similar findings were reported in the studies of Ogologo and Wagbara (2013) and Udo (2010), the studies argued that due to the adequate participation of students in the learning process the achievement of students assigned to the demonstration approach was significantly better than that of their counterpart assigned to the conventional approach.

In a related study, Abdulhamid (2010) observed in his quasi-experimental study that demonstration approach developed and sustained students' learning interests which led to the better off performance of secondary school students in Agricultural science. Similar to Abdulhamid (2010), Ekeyi (2013) in the context of Nigeria noted that due to the activity nature of demonstration approach, the students of demonstration approach class significantly outperformed their counterparts in the conventional approach class. Moreover, Auwal (2013) found that demonstration approach improves the students' knowledge retention in Agricultural science. This is because, in demonstration approach, the concepts are presented clearly to the learners. Equally important, Adekoya and Olatoye

(2011) have proved that demonstration approach is a friendly and interactive approach of instruction which brought a significant change in Agricultural science achievement of secondary school students. Based on the above discussions the following hypotheses are formulated:

H₁ There is no significant difference in the financial accounting achievement of guided discovery, demonstration, and conventional approach students before exposing them to the treatment.

H₂ There is no significant difference in the financial accounting achievement of guided discovery, demonstration, and conventional approach students after exposing them to the treatment.

In line with the above hypotheses, a research framework showing the relationship between the instructional approaches (i.e., guided discovery, demonstration and conventional approach) and the students' achievement in financial accounting is, therefore, developed (see Fig. 1).

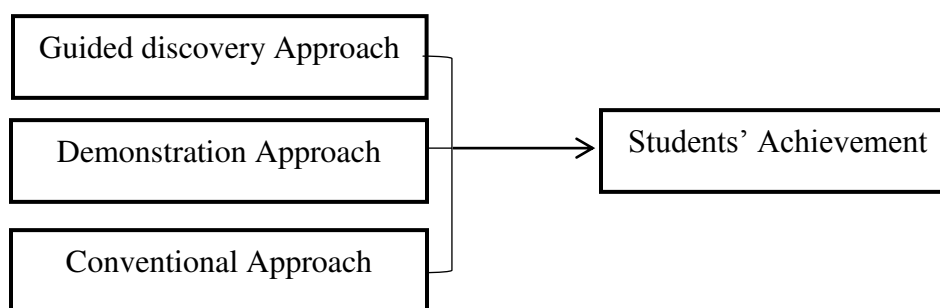


Fig. 1 Research Framework

3.0 Methodology

3.1 Population and Sample

The level two students of financial accounting of senior secondary schools in Gombe state, Nigeria are the target population of this study. This is a level where students are grouped

based on their area of specialization (Akanbi & Kolawole, 2014). Therefore, only those students who have an interest in accounting are considered in this study. One hundred and eighty (180) students from nine (9) secondary schools in Gombe state, Nigeria were selected

to participate in the study using a cluster sampling technique. This sampling technique is used when the population members are naturally grouped into a unit that can be conveniently used as clusters (Uzoagulu, 2011). Gombe state has three senatorial districts, viz., Gombe north, Gombe south, and Gombe central. Sixty (60) students were drawn from three schools in each of the senatorial districts to form the sample size. Both the students and the schools were selected at random.

3.2 Research Design

A pre-test-post-test-control group design was adopted in this study to examine the effect of

guided discovery and demonstration approach on students' achievement in financial accounting. The design is a true experimental design which consists of control and experimental group. Both the control and experimental group are given pre-test and post-test to ascertain the actual treatment effect (Sambo, 2005; Sekaran & Bougie, 2011). The differential between the groups (i.e., control and experimental group) is just that the former is exposed to treatment, while the latter is not (Sambo, 2005; Sekaran & Bougie, 2013). Graphically, the design of this study is as follows:

G1	R	Y11	X	Y12
G2	R	Y21	X	Y22
G3	R	Y31		Y32

Fig. 2 Pre-test-post-test-control group design

G1 and G2 are the experimental groups (i.e., guided discovery and demonstration approach). While G3 is the control group (i.e., conventional approach). R is random assignment of the subjects to the experimental and control group. Y11, Y21 and Y31 are the pre-test scores of the three groups. The X in the first two lines of Fig. 2 specifies that the experimental groups (i.e., G1 and G2) were exposed to the treatment. The absence of X in the last line of Fig. 2 indicates that control group (i.e., G3) was not exposed to the treatment. Y12, Y22 and Y32 are the post-test scores of the experimental group (i.e., G1 and G2) and the control group (i.e., G3), respectively. The design is followed in this study due to the fact that both groups have been randomized as well as exposed to pre-test and post-test. Therefore, whatever happens to the experimental group, apart from the treatment, also happens to the control group. In a nutshell, pre-test-post-test-control group design controls all the threats to

internal validity of the experiment (Sambo, 2005; Sekaran & Bougie, 2011).

3.3 Instrument

In this study, Financial Accounting Achievement Test (FAAT) is used as data collection instrument and it comprised 40 objective questions. This instrument was adopted from the WAEC's past examination based on the contents covered during the study. WAEC examination is reliable and valid because it has been designed by the experts (Osadebe, 2014). The instrument was also adopted by Ogologo and Wagbara (2013) to measure the achievement of secondary students in chemistry. Before conducting the actual study, the instrument was subjected to the pilot test, validity, and reliability test. The pilot test was conducted on the students that are part of the population, but not included in the sample of the study. The instrument was also assessed by the two experts for content validity. The experts were from Abubakar

Tafawa Balewa University, Bauchi, and Federal College of Education Technical, Gombe. This is to ensure that the content validity of the test instrument is established by expert judgment (Baykul, 2000).

Face validity was assessed by the two Heads of Department (HODs) of financial accounting in senior secondary schools in Gombe state. The suggestions and inputs of the validators were taken into consideration in adjusting the instrument for final use. The Cronbach Alpha was used to determine the reliability of the research instrument. According to Hair, Hult, Ringle, and Sarstedt (2010), the Cronbach Alpha value of more than .70 is acceptable and sufficient. The value of reliability coefficient in this study is .73, suggesting that the research instrument is reliable.

3.4 Procedure

Nine (9) financial accounting teachers with similar teaching qualification (Nigeria Certificate in Education) and years of working experience (5-7 years) were selected at random to execute the experiment in the selected schools. One-week orientation was given to the research assistants (i.e., selected teachers) on how to execute the experiment. After the orientation, the research assistants (i.e., trained teachers) were randomly assigned to the selected schools for the actual treatment. The treatment lasted for four (4) weeks, from 25th July to 19th August 2016 and given to the experimental groups only using guided discovery and demonstration approach as their teaching approach. The control group, on the other hand, was taught using conventional teaching approach.

After the students were assigned to their respective groups (i.e., 60 students in each of the instructional group) at random, the pre-test was given to them (both the experimental and control group students) by their respective teachers to measure their initial

skills before the treatment. After the pre-test, the students of the experimental groups were exposed to the guided discovery and demonstration approach, while those of the control groups were exposed to the conventional approach. The activities of both the experimental and control groups were carried out simultaneously. After the four weeks experiment, the post-test was given to the students of both experimental and control groups to ascertain the treatment effect. Both the pre-test and post-test were collected by research assistants immediately after the tests and passed to the researchers. The tests were marked by the researchers.

3.5 Data Analysis

The data collected from the study were subject to analysis of variance (ANOVA) and analysis of covariance (ANCOVA). ANOVA is a statistical tool used for comparing the mean scores of two or more groups (Tabachnick & Fidell, 2007). This test was performed to determine whether there is a significant difference in the financial accounting achievement of guided discovery, demonstration, and conventional approach students before exposing them to the treatment. On the other hand, Sambo (2005) argued that a usual statistical tool for the pre-test-post-test-control group design is ANCOVA. The ANCOVA was performed with the pre-test scores as covariates to test whether there is a significant difference in the financial accounting achievement of students who were exposed to guided discovery, demonstration and conventional approach.

4. Findings

The result of analysis of variance (Table 1) shows that the financial accounting achievement of the students assigned to the guided discovery, demonstration, and conventional approach did not differ significantly at the initial stage: $F(2, 177) =$

.075, $p = .928$. Then, Hypothesis 1 is supported. This result suggested that the students of guided discovery, demonstration, and

conventional approach group come from the same population as they are equal initially in terms of their achievement scores.

Table 1 One-way Analysis of Variance for Mean difference among the three groups

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	3.033 ^a	2	1.517	.075	.928
Intercept	103968.200	1	103968.200	5122.061	.000
Group	3.033	2	1.517	.075	.928
Error	3592.767	177	20.298		
Total	107564.000	180			
Corrected Total	3595.800	179			

a. R Squared = .001 (Adjusted R Squared = -.010)

After the students were exposed to the treatment, the analysis of covariance was performed to compare the effect of guided discovery, demonstration and conventional approach on students' achievement in financial accounting. In this analysis, the instructional approach was the independent variable, the post-test scores of students were used as dependent variable while their pre-test scores were used as covariates.

To ensure that the necessary assumptions of ANCOVA are achieved, the preliminary checks were performed and the results revealed that there was no violation of any of the assumptions. Subsequently, ANCOVA was performed and the result documented in Table 2 indicates a statistically significant difference in the financial accounting

achievement of students who were exposed to the guided discovery, demonstration and conventional approach: $F(2,176) = 538.778$, $p = .000$, partial eta squared = .860. Therefore, hypothesis 2 is not supported. The effect size is large (Cohen, 1988). Also, the result of post-hoc analysis performed using Tukey HSD test. reveals that the students who were exposed to the guided discovery approach ($M = 60.83$, $SD = 3.237$) have significantly outperformed their counterparts who were exposed to the demonstration approach ($M = 58.57$, $SD = 3.456$) and conventional approach ($M = 48.13$, $SD = 4.264$). But the achievement of demonstration approach students is significantly better than that of their counterparts who were exposed to the conventional approach.

Table 2 Analysis of covariance (ANCOVA) of Students' Achievement in Guided Discovery, Demonstration, and Conventional Approach

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Part. Eta Sq.
Corrected Model	7215.064 ^a	3	2405.021	616.510	.000	.913
Intercept	8715.908	1	8715.908	2234.261	.000	.927
Pre-test	1709.420	1	1709.420	438.198	.000	.713
Group	4203.569	2	2101.785	538.778	.000	.860

Error	686.580	176	3.901	.913
Total	569250.000	180		
Corrected Total	7901.644	179		

a. R Squared = .913 (Adjusted R Squared = .912)

5. Discussion

It has been confirmed from the finding of this study that before the students being exposed to the treatment, there was no statistically significant difference in their financial accounting achievement scores. The finding concurred with findings in the studies of Gokkurt et al. (2012); Hijazi and Al-Natour (2012); and Zakaria et al. (2010) who found the nonexistence of a statistically significant difference in the achievements of students who were assigned to the experimental and control group.

Nevertheless, after the students being exposed to the treatment, there was a statistically significant difference in the financial accounting achievement of students who were exposed to the guided discovery, demonstration, and conventional approach, and hence the achievement of students who were exposed to the guided discovery approach was significantly better than the achievement of students who were exposed to the demonstration and conventional approach. Conversely, the achievement of demonstration approach students was significantly better than that of the conventional approach students. This finding suggests that guided discovery approach which allows the active participation of students in the learning process was found to be the most effective approach for teaching financial accounting in secondary schools. Followed by the demonstration approach while conventional approach was less effective in enhancing the financial accounting achievement of secondary school students. Therefore, the poor achievement of secondary schools students in financial accounting, particularly in the final examination could be

addressed using guided discovery approach. Nbina (2013) and Udo (2010) discovered similar findings in chemistry. The finding also agreed with studies of Akanbi and Kolawole (2014); Bamiro (2015); Fatokun and Eniayeju (2014) and Matthew and Kenneth (2013) who observed the significant effect of guided discovery in enhancing the students' achievement.

6. Conclusions

The purpose of this study was to examine the effect of guided discovery and demonstration approach on students' achievement in financial accounting in Gombe state, Nigeria. The study adopted a pre-test-post-test-control group design where Financial Accounting Achievement Test (FAAT) was used as the instrument. One hundred and eighty (180) students from nine schools in Gombe state participated in the study.

The study proves that the achievement of students who were exposed to the guided discovery approach was significantly better than the achievement of students who were exposed to the demonstration and conventional approach. The powerful effect of guided discovery approach on students' achievement was relatively due to the fact that students are highly involved in the learning process. It is, therefore, recommended that government should encourage curriculum planners and financial accounting teachers of secondary schools to adopt the guided discovery approach as an instructional approach for teaching financial accounting in secondary schools to improve their students' achievement in the subject. However, this study considered only senior secondary schools level two (SSII) financial

accounting students. Therefore, the findings cannot be generalized to other levels of financial accounting students in senior secondary schools. It is suggested that future

research of this type could be conducted in other levels of financial accounting students in secondary schools.

References

- Abdulhamid, A. (2010). Effects of two teaching methods on secondary school students Agricultural Science performance in Bauchi metropolis, Nigeria. *Journal of Research in Education and Society*, 1(1).
- Abimbola, I. O., & Abidoye, F. O. (2014). Effect of qualification and experience of Biology teachers on the status of ecology teaching in Kwara state. *Sat*, 1, C6.
- Adekoya, Y., & Olatoye, R. (2011). Effect of demonstration, peer-tutoring, and lecture teaching strategies on senior secondary school students' achievement in an aspect of agricultural science. *The Pacific Journal of Science and Technology*, 12(1), 321.
- Adeleke, M. S., Binuomote, M. O., & Adeyinka, M. (2013). Determinants of students' academic performance in financial accounting among senior secondary school leavers in Oyo State. *International Journal of Business and Management Invention*, 2(5), 48-59.
- Adeyemi. (2008). Effects of cooperative learning and problem-solving strategies on junior secondary school students' achievement in social studies. *Electronic Journal of Research in Educational Psychology*, 3(6), 691-708.
- Afolabi, F., & Akinbobola, A. O. (2009). Constructivist problem based learning technique and the academic achievement of physics students with low ability level in Nigerian secondary schools. *Eurasian Journal of Physics and Chemistry Education*, 1(1), 45-51.
- Akanbi, A. A., & Kolawole, C. B. (2014) Effects of guided-discovery and self-learning strategies on senior secondary school students' achievement in biology. *Journal of Education and Leadership Development*, 6(1), 19-42.
- Akanmu, M. A., & Fajemidagba, M. O. (2013). Guided-discovery learning strategy and senior school students performance in mathematics in Ejigbo, Nigeria.
- Akinbobola, A. O., & Afolabi, F. (2010). Constructivist practices through guided discovery approach: The effect on students' cognitive achievement in Nigerian senior secondary school physics. *Eurasian Journal of Physics and Chemistry Education*, 2(1), 16-25.
- Akintelure, S. L. (1998). *Comprehensive book-keeping and accounts for senior secondary school: Sure-bet for WAEC*. Lagos Johnson publishing Ltd.
- Ameh, P. O., & Dantani, Y. (2012). Effects of lecture and demonstration methods on the academic achievement of students in chemistry in Nasarawa Local government area of Kano State. *International Journal of Modern Social Sciences*, 1(1), 29-37.
- Aremu, A., & Sokan, B. (2003). A multi causal evaluation of academic performance of Nigerian learners: Issues and implications for national development. *Department of Guidance and counseling, University of Ibadan*.
- Auwal, A. (2013). Effects of teaching method on retention of Agricultural Science knowledge in senior secondary schools of Bauchi Local Government Area, Nigeria. *International Journal of Science and Technology Education Research*, 4(4), 63-69.
- Bamiro, A. O. (2015). Effects of guided discovery and think-pair-share strategies on secondary school students' achievement in chemistry. *SAGE Open*, 5(1), 2158244014564754.
- Baykul, Y. (2000). *Egitimde ve psikolojide olcme: Klasik test teorisi ve uygulaması*. Ankara: ÖSYM Yayınları.
- Bileanmi-Awoderu, J. (2006). Effect of computer-assisted instruction and simulation/games on the academic achievement of secondary school students in biology. *Sokoto Educational Review*, 8(1), 49-60.
- Cohen. (1988). *Statistical power analysis for the behavioral sciences (2nd ed)*. Hillsdale. NJ: Lawrence Erlbaum Associates.
- Ekeyi, D. N. (2013). Effect of demonstration method of teaching on students' achievement in Agricultural Science. *World Journal of Education*, 3(6), 1.
- Ezeagba, C. (2014). The Problems in the teaching and learning of Accounting as a vocational subject in Nigeria Secondary Schools. *AFRREV STECH: An International Journal of Science and Technology*, 3(2), 208-226.
- Fatokun, K., & Eniayeju, P. (2014). The effect of concept mapping-guided discovery integrated teaching approach on Chemistry students'

- achievement and retention. *Educational Research and Reviews*, 9(22), 1218.
- Francis, N. P. (2014). Climate change and implication for senior secondary school financial accounting curriculum development in Nigeria. *Journal of Education and Practice*, 5(26), 153-157.
- Gokkurt, B., Dundar, S., Soylu, Y., & Akgun, L. (2012). The Effects Of Learning Together Technique Which Is Based On Cooperative Learning On Students' Achievement In Mathematics Class. *Procedia - Social And Behavioral Sciences*, 46, 3431-3434. Doi: 10.1016/J.Sbspro.2012.06.079
- Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2010). *A primer on partial least squares structural equation modelling (PLS-SEM)*. Thousand Oaks, CA: Sage Publications, Incorporated.
- Hijazi, D., & Al-Natour, A. (2012). Teachers'attitudes towards using cooperative learning for teaching english skills. *Interdisciplinary Journal of Contemporary Research in Business*, 3(12), 443.
- Hossain, A., & Tarmizi, R. A. (2013). Effects of cooperative learning on students' achievement and attitudes in secondary mathematics. *Procedia - Social and Behavioral Sciences*, 93, 473-477. doi: 10.1016/j.sbspro.2013.09.222
- Ja'afar-furo, M. R. u., Abdullahi, Y., & Badgal, B. E. (2014). Effects of demonstration and lecture methods of teaching apiculture on performance of agric students in Adamawa State University, Nigeria. *Scientific Papers Series-Management, Economic Engineering in Agriculture and Rural Development*, 14(2), 173-178.
- Kohle, K. (2002). Freedom, peace and personality. *Education: A biannual collection of Recent German contribution to the Educational Research*, 24.
- Majoka, M., & Khan, H. I. S. (2011). Effectiveness of cooperative learning for teaching social studies to students with different ability at elementary level. *Interdisciplinary Journal of Contemporary Research in Business*, 3(11), 486-498.
- Matthew, B. M., & Kenneth, I. O. (2013). A study on the effects of guided inquiry teaching method on students achievement in Logic. *International Researcher*, 2(1), 133-140.
- Mohammed, I. A. (2011). The challenges of teaching financial accounting in Nigerian secondary schools: A case study of Gombe state. Available at SSRN 1854322.
- Nbina, J. (2013). The relative effectiveness of guided discovery and demonstration teaching methods on achievement of chemistry students of different levels of scientific literacy. *Journal of Research in Education and Society*, 4(1), 8-13.
- NECO. (2004). *Regulations and syllabus for senior secondary school certificate examination*. Minna: NECO.
- Ogologo, G., & Wagbara, S. (2013). Effect of demonstration, strategy on senior secondary school students' achievement in separation techniques in chemistry inbio/Akpor local government area, Rivers State. *Journal Vocational Education & Technology*, 10(2), 15-29.
- Osadebe, P. (2014). Construction of economics achievement test for assessment of students. *World Journal of Education*, 4(2), 58.
- Salako, E., Eze, I., & Adu, E. (2013). Effects of cooperative learning on junior secondary school students' knowledge and attitudes to multicultural education concepts in social studies. *Education*, 133(3), 303-309.
- Sambo, A. A. (2005). *Research methods in education*. Ibadan: Evans Brothers Nigeria Ltd.
- Sekaran, U., & Bougie, R. (2011). *Research method for business: A skill building approach*. Chichester: Taylor & Francis.
- Seyi, D. (2014). An overview of vocational and technical education in nigeria under Secondary School Education System. *international Journal of technology enhancements and Emerging Research*, 2(6), 119-122.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*, 5th. Needham Height, MA: Allyn & Bacon.
- Udo, M. E. (2010). Effect of guided-discovery, student-centred demonstration and the expository instructional strategies on students' performance in Chemistry. *African Research Review*, 4(4).
- Udo, M. E., & Etiubon, R. U. (2011). Computer-based science simulations, guided-discovery and students' performance in Chemistry.

- Modern Applied Science*, 5(6). doi: 10.5539/mas.v5n6p211
- Uside, O. N., Barchok, K. H., & Abura, O. G. (2013). Effect of discovery method on secondary school student's achievement in Physics in Kenya. *Asian Journal of Social Sciences & Humanities*, 2(3), 351-358.
- Uzoagulu, A. E. (2011). *Practical guide to writing research project reports in tertiary institutions*. Enugu: John Jacobs Classic Publishers.
- Zakaria, E., Chin, L. C., & Daud, M. Y. (2010). The effects of cooperative learning on students' mathematics achievement and attitude towards mathematics. *Journal of social sciences*, 6(2), 272-272.