



Effects of Jigsaw and Think-Pair-Share Methods on Students' Academic Performance in Accounting in Colleges of Education in North-East Nigeria

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ABSTRACT

This study investigates the effects of the jigsaw and think-pair-share methods on students' performance in principles of account in colleges of education in north-east Nigeria. The study has three purpose, three research questions were raised to guide the study while three null hypotheses were formulated and tested at 0.05 level of significance. A quasi-experimesntal design was adopted for the study. The population of the study was 900 NCE business education students in colleges of education in north-east, who offered principles of accounts in 2015/2016 academic session. One hundred and twenty (120) students were taught in their intact classes. The instruments used to generate data for the study was Principles of Accounts Achievement Test (PAAT). Mean and standard deviations were used to answer the stated research questions. Simple Regression analysis was used to test null hypotheses one and two, while t-test statistic was employed in testing null hypotheses three, four and five. From the results of the study, null hypotheses three, four and five were retained while null hypothesis one, two were rejected. Based on the findings of the results, it revealed that Jigsaw and Think-pair-share methods had significant effects on students' academic performance in Principles of Accounts in Colleges of Education in Northeast, Nigeria. It was concluded that students taught with a jigsaw and think-pair-share methods are capable of earning better results. Based on this, five recommendations are postulated, among which to include Curriculum planners should consider the jigsaw and think-pair-share methods as effective methods for teaching principles of accounts when designing a curriculum for accounting education.

Keywords: Teaching and Learning, Jigsaw, Think-Pair-Share Methods, Students' Academic Performance and Principles of Accounting

INTRODUCTION

The process by which people obtain knowledge, values, skills and attitudes, is called education. The most common way to acquire a sound education is to attend school. National Policy on Education (2004) emphasizes the goals of education in Nigeria to include inculcation of the right type of values, attitudes, communication skills as well as life-long skills. These goals are attainable through effective classroom interaction. Interaction occurs between the teacher and the learner through the process of teaching and learning process. Teaching, which is the primary function of a teacher; it entails giving instruction, imparting knowledge, facts, skills, attitudes, interests and aptitude.

Learning is defined as the act of acquiring new, or modifying and reinforcing existing, knowledge, behaviors, skills, values, or preference which may lead to a potential change in synthesizing information, depth of the knowledge, attitude or behavior relative to the type range of experience (Ajoma, 2009). From this definition, it is observed that the teaching and learning are moving hand-in-hand and the central purpose of the process is to affect desirable change in the learners' behavior. In order to achieve this,

relevant teaching methods must be adopted by the teacher. Therefore, different teaching methods can be applied during teaching and learning of Principles of Accounts in order to make students learn better.

Principle of Accounts is part of business education NCE minimum standard that students offer in colleges of education. Principles of Accounts are the measurement, recording, and communication of economic data. Economic data are information about an individual, firm or organization, which can be expressed in monetary terms. In order to achieve the objectives of Study Principles of Accounts in Colleges of Education. The National Commission for Colleges of Education (NCCE, 2012), states the objectives of studying business education in Nigeria Colleges of Education is to:

1. Produce well qualified and competent NCE graduates in business subjects who will be able to teach business subjects in our secondary schools and other related educational institutions.
2. Produce NCE business teachers who will be able to inculcate the vocational aspects of business education into the society.
3. Produce NCE Business Teachers who will be involved in the much desired revolution of vocational development right from the Primary and Secondary schools.

In order to achieve the stated objectives by NCCE, Business Education teachers should be able to employ various teaching and learning methods in the classroom. The traditional methods which are confined to transmitting information and involve telling, reading, and memorizing, and the teacher adopting the "fountain of knowledge" approach, have failed to cope with the problems of Accounting knowledge needed for development (Kohle, 2002). Appropriate methods need to be sought in passing the message of Accounting across to the learners. Ajiboye and Ajitoni (2008) observed that children learn best by being interested fully in their own work, by seeing themselves, doing themselves, by puzzling themselves, by verifying their own suppositions; by experimenting themselves, by drawing conclusions themselves on the strength of evidence which they have collected themselves. They should always make mistakes which they then should rectify themselves in the light of new information and evidence that they have uncovered themselves. These teaching methods should be participatory through social interaction, togetherness, and action-oriented communication. Jigsaw and think-pair-share methods belong to these method. Jigsaw is a grouping strategy in which the members of the class are organized into "jigsaw" groups. The students are then reorganized into "expert" groups containing one member from each jigsaw groups. The members of the expert group work together to learn the materials or solve the problems, then return to their "jigsaw" groups to share their learning. Students work to obtain group goals that may not be obtained by working alone.

Think-pair-share method is designed to differentiate instruction by providing students time and structure for thinking on a given topic, enabling them to formulate individual ideas and share these ideas with a peer. This teaching method promotes classroom participation by encouraging a high degree of student response, rather than using a basic recitation method in which a teacher poses a question and one student offers a response (Simon, 2013). Think-pair-share is a cooperative learning strategy that includes three components, namely, time for thinking, time for sharing with a partner, and time to share among pairs to a larger group. The use of the strategy unites the cognitive and social aspects of learning, promoting the development of thinking and the construction of knowledge.

Academic performance is the outcome of education, the extent to which students, teachers or institutions have achieved their educational goals. In general terms academic performance refers to what students achieve in their studies and how they cope with or accomplish different learning experiences given to them by their teachers. The successes of educational institutions are measured by academic performance or how well a student meets the standards set out by the institution. It is based on the stated background that the researcher intended to find out the effects of Jigsaw and Think-pair-share methods on students' academic performance in Principles of Accounts in Colleges of Education in Northeast, Nigeria.

Statement of the problem

Accounting is a basic need of every business education students (Ibrahim, 2010). It is a discipline of study that all people, regardless of job position, should have some knowledge of, but despite the importance of accounting, it is unfortunate to observe that, a significant number of students cannot cope with the challenges of skills and technicalities in the subject. This tends to affect students' interest in accounting

education. Principles of Accounts is being offered as a major course for the attainment of NCE business education, but the issues of students failure have been at an alarming rate. The problems of massive students failure in accounting have been issues of discussion to accounting students, lecturers, and the society at large. Olowudun, (2010) observed that accounting education provided by Nigerian colleges of education is more examination oriented than of life's practical value, which thereby results in poor performance of students in examinations. However, it has been observed that the learning of accounting depends on the effective teaching of the subjects and available resources. Based on the data collected from the colleges visited by the researcher, the performance of students for the past five years was as: 60.2% failed in 2010, 53.6% failed in 2011, 57.0% failed in 2012, 56.5% failed in 2013 and 48.54% failed in 2014.

Therefore, the persistent increase in poor performance of colleges of education students in Principles of Accounts needs to be addressed. If it is not properly addressed this could affect the overall performance of accounting students in colleges of education in Northeast. One way to do this is to employ an effective teaching and learning methods. Therefore, this study was designed to see whether students' performance in Principles of Accounts could be improved when jigsaw and think-pair-share methods are employed.

This research study is therefore designed to determine the effects of the jigsaw and think-pair-share method on business education students' academic performance in Principles of Accounts in Colleges of Education of North East, Nigeria.

Purpose of the Study

The major objective of this research work is to assess the effects of jigsaw and think-pair-share methods on students' academic performance in Principles of Accounts in Colleges of Education in North East, Nigeria. The specific objectives of this study are to:

1. determine the effect of jigsaw method on the academic performance of business education students in Principles of Accounts in Colleges of Education in Northeast, Nigeria.
2. determine the effect of the think-pair-share method on the academic performance of business education students in Principles of Accounts in Colleges of Education in Northeast, Nigeria.
3. establish whether any difference exist between the academic performances of students taught Principles of Account using jigsaw method and that of those taught using think-pair-share method in Colleges of Education in Northeast, Nigeria.

Research Questions

In line with the specific objectives, the following research questions were formulated to guide the study.

1. What is the effect of jigsaw method on the academic performance of business education students in Principle of accounts in Colleges of Education in Northeast, Nigeria?
2. What is the effect of think-pair-share method on the academic performance of business education students in Principles of Accounts in Colleges of Education in Northeast, Nigeria?
3. What is the differential effect between the academic performance of business education students taught using jigsaw method and those taught using think-pair-share method in Principles of Accounts in Colleges of education in Northeast, Nigeria?

Research Hypotheses

Based on the research questions, the following null hypotheses are formulated:

H0₁ Jigsaw method has no significant effect on students' academic performance in Principles of Accounts in Colleges of Education in northeast, Nigeria.

H0₂ Think-pair-share method has no significant effect on students' academic performance in Principles of Accounts in Colleges of Education in Northeast, Nigeria.

H0₃ There is no significant difference between the performance of business education students taught Principles of Accounts using jigsaw method and those taught using think-pair-share method in colleges of education in Northeast.

Concept of Business Education

Business education as a concept cannot be subjected to a single definition. It is a field of study which has been attracting the attention of many scholars, educational stakeholders, parents, and students. Business Education is a type of training which, while playing its part in the achievement of the general aims of education on any given level, has its primary objective as the preparation of people to enter into a career, to render efficient service and to advance from their present level of employment to higher levels (Osuala, 2003).

Basic Business Education affords to every individual an opportunity to develop the skills, abilities, and understanding that will enable him to handle competently his personal business affairs; to develop an understanding of the vocational opportunity available in the broad field of business and to assume his citizenship responsibilities through enlightened participation in, as well as an understanding and appreciation of the business system (Osuala, 2003). Furthermore, Basic Business Education is the broad area of knowledge that deals with the economy. It identifies and explains the role of business as an economic institution and provides content and experience that prepare the individual for effective participation as a citizen and consumer.

According to Ohiwerei (2014), business education is a process which upon graduation, business educators are expected to work in offices as well as to teach students business subjects. It is a process which creates no missing link between the students and teaching industries as well as other industries also to be able to make wise use of financial reward in order to attain a successful living.

Concept of Accounting Education

Accounting as a core subject in Business Education is offered in both secondary schools and tertiary institutions in Nigeria. According to Olarinoye (2015) big or small organizations, governments, as well as individuals in their daily activities, deal with money and monetary transaction with one another. Therefore, the need for accounting cannot be overemphasized especially in relation to keeping records. Accounting is always practiced in virtually every business dealings. Accounting is a discipline that involves the process of measuring, interpreting, and communicating financial information decisions. The main objective of accounting is to provide information necessary for economic decisions. (Ezeani, 2008).

According to Asaola (2002) Accounting is a process of recording, classifying, selecting, measuring, interpreting, summarizing and reporting financial data of an organization to the users for objective assessment and decision making. Accounting data is processed into accounting information through the use of accounting principles and conventions. The accounting principles are known as General Accepted Accounting Principles. They are the basic fundamental which guide accountants in recording, appreciating and assessing accounting information as well as the preparation and interpretation of the financial statement. The accounting information system is proven, time-honored, and its format is universally understood. Book of accounts prepared by accountants in one part of the world is easily understood by their counterparts in other parts of the world because the information system is based on the principles that are widely accepted and globally used.

Business education students are taught Accounting at the various levels of education aimed at making them functional, creative and enterprising. Umar (2010) defined Accounting as a discipline concerned with the recording, analysis, and forecasting of income and wealth of business and other entities recorded in money terms. In the same view, Accounting is the process of recording, classifying, selecting, measuring, interpreting and communicating financial data of an organization to enable users to make assessments and decision. (Longe and Kazeen, 2002). However, according to Agbata (1999), accounting is the art of recording, classifying, summarizing, reporting in a significant manner and in terms of money, the transactions and events which are in part at least of a financial nature, and the interpretation of the results. Accounting is a set of theories, concepts (or ideas), and techniques for which financial data are processed into meaningful information for reporting, planning, controlling, and decision making purpose (Ama, 2000).

Concepts of Jigsaw Method

The Jigsaw method was developed by Elliot Aronson in 1971. In the Jigsaw method, students are assigned to multi-member teams to work on academic material that has been divided into sections. Each member of the group is assigned a section of study on which he or she becomes an expert. Experts are then assigned to expert groups in which the members of the group discuss the information and decide on the best way to present the material to members of their home teams. After the students have mastered the material, group members return to their home teams to teach the other members the material (Adams, 2013). Since it is the only way students can learn material other than their own is to listen carefully to their teammates, they are motivated to support and show interest in one another's work.

Jigsaw can be defined as a grouping strategy in which the members of the class are organized into "jigsaw" groups. The students are then reorganized into "expert" groups containing one member from each jigsaw group. The members of the expert groups work together to learn the material or solve the problem, then return to their "jigsaws" groups to share their learning (Amedu, Otuka, and Uzoechi, 2015). In this way, the work of the expert groups is quickly disseminated throughout the class, with each person taking responsibility for sharing a piece of the topics. Jigsaw is an efficient way for students to become engaged in their learning, learn a lot of material quickly, share information with other groups, minimize listening time, and be individually accountable for their learning. Since each group needs its members to do well in order for the whole group to do well, Jigsaw maximizes interaction and establishes an atmosphere of cooperation and respect for other students. Teachers who listen in to the sharing of one of the jigsaw groups can quickly hear what each of the original groups has been doing.

Kagan and Kagan (2009) said that Jigsaw is an effective strategy to use when you want to increase student's mastery of a topic at a hand, boost their concept development, and enhance targeted discussion among students, and foster group project participation and learning. In this strategy, students are divided into heterogeneous groups each group consists of four-five (4-5) members. In this strategy, the members of each group study the same subject, for example, a chapter in a textbook and each member concentrates on a specific part of the subject. After that, the members of different groups assigned the same part to hold a discussion meeting.

After that, each member joins his original group to explain to them what he has learned from his specific assignment. Finally, each member takes an individual test and all member scores are used to calculate each group's score (Al-Salkhi, 2009).

The Jigsaw method is considered an image of cooperative learning by which students learn through their activities within small groups. Each member specializes in a specific portion of the study subject and then he shares the acquired knowledge with the other members of his group.

How can Jigsaw work?

1. Divide the day's lesson into segments, and form student groups. The groups should be different in terms of ability.
2. Form temporary expert groups in which students are assigned to the same segment. Give students in these expert groups time to discuss the main points of their segment and to rehearse the presentations they will make to their jigsaw group.
3. Then bring the students into jigsaw groups that are composed of one student from each expert group. Have each student present his or her segment to the group. At the end of the session, you may give a quiz so that students are held accountable for learning all the material.

Concepts of Think-Pair-Share Method

Think-Pair-Share is a cooperative discussion strategy developed by Frank Lyman and his colleagues in 1978 in Maryland. It gets its name from the three stages of student action, with emphasis on what students are to be DOING at each of those stages. (1) Think. The teacher provokes students' thinking with a question or prompt or observation. The students should take a few moments (probably not minutes) just to THINK about the question. (2) Pair. Using designated partners, nearby neighbors, or a desk mate, students PAIR up to talk about the answer each came up with. They compare their mental or written notes and identify the answers they think are best, most convincing, or most unique. (3) Share.

After students talk in pairs for a few moments, the teacher calls for pairs to SHARE their thinking with the rest of the class (www.sciencedirect.com). They can do this by going around in round-robin fashion, calling on each pair, or they can take answers as they are called out (or as hands are raised).

Often, the teacher or a designated helper will record these responses on the board, an example is learning task: The teacher will provide a worded problem involving an area. Think: The teacher will allow the students to individually solve the problem first. Pair: After 5 minutes, the teacher will ask the students to find a partner and discuss their solutions to each other. They should come up with a single solution for the given problem. While partners are discussing their solutions, the teacher will roam around to see which partnered students were able to make it correctly and which are not. Share: The teacher will randomly select a partner to share their solutions to the class by explaining it in front and solving it using the blackboard.

According to Bamiro (2015), Think-pair-share is a cooperative learning strategy that includes three components, namely, time for thinking, time for sharing with a partner, and time to share among pairs to a larger group. The use of the strategy unites the cognitive and social aspects of learning, promoting the development of thinking and the construction of knowledge. The think-pair-share strategy has many advantages over the traditional questioning structure. The “think time” incorporates the important concept of “wait time.” It allows all children to develop answers, longer and more elaborate answers can be given, and answers will have reasons and justifications because they have been thought about and discussed. Students are more willing to take risks and suggest ideas because they have already “tested” them with their partner.

Think-pair-share: After posting a question (particularly a complex one), give students five minutes to think about it, perhaps even jot down some notes, after which you have them partner up for a quick discussion about what they think and why. After giving ample time for discussion, ask partners to share their insights with the entire class. This strategy is helpful in engaging students in a more meaningful way. Think-pair-share provides time to think about the answer to a question or problem and time to discuss it with a group, before proposing an answer or solution to the entire class (PhiriKeins, 2004). Regardless of whether the result ends up being shared in the larger class discussion, the process often leads to more thorough, deeper thinking on the part of each student.

According to Magre and Joshi (2013), Think-Pair-Share is a method that allows students to engage in individual and small-group thinking before they are asked to answer questions in front of the whole class. There are four steps to this method. The first step is a group of four students listens to a question posed by the teacher. Secondly, individual students are given time to think and then write their responses. Thirdly, pairs of students read and discuss their responses. Finally, a few students are called upon by the teacher to share their thoughts and ideas with the whole class. Three-Step Interview It is a strategy that is effective when students are solving problems. Three problem-solving steps are involved in this process.

In step one, the teacher presents an issue about which varying opinions exist and poses several questions for the class to address. Step two, the students, in pairs becomes the interviewer and the interviewee. Step three, after the first interview has been completed, the students' roles are switched. After each student has turned, the pairs read their interviews to the class. After all, interviews have been done, the class writes a summary report of the interview results.

Think-pair-share essentially increases wait time after students are posed with a question or task (Johnson and Johnson, 2002). This allows more time for students to think, and has been shown to get more students involved in the discussion and improve the quality of student responses (Rowe, 2000). Think-pair-share is also very useful to teachers because it can be used as a valuable form of formative assessment (Cooper and Robinson, 2000).

In order for meaningful learning to occur, students must interpret, relate, and incorporate new information with students' existing knowledge and experiences (Cortright, Collins and Dicarlo, 2005).

Bataineh (2015) stated that where students think of an answer to a question, share their answer with a partner, and then that pair shares with another pair. Finally, the foursome creates an answer that represents the consensus of their group to the whole class. This activity may take fewer than 15 minutes. Think-pair-share is a cooperative learning technique which involves presenting students with a task or

question and giving them time to think by individually. Then in pairs, they report their individual findings, discuss their own thoughts and then refine their individual work if they see fit in order to come up with a consensus on the question or task. Then after pairs they have time to discuss, the class reconvenes and members of the different pairs share their thoughts with the class.

According to Kitaoka, (2013) stated that the think-pair-share encourages;

1. Positive interdependence: the students are able to learn from each other.
2. Individual accountability: students are accountable to each other for sharing ideas. The students may also be required to share their partners' idea to another pair or the whole group.
3. Equal participation: each student within the group has an equal opportunity to share. It is possible that one student may try to dominate. The teacher can check this does not happen in any other groups.
4. Simultaneous interaction: a high degree of interaction. At any moment all of the students will be actively engaged in purposeful speaking and listening. Compare this with the usual practice of teacher questioning whereby only one or two students would be actively engaged.

METHODOLOGY

Research design

The researcher employed quasi-experimental design; this is because the study utilized “a pretest/posttest non-equivalent comparison group design” (McMillan and Schumacher 2006). Quasi-experimental design is a design in which participants are not randomly assigned to the groups.

Population of the study

The population of the study comprised of nine hundred (900) NCE 1 business education students offering Principles of Accounts in the 2015/2016 academic session in the six Colleges of education in North Eastern states. The distribution of the population is shown in Table 1.

Table 1: Population of the Study

Names of colleges	Students		
	Male	Female	Total
College of Education, Azare	90	70	160
Federal College of Education (Technical), Gombe	93	27	120
Federal College of Education (Technical), Potiskum	102	43	145
Federal College of Education, Yola	73	52	125
Kashim Ibrahim College of Education, Maiduguri	105	85	190
Umar Suleiman college of education, Gashu-a	90	70	160
Total	553	347	900

Source: Academic Planning unit of colleges of education, 2016

Sample Size and Sampling Procedure

The sample size was 120 NCE I male and female Business Education student in Federal College of Education (Technical), Gombe State, Nigeria. The sample size comprised of 93 males and 27 females NCE I students. The breakdown of the sample size is presented in Table 2

Table 2: Sample Size

Treatment Groups	Male	Female	Total
Jigsaw method (Experimental I)	47	13	60
Think-Pair Share method (Experimental II)	46	14	60
Total	93	27	120

Simple random sampling was used to select federal college of education (Technical) Gombe state. The proportional Sampling method was used to group the students into 60 per groups. In selecting the sixty (60) students, the researcher wrote 47 (JM) and 46 (TPS) for male students; and 13 (JM) and 14 (TPS) for female students on pieces of paper and asked students to pick one each. Those who picked (JM) formed the sample size of jigsaw method and those picked (TPS) formed the sample size of think-pair-share

method. The researcher shook the container and placed on the table for selection by students. The two classes were intact groups in the sample school.

Instrument for Data Collection

The instrument used for data collection in this study is Principles of Accounting Achievement Test (PAAT). The instrument for data collection was divided into two parts, the pre-test, and the post-test. The pre-test instrument contained twenty (20) items multiple choice objective questions with four (4) options A-D each, which was centered on the subsidiary book, principles of double entry and cash book, it lasted for one hour (see appendix II). The marking scheme of pre-test (appendix III) was used to mark the pre-test. The second part of the instrument post-test (appendix IV). The instrument was administered in order to collect data after teaching the students with different methods. This instrument was administered to determine the effects of the selected methods of teaching.

This instrument is prepared based on the table of the specification that was developed using the Final Accounts up to Balance Sheet of a Sole Trader without adjustment. The researcher designed a lesson plan toward effective teaching and to see the effects of the jigsaw and think-pair-share method on students' academic performance. (See appendices VI to XII for details)

Validation of the Instrument

Principles of Accounting Achievement Test (PAAT), was scrutinized and vetted by researcher's supervisor and research experts of not below the rank of a senior lecturer from the department of psychology and counseling, faculty of education, Ahmadu Bello University, Zaria. It suggested modification on the test items were affected before the test was administered to students in the selected College of Education.

Pilot Testing

In order to establish the reliability of the Principles of Accounts Achievement Test (PAAT), a pilot testing was conducted using forty (20) students of NCE 1 Business Education, at Federal College of Education, Zaria. Both pre-test and a post-test component of the instrument were administered to NCE 1 Business Education Students. This is because the college had a set of Business Education Programme which was in line with researcher target population and also the institution was outside the Northeast States covered by the study but they shared similar characteristics with that of the study area. The data collected were subjected to a statistical test to determine coefficient correlation.

Reliability of the instrument

Test and re-test method was used in testing the test items for the reliability coefficient. The data obtained from the pilot testing was subjected to statistical analysis using Pearson Product Moment Correlation Coefficient. The reliability coefficient was 0.88 which showed that the instrument was valid and reliable.

Procedure for data collection

The researcher collected a letter of introduction as in (Appendix A) from the department of vocational and technical education, Ahmadu Bello University, Zaria. This was used to introduce the researcher to the authority of the selected College of Education. Upon introduction, the researcher grouped the students into two (2) heterogeneous groups that is jigsaw method group (Experimental I) and think-pair-share method group (Experimental II). Each group consists of 60 students as intact class. For each group, one hour of week one was used for introduction and establishment of good rapport between the researcher and the students. The pre-test was administered for the last hour of the week; all students in both groups were subjected to pre-test.

For each group, a double period of week two was used to teach the students trading account and its terminologies and how to prepare Trading Account of a Sole Trader. While the double periods of week three were used to teach the students on how to prepare Profit and Loss Account and its terminologies. Lastly, double period of week four was use to teach Concepts of Balance Sheet. Lesson plans were prepared for the actual periods that were used in the teaching (See appendices VI to XII). At the end of the treatment (five weeks), a post-test (Appendix IV) was administered to experimental groups. In order to avoid cheating during the test, the researcher employed the services of staff members in the Department that assisted in the invigilation and collection of scripts. The answer scripts were scored 100 marks as stated in the marking scheme (Appendix V). The test result of each test for the experimental

groups was collected separately and was subjected to statistical analysis. The data collection period lasted for five (5) weeks comprising double periods lasted for two (2) hours per week were used on each of the two (2) groups.

Procedure for data analysis

In analyzing the data collected, the mean and standard deviation was used to answer all research questions. The null hypotheses one and two were tested using regression analysis. This decision was based on the opinion of Anthony (2006) who opined that Regression analysis should be employed to determine the relationship between dependent variable on independent variable if the variables are categorical. While null hypotheses three were tested using t-test. A t-test was considered appropriate for analyzing the difference between the mean of two groups variable (Ibrahim, 2013).

RESULTS AND DISCUSSION

Answer to Research Questions

Research Question One: *What is the effect of jigsaw method on the academic performance of business education students in principle of accounts in colleges of education in Northeast, Nigeria?*

To answer research question one, the post-test scores of students exposed to jigsaw method were used. The analysis of data generated is presented in table 1

Table 1 Mean and standard deviation of effect of Jigsaw Method on Performance of Business education students in Principles of Accounts

Jigsaw method	N	DF	X	SD	Mean Diff.
Post-test	60		59.53	11.51	
		58			5.93
Pre-test	60		53.60	10.15	

Source: Field Work, 2016

The results of table 1 showed the effect of Jigsaw method on the performance of business education students in Principles of Accounts in colleges of education in the north east, Nigeria. The analysis revealed the cumulative score of 3572 for 60 students with a mean score of 59.53% and standard deviation of 11.51. The summary of the result showed that, jigsaw method has an effect on students' academic performance in Principles of Accounts. This means that, Jigsaw method affects students' academic performance in Principles of Accounts. Therefore, Jigsaw method is effective in teaching Principles of Accounts. But the test of null hypothesis one will indicate whether or not Jigsaw method has significance effect on students' performance statistically.

Research Question Two: *What is the effect of think-pair-share method on the academic performance of business education students in principle of accounts in colleges of education in Northeast, Nigeria?*

To answer research question two, data collected were analyzed using mean and standard deviation as presented in Table 2.

Table 2 Mean and standard deviation of effect of Think-pair-share method on the performance of Business education students in Principles of Accounts

Think-pair-share	N	DF	X	SD	Mean Diff.
Post-test	60		56.37	11.15	
		58			2.39
Pre-test	60		53.98	10.44	

Source: Field Work, 2016

The results of table 2 showed the effect of think-pair-share method on the academic performance of business education students in Principles of Accounts in colleges of education in the north east, Nigeria. The analysis revealed the cumulative score of 3382 for 60 students with a mean score of 56.37% and standard deviation of 11.37. The summary of the result showed that, think-pair-share method has an effect on students' academic performance in Principles of Accounts. This means that, think-pair-share method

affects students' academic performance in Principles of Accounts. But the test of null hypothesis two will indicate whether or not think-pair-share method has significance effect on students' performance statistically.

Research Question three: *What is the differential effect between the academic performance of business education students taught using jigsaw method and those taught using think-pair-share method in Principles of Accounts in colleges of education in Northeast, Nigeria?*

In order to answer research question, three on the performance of students taught using a jigsaw and think-pair-share method the data collected was analyzed using mean and standard deviation. Analysis of data used to answer research question three is presented in Table 3.

Table 3: Analysis of difference in the mean performance of Students taught principles of account using Jigsaw method and those taught using think-pair-share method

Method	N	Total	Mean	SD	Xdiff.
jigsaw	60	3572	59.53	11.51	
Think-pair-share	60	3382	56.37	11.51	3.17
	120	6954	57.95		

Field work, 2016

Table 3 revealed that the performance of students taught Principles of Accounts using jigsaw teaching method performed better than those who were exposed to think-pair-share method with a mean score of 59.53% with standard deviation 11.51 against 56.37% with standard deviation of 11.51 with mean different of 3.17%. From the data presented, it shows that jigsaw method affected students' performance better than think-pair-share method. This implied that jigsaw method is more effective.

Testing of Null Hypotheses

Results of the test of the five null hypotheses are presented in Table 10 to 4.14.

H0₁ *Jigsaw method has no significant effects on students' academic performance in principle of accounts in colleges of education in Northeast, Nigeria.*

Data collected to address the null hypothesis one is presented in table 4.

Table 4: Regression Analysis of effect of jigsaw method on students' academic performance in Principles of Accounts

Variable	B	Std. Error	T	R-crit	R-cal	R ²	Adjusted R ²	Sig.
Jigsaw Method	16.45	4.963	3.316	0.088	.707	.500	.492	.000
Students Performance	0.624	.082	7.620					

Field work, 2016

The result of the data used to determine the effects of jigsaw method on students' academic performance in Principles of Accounts in colleges of education in northeast, it shows the Constant Beta (Jigsaw method) value of 16.45 with the t value of 3.316 against the coefficient value of 0.624 and t-value of 7.620 for students' performance. The calculate R value was .707 found to be greater than Table value of 0.088. The R² was .500 and adjusted R² of .492 with p-value of .000. The result showed that, jigsaw method has 50% effect on the performance of business education students in Principles of Accounts determined by students' performance. The observed effect (r=0.707) was significant, therefore Jigsaw

method has an effect on students' academic performance in Principles of Accounts in colleges of education in the north east. Hence the null hypothesis is therefore rejected.

H0₂ *Think-pair-share method has no significant effects on students' academic performance in Principles of Accounts in colleges of education in Northeast, Nigeria.*

To test null hypothesis two, pre-test and post-test scores of students exposed to think-pair-share method were computed using simple regression analysis at 0.05 level of significance as seen in Table 5.

Table 5: Regression Analysis of effect of think-pair-share method on students' academic performance in Principles of Accounts

Variable	B	Std. Error	T	R-crit	R-cal	R ²	Adjusted R ²	Sig.
Think-pair-share method	11.540	3.820	3.021	0.088	.830	.689	.684	.000
Students Performance	0.753	.066	11.336					

Field work, 2016

The result of the data used to determine the effects of jigsaw method on students' academic performance in Principles of Accounts in colleges of education in northeast, shows the Constant Beta (Think-pair-share method) value of 11.540 with the t value of 3.021 against the coefficient value of 0.753 and t-value of 11.336 for students performance. The calculate R value was .830 found to be greater than Table value of 0.088. The R² was .689 and adjusted R² of .684 with p. the value of .000. The result showed that, think-pair-share method has 69% effect on the performance of business education students in Principles of Accounts determined by students' performance. The observed effect (r=0.830) was significant, therefore think-pair-share method has an effect on students' academic performance in Principles of Accounts in colleges of education in the northeast. Hence the null hypothesis is therefore rejected.

H0₃ *There is no significant differences between the performance of business education students taught Principles of Accounts using jigsaw method and those taught using think-pair-share methods in colleges of education in Northeast*

To test null hypothesis three, a post-test score of students taught principles of account using jigsaw method and those taught using think-pair-share method were compared. The scores were analyzed using t-test at 0.05 level of significant as presented in Table 6.

Table 6: t-test analysis on difference in performance of students taught Principles of Accounts using jigsaw method and those taught using think-pair-share methods

Methods	N	Mean X	SD	DF	t-cal	t-crit.	Sig.
Jigsaw	60	59.53	11.51	118	1.507	1.98	.135
Think-pair-share	60	56.37	11.51				

Fieldwork, 2016

Table 6 indicates that, since the calculated t-value is 1.507 while table value is 1.98, the t-calculated is less than the table value of the t (1.507<1.98), the null hypothesis is therefore accepted and concluded that there is no significant differences in the academic performance of students taught Principles of Accounts using jigsaw method and that of those taught using think-pair-share method in colleges of education in northeast, though there is a significant difference in the mean performance but statistically there is none as revealed by t-test.

FINDINGS

From the data analysis, the following are summary of the major findings:

1. The result of research question one and null hypothesis one revealed that Jigsaw method has an effect on students' academic performance in Principles of Accounts in colleges of education in northeast with a mean of 59.53% and r^2 (0.500). Indicating that 50% of the variability of performance of students in Principles of Accounts achievement test was determined by Jigsaw method ($p = 0.000 < 0.05$).
2. The result from research question two and null hypothesis two revealed that think-pair-share teaching method had an effect on students' academic performance in Principles of Accounts in colleges of education in northeast with a mean of 56.37%, the standard deviation of 11.51 and r^2 (0.689) indicating an increase of performance of students with 69% in Principles of Accounts achievement test. ($p = 0.000 < 0.05$).
3. There is a significant difference in the mean performance of students taught principles of the account using Jigsaw method and those taught using think-pair-share method in colleges of education in northeast Nigeria, with a mean score of 59.53 against 56.37. This implies that jigsaw method is more effective than think-pair-share method of teaching with a value of ($P=0.135$).

CONCLUSION

Based on the findings discussed in chapter four, the study revealed that, jigsaw and think-pair-share methods are appropriate methods to be used in teaching Principles of Accounts. It is also revealed that jigsaw and think-pair-share methods assist Principles of Accounts Students to improve academic performance regardless of their gender difference. If this is the case, it could be concluded that students taught with this methods are capable of earning good grade which will enable them to secure admission into universities, this will also make their parents proud and also they would become productive members of the society after graduation.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. since the study revealed that jigsaw and think-pair-share methods significantly affected students' academic performance, it is therefore recommended that Principles of Accounts teacher should be trained in the use of effective instructional methods in the classroom, such as jigsaw and think-pair-share methods in teaching Principles of Accounts so as to improve the students' academic performance in colleges of education in Northeast, Nigeria.
2. Curriculum planners should consider the jigsaw and think-pair-share methods as effective methods for teaching Principles of Accounts when designing a curriculum for Accounting Education.
3. Equal opportunities should be given to both male and female students in colleges of education in Northeast in the teaching and learning process.

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