EFFECT OF JIGSAW TEACHING APPROACH ON STUDENTS' ACADEMIC ACHIEVEMENT AND RETENTION IN BUSINESS EDUCATION PRACTICUM IN COLLEGES OF EDUCATION, SOUTH EAST, NIGERIA

[1]Prof. A.U. Okeke & [2]Dr. Lucy Udoka Dikeocha

[1&2]Department of Business Education, Nnamdi Azikwe University Awka

Abstract

This research focused on the effect of jigsaw teaching approach on students' academic achievement and retention in business education practicum in colleges of education South East, Nigeria. Four research questions were generated and six hypotheses were formulated to guide the study. The study adopted quasi experimental research design of pretest, posttest non-randomized group. The study area is South East Nigeria. The population of the study comprised one hundred and fifty five (155) Business Education NCE II students from the seven colleges of education in South East Zone, Nigeria. The sample of the study is sixty seven (67) NCE year II Business Education students from two colleges of education in South East, Nigeria. A Business Education Practicum Achievement Test (BEPAT) was developed by the researcher from the lesson plan containing the course contents that were taught as to enable her collect data for the study. The instrument with 40 question items, constructed from the lesson content was validated by experts and subsequently administered to the sixty seven (67) respondents (Experimental and control group) used for the study. The administered test instrument were retrieved, marked and scored and the scores used for the analysis. The items with regards to research questions were analysed using mean and standard deviation while null hypotheses were tested at 0.05 level of significance using analysis of covariance (ANCOVA). The results showed that the effect of jigsaw teaching approach on students' academic achievement in business education practicum where significantly higher than the effect of lecture method. The findings of the study also showed that there was a significant difference between the retention mean scores of business education NCE II students taught business education practicum using jigsaw teaching approach and those taught using lecture method. The researcher concluded that Jigsaw teaching approach is more effective for improving and enhancing academic achievement and retention ability of NCE II business education students' in business education practicum. The researcher therefore recommended among others that business education lecturers should adopt Jigsaw teaching approach which is a cooperative and activity-based learning approach in order to improve students learning and achievement and as well enhance retention and mastery of what have been learnt by the students.

Introduction

Several teaching techniques used for classroom teaching by many teachers seem to vary in their usefulness and result orientation. There has been a paradigm shift from the use of traditional methods to digital methods. The chalk-talk method or transmission models commonly used by many teachers have not yielded enough result (Dikeocha, Nwagu, Ugochukwu and Okoronkwo, 2019). The traditional view of teaching believes that there are sets of ideas which are the duty of the teacher to give to the learners. This method assigns to the learner a passive role where the learner sits and receives information. This is teacher-centered or dominated method.

The traditional/conventional approaches which have been used in the past have failed to promote teaching/learning adequately. According to Okwelle, Emeli and Hart (2016), the traditional

method of teaching is defective in enhancing students' academic achievement in different school subjects. In support to this, Igboko and Ibeneme in Eze and Lasisi (2018) pointed out that traditional education practices such as demonstration and lecture method alone have proved incapable of producing skills required for coping with the challenge posed by rapid technological development. The learner-centred or modern approaches to teaching and learning are innovative methods and techniques that encourage student's interest and participation in the learning process.

Obasi and Okoro (2017) see the learner-centred method as a method whereby students are opportuned to participate actively in the teaching-learning process while the teacher plays a more passive role. Unlike the conventional method which promotes rote or memory learning, the modern approach is interactive, task-based and learner-centred. The modern view sees teaching as a method of helping learners to construct, form or reconstruct knowledge based on personal experience from activities or interaction with individual and materials within the learning environment. Thus, the modern teaching approach is learner-centred, learner-friendly with activity-based teaching methods which are used to get learners fully involved in the teaching and learning process

The modern teaching approach lays emphasis on the learner's prior ideas or frame of reference that is what the student knows which may enhance or hinder the student from learning thus assigning an active role to the learner. This was why Taylow and Cranton (2013) noted that concept that is most central to transformational learning in general is experience, particularly prior experience (that is happened in one's past). They further state that in active learning environment learners are immersed in experiences within which they are engaged in meaning – making inquiry, action, imagination, invention, interaction, hypothesizing and personal reflection. Among the active learning approaches is Jigsaw teaching approach.

Jigsaw teaching approach is one of the modern teaching approaches which ensure the active participation of learners. Jigsaw teaching approach is a cooperative learning strategy designed to reduce racial conflict and increase positive educational outcomes such as improved test performance, reduce absenteeism and increase students' interest in classroom activities (Onoja and Ugwuoti, 2021). Students are provided the opportunity to become experts in a particular subject and share that knowledge with their peers. This approach promotes both self and peer teaching which requires students to understand the material at a deeper level and engage in discussion, problem-solving and learning (Dikeocha et al, 2019).

Business education is concerned with teaching the skills, attitudes and knowledge needed for a successful business career. According to Onojetah (2014) business education is a vocational discipline that prepares its recipients with skills that will enable them to contribute significantly to the economic development of a nation. Buttressing more, Onyesom and Okolocha (2013) defined business education as an education for the acquisition and development of skills and competencies, attitudes and attributes which are needed for efficiency of the economic system. They further stressed that it is the intellectual and vocational preparation of students for earning a living in the contemporary industrial and business environment and for self-employment. Otamiri in Oluwafemi, Uzoegbo and Dada (2014) maintained that it is a fusion of pedagogical and entrepreneurial preparation. He further states that it involves the study of technologies and related sciences and the acquisition of practical skills (including teaching skills) attitudes, understanding and knowledge related to occupation in various sectors of the economy and social life. To ensure that the recipient of business education acquire these desirable skills, courses

covering areas such as office technology, accounting, marketing, management and administration and entrepreneurship are enshrined in the business education curriculum.

Business education courses are wide array of courses that are meant to equip students of various ages with the fundamental principles of business. It exposes and prepares students for a business career or enable those in that career to become efficient and to advance to higher position. Business education exists at various levels of education. Among the numerous courses in NCE business education, include business education practicum. Business education practicum is designed to assist business education students gain better understanding of the necessary practical skills to acquire which enable them to teach business education in schools and as well function effectively in the work place. Owing to this, the need to adopt a teaching method that will get them fully involved becomes necessary. Providing learners the opportunity of being actively involved in the teaching and learning process will lead to better academic achievement.

Academic achievement is the level attained by a learner in some general or specific area of learning, which is quantified by a measure of the student's academic standing in relation to those of other students who were exposed to the same learning experiences. According to Okoli and Egbunonu (2012) academic achievement involves observable and measurable performance of students that take place in the presence of a standard for measuring academic excellence. For students to have better academic achievement, there must be retention of what had been learnt.

Retention is the process of transferring new information into long-term memory. This means the individual have effectively taken in the information and is able to recall it in future. Agomuoh (2010) defined retention as ability to store facts and remember things easily. It is the ability to recall or recognize what has been learnt or experienced. Suffice it to state here that the teacher's teaching method goes a long way to determine the level of retention of learning materials by the learners. Learners irrespective of gender retain what they learnt when an appropriate teaching approach is adopted.

Statement of the Problem

Business education as an aspect of vocational and technical education emphasizes learning by doing. This means that learners are meant to participate actively in the teaching and learning process. This will enable them practicalize what they are being taught. To acquire dexterity and other skills in business education, learners are expected to engage in practical activity during teaching and learning. Observation by the researcher has shown that many teachers of business education are yet to adopt modern pedagogy. They only make use of the traditional/conventional teaching approach that makes the students passive learners. This challenge has affected the achievement of the objectives of the programme, business education practicum in particular which is made compulsory for all NCE students irrespective of their options as to ensure that the students do not lack the practical work skills they will require in the work place which is the objective of developing the curriculum. The teaching approach adopted to teach any course has a direct and consequential effect on the students' achievement and retention in that course. The use of rote rather than task based learning has led to the production of students who are not well equipped to face the world of work. This was confirmed by Ajoma (2019) who noted that the adoption of conventional lecture method by lecturers of business education is largely responsible for the high level anxiety and failure expressed by their students. The challenge of poor academic achievement and retention witnessed in business education practicum calls for concern. Despite efforts made by Heads of Department by assigning the course to specialists in office education

rather than allowing every lecturer of business education to teach the course, the course has continued to witness low achievement by students. This may be as a result of traditional method of teaching use by the lecturers. This situation is rather worrisome. This is because the students may not be well equipped to face the world of work of today when the course was enshrined in the curriculum of business education to prepare students for the work place of now.

This conventional teaching approach makes teaching ineffective, consequently affecting students' academic achievement and retention in business education practicum. Therefore, there is need to adopt an instructional approach that can help students learn better and acquire the knowledge and work skills in business education practicum and become better prepared for work in business and industry. It is this problem of poor academic achievement and retention in business education practicum that led the researcher into finding out the effect which Jigsaw cooperative teaching approach as a task/activity- based learning approach will have on business education students' academic achievement and retention in business education practicum.

Research Questions

The following research questions guided the study:

1. What are the mean achievement scores of students taught Business Education Practicum using Jigsaw approach and those taught using lecture method in Colleges of Education in South East, Nigeria?
2. What are the mean retention scores of NCE students taught Business Education Practicum using Jigsaw approach and those taught with lecture method in Colleges of Education in South East, Nigeria?

Hypotheses

The following research hypotheses were tested at 0.05 level of significance

1. There is no significant difference between the mean achievement scores of students taught business education practicum using jigsaw teaching approach and those taught with lecture method
2. There is no significant difference in the mean retention scores of NCE students taught business education practicum using jigsaw teaching approach and those taught with lecture method

Method

The study adopted the pre-test, post-test, non-equivalent control group quasi-experimental design. The research design is considered suitable because it allows the researcher to observe the achievement and retention of students before and after manipulation of the independable variable. The study was conducted in South East, Nigeria. The population of this study comprises 155 NCE II business education students in Colleges of Education in South East. The sample size is 67 NCE II business education students from two colleges of education in South East Zone. From the experimental school, the intact of 26 (4 males and 22 females) was used and from the control school, an intact class of 41 (9 males and 32 females) was used. The instrument used for data collection was Business Education Practicum Achievement Test (BEPAT) with 40 multiple choice objective test questions with four options which covers contents in business education practicum. The researcher used the questions during the pre-test and the same questions were reshuffled and used as post-test. This instrument was reshuffled again and used as retention test.

The BEPAT was validated by three experts, one from the department of Technology and Vocational Education, the other from Science Education and another from the department of Measurement and Evaluation, all in Nnamdi Azikiwe University, Awka. The reliability of BEPAT was established by administering it on NCE II business education practicum students in Delta State College of Education (Tech) Asaba, which is outside the research area but has a homogenous culture as the research area. The scores obtained from trial testing exercise were used to estimate the reliability co-efficient of BEPAT using Kudar Richardson formular (KR-20) which yielded a reliability index of 0.83. Reliability coefficients for test 1 and test 2 is 0.795, test 2 and test 3 is 0.732 while 1 and 3 is 0.738. Before the experimental, pre-test was administered to all the NCE II business education practicum students, experimental and control groups. Data obtained were analyzed with the descriptive statistics of mean to answer the research questions while standard deviation was used to ascertain the homogeneity or otherwise of the respondents' achievement scores. Analysis of covariance (ANCOVA) was used to test the null hypothesis at 0.05 alpha level. The null hypothesis was rejected if probability value is less than or equal to the significant value of 0.05 ($P \leq 0.05$) and if otherwise ($P > 0.5$), it was accepted.

Research Question 1

What are the mean achievement scores of students taught Business Education Practicum using jigsaw approach and those taught using lecture method in Colleges of Education in South East, Nigeria?

Table 1: Mean achievement scores and standard deviation of experimental and control groups in Business Education practicum

		Pretest	Posttest		Gain	
Group	N	Mean	SD	Mean	SD	Mean
Experimental	26	10.12	1.451	25.85	2.767	15.73
Control	41	9.37	2.385	18.29	1.927	8.92
Difference	67	0.75		7.56		6.81

Table 1 depicts the mean achievement scores of students taught Business Education Practicum using jigsaw teaching approach and those taught with lecture method. The table show mean scores of pretest for the experimental group (M = 10.12) and the control group (M = 9.37). Similarly, the table shows the mean scores of posttest for the experimental group (M = 25.85) and the control group (M = 18.29). the table further shows the mean gains for the experimental group (M = 15.73) and the control group (M = 8.92), which indicates that the experimental group has higher mean gain than the control group with a difference of 6.81.

Research Question 2

What are the mean retention scores of NCE students taught Business Education Practicum using jigsaw teaching approach and those taught with lecture method in Colleges of Education in South East, Nigeria?

Table 2: Mean retention scores and standard deviation of experimental and control groups in Business Education Practicum

			Delayed Test		Gain	
Group	N	Mean	SD	Mean	SD	Mean
Experimental	26	25.85	2.767	26.31	2.977	0.46

Control	41	18.29	1.927	18.54	2.099	0.23
Difference	67	7.56		7.77		0.23

Table 2 depicts the mean retention scores of students taught Business Education Practicum using jigsaw teaching approach and those taught with lecture method. The table shows mean scores of posttests for the experimental group (M = 25.85) and the control group (M = 18.29). Similarly, the table shows the mean scores of delayed tests for the experimental group (M = 26.31) and the control group (M = 18.54). The table further shows the mean gains for the experimental group (M = 0.46) and the control group (M = 0.23), which indicates that the experimental group has higher mean gain than the control group with a difference of 0.23.

Hypothesis 1

There is no significant difference between the mean achievement scores of students taught business education practicum using jigsaw teaching approach and those taught with lecture method

Table 3: ANCOVA summary of Teaching Approaches on Students Mean Achievement Scores in Business Education Practicum

Sources	Type III sum of squares	df	Mean square	F	Sig	Partial Eta Squared	Decision
Corrected Model	932.997a	2	466.499	94.888	.000	.748	
Intercept	1034.484	1	1034.484	210.418	.000	.767	
Pretest	25.228	1	25.228	5.131	.027	.074	
Group	828.094	1	828.094	168.438	.000	.725	S
Error	314.645	64	4.916				
Total	31428.000	67					
Corrected Total	1247.642	66					

Note: S = Significant

The results of Table 3 depict the test of the difference in academic achievement mean scores of students taught Business Education practicum using Jigsaw teaching approach and those taught with lecture method. The result shows a significant difference between the academic achievement mean scores of students taught practicum with jigsaw teaching approach and those taught with lecture method: $F(1, 64) = 168.438$, $p = .000$ with an effect size of 0.725 (72.5%). This outcome reveals that the null hypothesis is rejected. Hence, there is a significant difference in the academic achievement mean scores of students taught Business Education practicum with jigsaw teaching approach and those taught with lecture method.

Hypothesis 2

There is no significant difference in the mean retention scores of NCE students taught business education practicum using jigsaw teaching approach and those taught with lecture method

Table 4: ANCOVA Summary of Teaching Approaches on Students Retention Mean Scores in Business Education Practicum

Source	Type III	df	Mean	F	Sig	Partial	Decision

	sum of squares		square			Eta Squared	
Corrected Model	963.623a	2	481.812	78.077	.000	.709	
Intercept	287.888	1	287.888	46.652	.000	.422	
Posttest	2.790	1	2.790	.452	.504	.007	
Group	217.674	1	217.674	32.274	.000	.355	S
Error	394.944	64	6.171				
Total	32480.000	67					
Corrected Total	1358.567	66					

Note: S = Significant

Data presented in Table 4 depict the test of the difference in the mean retention scores of students taught Business Education practicum using Jigsaw teaching approach and those taught with lecture method. The Table shows a significant difference in the mean retention scores between the students taught practicum with jigsaw teaching approach and those taught with lecture method: $F(1, 64) = 35.274$, $p = .000$ with an effect size of 0.355 (35.5%). This result reveals that the null hypothesis is rejected. Hence, there is a significant difference in the mean retention scores of students taught Business Education practicum with jigsaw teaching approach and those taught with lecture method.

Effect of teaching approaches on NCE II business education students' academic achievement in business education practicum.

Research question one sought to determine the effect of Jigsaw teaching approach on academic achievement of NCE II business education students in business education practicum. The findings of this study shows that the effect of Jigsaw teaching approach on students' academic achievement in business education practicum were significantly higher than the effect of lecture method. The higher level achievement by the experimental group could be as a result of high level of interaction amongst group members during the treatment.

The present finding is in line with earlier results of findings of Nwankwo and Okigbo (2021) whose findings revealed that Jigsaw teaching strategy significantly enhance achievement and retention of students in chemistry more than the conventional teaching method. The findings also corroborated with the reports of Orji and Ogar (2019) which revealed that Jigsaw learning strategy was more effective for teaching basic science than conventional strategy. Their findings also revealed that in Jigsaw teaching approach, the students are actively involved in the experimental learning.

Furthermore, in support of Jigsaw effectiveness Mbachu and Changieywo (2013), Lawan (2016) and Adil, Sameer, Mundhil and Ahamad (2020) revealed that Jigsaw strategy had more positive effect on students' overall mathematics achievement than the lecture method. the reason for these could be because these group of students were always engaged during the lectures, got involved in discussions, asked and answered questions. Thus, they had indepth understanding of the various topics discussed during the interaction.

Effect of teaching approaches on NCE II business education students' retention in business education practicum

Research question two sought to determine the effect of jigsaw teaching approach on retention of NCE II students in business education practicum. The findings of this study showed that the effect of jigsaw teaching approach on students' retention in business education practicum were significantly higher than the effect of lecture method. The reason for this higher retention may be as a result of interaction with group members which enabled the students to comprehend what was discussed and learnt.

The findings of this study is in consonance with earlier findings of Nwankwo and Okigbo (2019) which revealed that jigsaw teaching strategy significantly enhance retention scores of SS2 students in chemistry more than the conventional method. In the same vein the findings of the study by Ajoma (2019) revealed that HND students taught with cooperative technique had higher mean scores than those in control group that were taught with the conventional teaching method. In support to this finding also the result of the study by Umoru and Oluwafemi (2019) shows that students taught business studies using programme instruction which is also a learner-centred approach retained better what they have learnt over a period of time than those taught using conventional method.

Furthermore, the study by Safkolam, EI Islami and Sari (2023) revealed that science teacher students who studied with jigsaw technique had learning retention than those taught using the lecture method.

The findings of the hypothesis is also in agreement with the study of Eze and Lasis (2018) and Eze, Ezenwafor and Obidile (2016) which revealed that there were no significant difference in male and female students retention in basic technology and financial accounting respectively.

Conclusion

Based on the findings of this study, it was observed that jigsaw teaching approach is more effective than lecture method in improving students' achievement in business education practicum. This is because of the significant effect it has on NCE II business education students. The findings also showed that jigsaw teaching approach improves students' retention in business education practicum than lecture method which had a mean loss.

Recommendations

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

1. Business education lecturers in colleges of education should adopt jigsaw teaching approach which is cooperative and activity-based learning approach in order to improve students learning and achievement and as well enhance retention and mastery of what have been learnt by the students.
2. Management/institutions administrators of colleges of education should organize seminars, workshops and conferences and train lecturers on how to make effective use of jigsaw teaching approach in their instruction/delivery.

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