AJEMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.10 (1), October-December, 2023 https://ajemates.org

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

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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. Two research questions were generated and two 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). Findings of the study revealed that teaching and learning business education practicum using jigsaw teaching approach improve female students' academic achievement than their male counterpart. The findings of the study also show that jigsaw teaching approach improved female students' retention in business education practicum than their male counterpart. Result of the hypotheses shows that there was no significant difference between the academic achievement and retention of male and female NCE II students in business education practicum. The researcher concluded that Jigsaw teaching approach is more effective in improving female students' achievement and retention ability in business education practicum. The researcher therefore recommended among others that

business education lecturers should monitor the students carefully during jigsaw classes to ensure there is adequate collaboration, active participation of each student and team work among group members irrespective of gender so that team of adopting jigsaw teaching approach is not defeated.

Keywords: Jigsaw; Teaching Approach; Students; Academic Achievement; Retention; Business Education; Practicum.

Introduction

Several teaching techniques used for classroom teaching by many teachers seem to vary in their usefulness and result orientation. 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) view 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

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. 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. 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 business education practicum 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. 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 of Jigsaw teaching approach on 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 male and female NCE students taught Business Education Practicum using Jigsaw teaching approach and those taught with lecture method in Colleges of Education in South-East, Nigeria?
2. What are the mean retention scores of male and female NCE

students taught Business Education Practicum using Jigsaw teaching approach and those taught with lecture method in Colleges of Education in South-East, Nigeria?

Hypotheses

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

1. There is no significant difference in the mean achievement scores of male and female students taught Business Education Practicum using Jigsaw teaching approach and those taught with lecture method in Colleges of Education in South East, Nigeria.
2. There is no significant difference in the mean retention scores of male and female students taught Business Education Practicum using Jigsaw teaching approach and those taught with lecture method in colleges of Education in South-East, Nigeria.

Research 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 independent 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 was 67 NCE II business education students from two colleges of education in South-East Zone. From the experimental school, the intact of 26 (8 males and 18 females) was used and from the control school, an intact class of 41 (12 males and 29 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. 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 male and female NCE students taught Business Education Practicum using Jigsaw approach and those taught with lecture method in Colleges of Education in South-East, Nigeria?

Table 1: Mean scores and standard deviation of male and female students in Business Education Practicum

		Pretest			Gair	
Group	N	Mean	SD	Mean	SD	Mean
Male	20	9.65	1.424	20.70	3.962	11.05
Female	47	9.66	2.334	21.45	4.524	11.79
Difference	67	0.01		0.75		0.74

Data presentation in table 1 show the mean achievement scores of male and female students taught Business Education practicum using jigsaw teaching approach and those taught with lecture method. The table reveals mean scores of pretests for the male students (M = 9.65) and the female students (M = 9.66). The table also shows the mean scores of posttests for the male students (M = 20.70) and the female students (M = 21.45). The table further reveals the mean gains for the male students (M = 11.05) and the female students (M = 11.79). The mean gains depict that the female students have higher mean gain than the male students with a differences of 0.74.

Research Question 2: What are the mean retention scores of male and female NCE students taught Business Education Practicum using Jigsaw approach and those taught with lecture method in Colleges of Education in South-East, Nigeria?

Table 2: Mean retenti**on scores and standard deviation of male and female students in Business Education Practicum**

					Gain/loss	
Group	N	Mean	SD	Mean	SD	Mean
Male	20	20.70	3.962	20.30	3.962	0.05
Female	47	21.45	4.524	22.09	4.524	0.64
Difference	67	0.75		1.61		0.69

The results presented in Table 2 show the mean retention scores of male and female students taught Business Education Practicum using jigsaw teaching approach and those taught with lecture method. The table reveals mean scores of posttests for the male students (M = 20.70) and the female students (M = 21.45). The table also shows the mean scores of delayed tests for the male students (M = 20.30) and the female students (M = 22.09). The table further reveals a mean loss for the male students (M = 0.05) and a mean gain for the female students (M = 0.64). The mean gain/loss

depict that the female students have mean gain than the male students with a difference of 0.69.

ANCOVA Summary of Teaching Approaches on Male and Female Students' Mean Achievement Scores

Sources	Type III sum of squares	Df	Mean square	F	Sig	Partial Eta Squared	Decision
Corrected Model	112.608a	2	56.304	3.175	0.48	0.90	
Intercept	684.491	1	684.491	38.596	.000	.376	
Pretest	104.783	1	104.783	5.908	.018	.085	
Gender	7.7.04	1	7.704	.434	.512	.007	NS
Error	1135.034	64	17.735				
Total	31428.000	67					
Corrected Total	1247.642	66					

Note: NS = Not Significant

Table 3 shows the test of the difference in academic achievement mean scores of male and female students taught Business Education practicum using Jigsaw teaching approach and those taught with lecture method. From the table, it shows that there is no significant difference between the academic achievement mean scores of male and female students taught practicum with jigsaw teaching approach and those taught with lecture method: F(1, 64) = 0.434, p = 0.512 with a non-significant effect size of 0.007 (0.7%). This outcome reveals that the null hypothesis is retained. Hence, there is no significant difference in the academic achievement mean scores of male and female students taught Business Education practicum with jigsaw teaching approach and those taught with lecture method.

ANCOVA Summary of Teaching Approaches on Male and Female Students Mean Retention Scores

Source	Type III sum of squares	df	Mean square	F	Sig	Partial Eta Squared	Decision
Corrected Model	766.540a	2	383.270	4.433	.000	.564	
Intercept	69.527	1	69.527	7.516	.008	.105	
Posttest	721.832	1	721.832	78.032	.000	.549	
Gender	20.591	1	20.591	2.226	.141	034	NS
Error	592.027	64	9.250				
Total	32480.000	67					
Corrected Total	1358.567	66					

Note: NS = Not Significant

Table 4 shows the test of the difference in the mean retention scores of male and female students taught Business Education practicum using Jigsaw teaching approach and those taught with lecture method. The table shows that there is no significant difference between the mean retention scores of male and female students taught practicum with jigsaw teaching approach and those taught with lecture method: F(1, 64) = 2.226, p = 0.141 with a non-significant effect size of
0.034 (3.4%). This result reveals that the null hypothesis is retained. Hence, there is no significant difference in the mean retention scores of male and female students taught Business Education practicum with jigsaw teaching approach and those taught with lecture method.

Discussion

Research question one sought to find out the effect of Jigsaw teaching approach on academic achievement of male and female NCE II students in business education practicum. The findings emanating from this study shows that teaching and learning business education practicum using Jigsaw approach improve female students' academic achievement in business education practicum than their male counterpart. The mean scores of female students is higher than those of male students in other words, teaching business education practicum using Jigsaw teaching approach proved to be more effective in female students. The findings of this study is in line with earlier findings by Mohammed and Samuel (2020) and Abike (2022) which revealed that female students achieved better than their male counterparts after they were exposed to Jigsaw strategy in biology class.

The result is also akin to the findings of the study by Macmillan (2019) which revealed that female students in both experimental and control group achieve averagely higher than the male students. The findings of the hypothesis agreed with the study of Dania (2014) and Eze and Akamobi (2019) which revealed that there was no significant difference between the academic achievement mean scores of male and female technical college students taught Basic Electricity using constructive teaching method and those taught using meta-learning teaching method. The finding is in disagreement with the findings of Eze and Emeli (2013) which indicated that there was significant difference in the achievement of male and female students. The disagreement with the present study could be as a result of the fact that previous study focused on using AUTOCAD in the teaching of technical drawing whereas the present study focused on using jigsaw teaching approach in teaching business education practicum.

Research question two sought to find out the effect of jigsaw teaching approach on retention of male and female NCE II students in business education practicum. The findings of the study showed that jigsaw teaching approach improved female students' retention in business education practicum than their male counterpart. In other words, teaching business education practicum using jigsaw teaching approach proved to be more effective in improving female

students' retention. This findings is consistent with the study carried out by Ezeobi (2011). In an attempt to find out differences in performance and retention between male and female students taught physics using jigsaw instructional approach, the study revealed that the female students have a higher gain in their mean score and standard deviation. Findings also showed that there was no significant difference in the mean retention scores of male and female NCE II students taught business education practicum using jigsaw teaching approach.

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 in improving both male and female students' academic achievement and retention in business education practicum

Recommendations

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

1. Business education practicum lecturers should monitor the students carefully during jigsaw classes to ensure there is adequate collaboration, active participation of each student and team work among group members so that the aim of adopting jigsaw teaching approach is not defeated.
2. Business education lecturers should provide equal opportunities and attention to both male and female students when exposed to jigsaw class.

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