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Effect of Problem-Solving and Jigsaw Teaching Techniques on Academic Achievement of Business Education Students in Financial Accounting in Universities in Anambra State, Nigeria

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Abstract

The study determined the effect of problem-solving and jigsaw on academic achievement of business education students in financial accounting in universities in Anambra State. The study was quasi-experimental research which specifically used the pre-test and post-test non-equivalent control group design. The population of the study was 719 business education students in universities in Anambra State and the sample size was 123 business education students drawn from 2 universities. Financial Accounting Achievement Test (FAAT) developed by the researcher using 300L past questions between 2020 to 2022 was used as research instrument. FAAT was administered to business education students in both experimental and control groups. Test-retest method was used to establish the reliability of the instrument and data were analysed with Pearson Product Moment Correlation coefficient which yielded 0.86. Mean was used to answer the research questions while analysis of covariance (ANCOVA) was used to test the hypotheses. The SPSS version 21.0 was used for analysis. Findings revealed that using problem-solving and jigsaw instructional mode enhances business education students' academic achievement in financial accounting when compared with lecture teaching method. Based on the findings of the study, the researcher concluded that problem-solving and jigsaw instructional mode has the capacity of improving business education academic achievement in financial accounting. It was therefore recommended among others, that problem-solving and jigsaw instructional mode should be formally adopted by business education teachers in universities for teaching financial accounting and other skill-based subjects to improve academic achievement of business education students.

Keywords: problem-solving, jigsaw, academic achievement, business education, financial accounting

Introduction

Education is regarded as the roadmap of experiences that pave way for the nation and its citizen to understand the world they live in and be able to manage affairs well. Indeed, education determines the quality development of any nation. A country with sound educational system and well articulated ideas, policies and programmes will produce manpower that will develop the nation. Ezenwafor et al. (2021) averred that education is the bedrock of any nation's development as no nation can develop with a higher rate of illiteracy among the citizens. The goal of education is achieved through the establishment of various policies and programmes by the federal government. Nigeria as a nation has various levels of education of which tertiary education is one of them. Tertiary education is structured in a way that its recipients will have the ability and capacity to contribute to the nation building. Tertiary education is widely believed to provide the optimum standard to prepare young people to face the challenges of life. In addition, for countries to compete globally a significant number of their citizens needs a tertiary education. According to World Bank (2021), tertiary education refers to all formal post-secondary education, including public and private universities,

colleges, technical training institutes, and vocational schools. Tertiary education is instrumental in fostering growth, reducing poverty, and boosting shared prosperity. A highly skilled workforce, with lifelong access to a solid post-secondary education, is a prerequisite for innovation and growth: well-educated people are more employable and productive, earn higher wages, and cope with economic shocks better. World Bank further averred that tertiary education benefits not just the individual, but society as a whole. Graduates of tertiary education are more environmentally conscious, have healthier habits, and have a higher level of civic participation. Also, increased tax revenues from higher earnings, healthier children, and reduced family size all build stronger nations. In short, tertiary education institutions prepare individuals not only by providing them with adequate and relevant job skills, but also by preparing them to be active members of their communities and societies. The economic returns for tertiary education graduates are the highest in the entire educational system[*] – an estimated 17% increase in earnings as compared with 10 % for primary and 7% for secondary education. These high returns are even greater in Sub-Saharan Africa, at an estimated 21% increase in earning for tertiary education graduates. Tertiary education comprise of polytechnics, monotechnics, colleges of education, professional institutions and universities.

University is seen as a formal education that occurs in different areas of teaching including undergraduate and graduate. A university differs from a college in that it is usually larger, has a broader curriculum, and offers graduate and professional degrees in addition to undergraduate degrees. According to Alemu (2018) university is a higher learning institution that brings men and women to a high level of intellectual development in the arts and science, and in the traditional professional disciplines, and promotes high-level research. Universities in Nigeria run different programmes including business education. Business education is a programme offered at tertiary education level that has the capacity to impart in its learners the ability, attitude and strong-will to contribute to the nations building. According to Nwagwu et al. (2022), business education is one of the vocational education programmes aimed at equipping individuals with skills and knowledge required to function effectively in chosen occupation in world of business. Edokpolor and Egbri, cited in Oluwadare et al. (2022) had stipulated that the actual goals of business education shall be to prepare students for specific career in office occupations; equip students with the requisite skills for job creation and entrepreneurship and expose students with knowledge about business, including a good blend of computer technology, which incorporates information and communication technology (ICT). Business Education as a course of study, have the capacity of molding students to graduate with such revealing and endearing skills (Okeke, 2021). Unfortunately, limited access to funds, lack of instructional material, equipment and computer laboratories prevents the teachers from involving much practice in their students' academic activities. As a result of this, teachers have no other choice but to concentrate on lecture teaching method. Lecture method is one of the oldest methods of teaching widely used by teachers in almost all discipline. This method is used to give an overview of a large unit and is an effective way for motivating students and developing their interest in the subject.

Lecture method is most convenient and inexpensive method of teaching any subject. It hardly requires the use of scientific apparatus, experiment, and aids materials except for the black board. However, this method do not seems to address students' different needs in the learning process. This is so because the lecture method is based on vertical learning, whereby the teacher has all the knowledge and the know-how which they transmit to the students. The students are considered to have everything to learn. Lecture method is teacher controlled and information centered approach in which teacher works as a role resource in classroom instruction. In this method, only the teacher does the talking and the student is passive listener.

[*] https://documents.worldbank.org/curated/en/830831468147839247/pdf/WPS7020.pdf

This creates dullness in the classrooms as the interaction between the pupil and teacher ceases to occur. Lecture method mainly focuses on cognitive objectives. The main emphasis of this strategy is the presentation of the content. In this method teachers plans and controls the whole learning process. The teacher communicates their knowledge in the form of a presentation, like a university lecture, while the students take notes. To check their students have understood the class, the teacher may ask questions at the end of the presentation. However, this method does not allow students to participate actively in the classroom, since they possibly relied on what the teacher taught them. Based on this student academic achievement is hampered.

Academic achievement indicates the outcome of student's performance in examination at primary, secondary and tertiary level of education. Academic achievement is the extent to which a student, teacher, or institution has attained their short or long-term educational goals and is measured either by continuous assessment or cumulative grade point average (CGPA) (Talib and Sansgiry, cited in Tadese et al., 2022). Zhou and Siti (2022) academic achievement is a direct manifestation of learning effectiveness and a valid indicator to evaluate the effectiveness of teaching and education in higher education as well as the overall development of students. In Nigeria, poor academic achievement at the secondary school level of education is on the increase. Record from West African Examination Council (2022) revealed the performance of all the senior secondary school candidates that registered for senior secondary certificate examination (SSCE) between 2020 and 2022. According to Kanabe (2022), 72.9% obtained credits and above in a minimum of five (5) subjects, including English Language and Mathematics and 27.1% recorded poor performance. In 2021, 91.2% obtained credits and above in a minimum of five (5) subjects, including English Language and Mathematics and 8.8% poor performance. In 2022, 76.36% obtained credits and above in a minimum of five (5) subjects, including English Language and Mathematics and 23.64% recorded poor performance. This rising and falling in the students' performance may be attributed to the method of teaching using by teachers in various subjects. An effective teacher uses teacher-directed and others learner-directed method of teaching. From these methods, teacher chooses a method or combination of methods that will yield good result for particular lesson's objectives with a particular group of students. There are a lot of teaching techniques such as reciprocal teaching, problem-based learning, inquiry-based learning, peer teaching, project-based learning, problem-solving technique and jigsaw, a teacher should choose from in order to achieve teaching and learning goals and objectives. The present study focused on problem-solving and jigsaw method of teaching.

Problem-solving learning (PSL) involves teaching the students on how to solve problem by starting from known to unknown in order to achieve proficiency in teaching and learning. Chileya et al. (2020) problem solving is a process of working towards a solution or solutions to a problem. Problem-solving method of teaching is the processes used to proffer solution to a problem. Problem solving skills refer to the ability of an individual to find meaningful solutions to solve problems using effective and timely strategies (Karabacak, Nalbant, and Topçuoglu, cited in Albay, 2019). Problem solving is ubiquitous in modern life and an essential skill for overcoming the problems encountered daily (Wang, 2021). According to Wilson (2020) problem solving method refers to a body of techniques for investigating phenomena, acquiring new knowledge, or correcting and integrating previous knowledge. Problem solving places the focus on the student making creative ideas. Problem solving encourages students to believe in their ability to think innovatively. It can help a teacher to make instructional decisions. It allows students to work at their pace and make decisions about the way they explore the problem. In order to strengthen this techniques, cooperative learning strategies like jigsaw that makes use of lesson content that is subdivided into various topics is needed to achieve optimum result.

Jigsaw is a learning strategy in which each student are expected to become an expert on a particular topic, through communication and discussion with their groups reading the same text, researching the same topic or unit, and then share their findings to their original "home" group. One student from each group has his/her own topic and then they meet with other students from other groups who have the same topic and they work together to decide the most important parts to share back with their original or home group to help them develop the same understanding. According to Nkadi, cited in Nduji et al. (2020) Jigsaw as a variable under investigation in the present study is attributed to be well planned and structured procedures with suitable instructional materials and specific guidelines for all participants that make students dependent on each other for meaningful learning. Ojekwu and Ogunleye (2020) opined that the essence of the learning strategy was to reduce interracial segregation and foster cooperation among the students. Aydin and Biyikli (2020) averred that jigsaw cooperative learning structure enhances cooperative learning by making each student responsible for teaching some of the material to the group. Jigsaw techniques involve teams and these teams comprise of male and female. Tofi, Usman and Lakpini (2022) averred that jigsaw is gender friendly.

Gender is described by Mbonu and Okoli, 2019 in Tofi et al. (2022) as a socially ascribed attribute which differentiates male from female. Gender refers to the roles and relationships between men and women in a given context (Oludipe, cited in Mohammed and Samuel, 2022). Mohammed et al. also opined that gender factor is a responsible factor that challenges educational and sustainable development in Nigeria. Macmillan and Mangut (2021) conducted a study on Jigsaw IV Cooperative Learning Strategy: Closing the Gender and School Type Gaps in Physics Achievement of Senior Secondary two Students, the result revealed, amongst others, that students taught heat energy measurements using J4CLS achieve significantly higher than students taught under conventional lecture method (CLM); those who were taught heat energy measurements using J4CLS achieved high, without gender and school type bias. Gender is one of the factors that may determine students' achievement when cooperative learning is adopted for classroom instruction. Gender is the grouping of people into feminine and masculine through interaction with caretaker and socialization in childhood (Ezenwosu and Nworgu, cited in Jimoh, Idris and Olatunji, 2016). According to Madumere-Obike and Nwabueze (2020) averred that gender can be seen as the socially determined roles and relationships between male and female human beings. University in Anambra State comprise of male and female. These male and female engage in one course or the other, of which business education is one of them.

Business education is an educational programme associated with skills, attitudes, aptitude and abilities required to enhance academic achievement of male and female in universities. Umoru (2020) opined that business education is a combination of courses offered to all individuals in the school system irrespective of their career aspirations and this is referred to as education about business or consumer education. According to Emeasoba and Nwatarali (2020), business education is a component of vocational and technical education programme that prepares an individual for career in business and also to be an intelligent consumer of economic goods and services. Emeasoba and Nwatarali (2020) further stress that business education provides students with needed competencies, skills, knowledge, understanding and attitude to perform as workers in industries, civil service and also proprietors of business. Business education is all about skills, hence the need to use a teaching techniques and teaching strategies that will make the students achieve optimal results in their academic pursuit. Options abound in business education of which accounting is one of them.

Financial accounting is a skill-based subject that requires the active participation of learners. Asaolu cited in Olulowo et al. (2020) opined that financial accounting is seen as the process of recording, classifying, selecting, measuring, interpreting, summarizing, and

reporting financial information of an organization to internal and external users for decision-making and proper appraisal. According to Nwaukwa and Okolocha (2020) financial accounting is the process of recording, reporting and evaluating economic occurrences and transactions that affect business organizations and the general economic status of a nation. Financial accounting is not a subject that can be mastered by mere memorization, it requires continuous practice. The analysis of results of business education students in financial accounting in the sampled university for 2020, 2021 and 2022 academic years showed a percentage failure rate of students in the subject to be 61.69%, 56.87% and 53.15% (Departmental examination Report, 2020, 2021 & 2022) respectively. This situation calls for remedial action by using a teaching technique that encourages active participation of learners. Problem-solving and jigsaw technique is adequate for teaching and learning of financial accounting. The combination of problem-solving technique and jigsaw will enhance the academic achievement of business education students in accounting. Hence, the need for an instructional technique that involves the active participation of its students. A lot of research has been conducted on problem-solving and jigsaw, but none to the best of the researchers' knowledge have been conducted in the present area of the study, Anambra State.

Statement of the Problem

Business education as a skill-oriented programme requires the type of teaching technique that should impart in its learners the requisite skills. It is a discipline of study that prepares the students for future job upon graduation, but despite the importance of business education, it is unfortunate that, a significant number of students cannot cope with the skills and competencies attributed to the subject. This tends to affect students‟ interest in business education. The problem of graduated business education students remaining idle after looking for white-collar job without success is a matter of great concern to students, lecturers, and the society at large. However, it has been observed that the learning of business education depends on the effective teaching of the subjects with an instructional technique that encourage active participation of learners. Therefore, the persistent increase in unemployment of business education students needs to be addressed. If it is not properly addressed the academic achievement of business education students will be in jeopardy.

Purpose of the Study

The purpose of the study was to determine the effect of problem-solving and jigsaw method of teaching on the academic achievement of business education students in financial accounting in universities in Anambara State, Nigeria.

Research Questions

The following research question guided the study:

1. What is the effect of problem-solving method of teaching on achievement of business education students in financial accounting when compared with those taught with lecture method using pre-test and post-test mean scores?
2. What is the effect of jigsaw method of teaching on achievement of business education students in financial accounting when compared with those taught with lecture method using pre-test and post-test mean scores?
3. What is the relative effectiveness of problem-solving teaching method on achievement of male and female business education students in financial accounting using their pre-test and post-test mean scores?
4. What is the relative effectiveness of jigsaw teaching method on achievement of male and female business education students in financial accounting using their pre-test and post-test mean scores?

5. What is the relative effectiveness of lecture method of teaching on achievement of male and female business education students in financial accounting using their pre-test and post-test mean scores?

Research Hypotheses

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

1. There is no significant difference in the pre-test and post-test mean achievement scores of business education students taught financial accounting using problem-solving teaching method and those taught using lecture method.
2. There is no significant difference in the pre-test and post-test mean achievement scores of business education students taught financial accounting using problem-solving teaching method and those taught using lecture method.
3. There is no significant difference in the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using problem-solving technique.
4. There is no significant difference in the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using jigsaw technique.
5. There is no significant difference in the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using lecture method.

Methods

The research was carried out using quasi-experimental design of pre-test and post-test non-equivalent control group. The study was carried out in Anambra State of Nigeria and the population consisted of 719 business education students of the three universities offering accounting in Anambra State and the sample size was 123 business education students drawn from the two sampled schools out of 3 universities in Anambra State. The instrument for data collection was Financial Accounting Achievement Test (FAAT) extracted from 300L past questions from 2019-2023. The instrument was validated by three experts and the reliability of the test was calculated using Pearson Product Correlation Coefficient and the result revealed a reliability coefficient of 0.86. Mean and standard deviation were used in analyzing the data and Analysis of Covariance (ANCOVA) was used in testing the hypotheses at 0.05 level of significance.

Research Question 1: What is the effect of problem-solving method of teaching on achievement of business education students in financial accounting when compared with those taught with lecture method using pre-test and post-test mean scores?

The result of the analysis in respect of the research question is presented in Table 1.

Table 1: Pre-test and post-test mean achievement scores of students taught financial accounting using problem-solving and those taught using lecture method

Methods	N	Pre-test mean	Post-test mean	Mean gain	Decision
Problem-solving	40	30.24	54.98	24.74	Effective
Lecture	80	15.17	18.88	3.71	

Data in Table 1 show that the pre-test and post-test mean achievement scores of business education students taught financial accounting using problem-solving are 30.24 and 54.98 while the pre-test and post-test mean achievement scores of students taught with lecture method are 15.17 and 18.88 respectively. The mean gain of experimental group of 24.74 is higher than

that of control group (3.71). This shows that experimental group performed better than the control group.

Research Question 2: What is the effect of jigsaw method of teaching on achievement of business education students in financial accounting when compared with those taught with lecture method using pre-test and post-test mean scores?

The result of the analysis in respect of the research question is presented in Table 2.

Table 2: Pre-test and post-test mean achievement scores of students taught business education using jigsaw and those taught using lecture method

Methods	N	Pre-test mean	Post-test mean	Mean gain	Decision
Jigsaw	40	31.12	32.19	1.07	Effective
Lecture	80	30.00	54.91	24.91	

Data in Table 2 show that the pre-test and post-test mean achievement scores of business education students taught financial accounting using problem-solving are 31.12 and 32.19 while the pre-test and post-test mean achievement scores of students taught with lecture method are 30.00 and 54.91 respectively. The mean gain of experimental group of 24.91 is higher than that of control group (1.07). This shows that experimental group performed better than the control group.

Research Question 3: What is the relative effectiveness of problem-solving technique on achievement of male and female business education students in financial accounting using their pre-test and post-test mean scores?

The result of the analysis in respect of the second research question is presented in Table 3.

Table 3: Pre-test and post-test mean achievement scores of male and female business education students taught using problem-solving

Gender	N	Pre-test mean	Post-test mean	Mean gain	Decision
Male	10	32.32	55.28	22.96	No difference in effectiveness
Female	30	28.15	54.67	26.52	

Data in Table 3 show that the pre-test and post-test mean scores of male business education students taught financial accounting using problem-solving are 32.32 and 55.28, while the pre-test and post-test mean scores of female students are 28.15 and 54.67 respectively. The mean gain of male students is 22.96 higher than that of their female counterpart which is 26.52. This implies that the mean achievement scores of female students are 3.56 higher than that of males' students. Thus, problem-solving enhanced the performance of males more than the female students.

Research Question 4: What is the relative effectiveness of jigsaw technique on achievement of male and female business education students in financial accounting using their pre-test and post-test mean scores?

The result of the analysis in respect of the second research question is presented in Table 4.

Table 4: Pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using jigsaw

Gender	N	Pre-test mean	Post-test mean	Mean gain	Decision
Male	10	55.23	63.42	8.19	No difference in effectiveness
Female	30	54.67	63.15	8.48	

Data in Table 4 show that the pre-test and post-test mean scores of male business education students taught financial accounting using jigsaw are 55.23 and 54.67, while the pre-test and post-test mean scores of female students are 63.42 and 63.15 respectively. The mean gain of male students is 8.19 and that of their female counterpart which is 8.48. This implies that the mean achievement scores of female students are 8.48 higher than that of males' students. Thus, jigsaw enhanced the performance of females more than the male students.

Research Question 5: What is the relative effectiveness of conventional method of teaching on achievement of male and female business education students in financial accounting using their pre-test and post-test mean scores?

Result of analysis to the third research question is presented in Table 5.

Table 5: Pre-test and Post-test Mean Achievement Scores of male and female business education students taught financial accounting using lecture method

Gender	N	Pre-test mean	Post-test mean	Mean gain	Decision
Male	10	16.24	20.65	4.41	No difference in effectiveness
Female	30	14.10	17.10	3.00	

Data in Table 5 show that the pre-test and post-test mean scores of male business education students taught financial accounting using lecture method are 16.24 and 20.65 while the pre-test and post-test mean scores of female students are 14.10 and 17.10 respectively. The mean gain of male students is 4.41 higher than that of their female counterpart which is 3.00. This implies that the mean achievement scores of male students are 1.41 higher than that of females' student. Thus, lecture method improves the performance of males more than the female students.

Hypothesis 1

There is no significant difference between the pre-test and post-test mean achievement scores of business education students taught financial accounting using problem-solving technique and those taught using lecture method. The statistical test of the first hypothesis is presented in Table 6.

Table 6: ANCOVA on pre-test and post-test mean achievement scores of business education students taught financial accounting using problem-solving and those taught using lecture method

Source	Type III Sum of Squares	Df	Mean Square	F	p-value	
Corrected Model	392.959[a]	2	196.479	15.607	.000	Not Significant
Intercept	647.988	1	647.988	51.471	.000	
Pre-test	55.612	1	55.612	4.417	.048	
Group	326.512	1	326.512	25.936	.000	
Error	264.375	21	12.589			

Total	7730.000	24				
Corrected Total	657.333	23				

The result in the Table 6 shows that there is a statistically significant difference on the mean achievement scores of business education students taught financial accounting using problem-solving and those taught using lecture method. This is because the p-value (.000) is less than the level of significant (0.05). Based on the above, the null hypothesis is not rejected, implying that there is a statistically significant difference on the mean achievement scores of business education students taught financial accounting using problem-solving and those taught using lecture method.

Hypothesis 2

There is no significant difference between the pre-test and post-test mean achievement scores of business education students taught financial accounting using jigsaw technique and those taught using lecture method. The statistical test of the second hypothesis is presented in Table 7.

Table 7: ANCOVA on pre-test and post-test mean achievement scores of business education students taught financial accounting using jigsaw and those taught using lecture method

Source	Type III Sum of Squares	Df	Mean Square	F	p-value	
Corrected Model	26955.942[a]	2	13477.746	15.607	.000	Not Significant
Intercept	3314.837	1	3314.837	51.471	.000	
Pre-test	19305.834	1	19305.834	4.417	.048	
Group	9145.514	1	9145.514	144.327	.000	
Error	8554.487	120	12.589			
Total	299257.000	123				
Corrected Total	35509.978	122				

The result in the Table 7 shows that there is a statistically significant difference on the mean achievement scores of business education students taught financial accounting using jigsaw and those taught using lecture method. This is because the p-value (.000) is less than the level of significant (0.05). Based on the above, the null hypothesis is not rejected, implying that there is a statistically significant difference on the mean achievement scores of business education students taught financial accounting using jigsaw and those taught using lecture method.

Hypothesis 3

There is no significant difference between the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using problem-solving technique. The statistical test of the third hypothesis is presented in Table 8.

Table 8: ANCOVA on the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using problem-solving technique

Source	Type III Sum of Squares	Df	Mean Square	F	P-value	
Corrected Model	102.045[a]	2	12.022	3.356	.077	Not significant
Intercept	347.270	1	337.270	24.335	.001	
Pre-test	95.325	1	85.325	6.149	.033	
Gender	7.339	1	7.339	.473	.407	
Error	156.031	120	12.503			
Total	5774.000	123				
Corrected Total	255.077	122				

The result in the Table 8 show that there is no statistically significant difference on the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using problem-solving technique. This is because the p-value (.407) is greater than the level of significant (0.05). Based on the above, the null hypothesis is rejected, implying that there is no statistically significant difference on the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using problem-solving technique.

Hypothesis 4

There is no significant difference between the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using jigsaw technique. The statistical test of the fourth hypothesis is presented in Table 9.

Table 9: ANCOVA on the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using jigsaw technique

Source	Type III Sum of Squares	Df	Mean Square	F	P-value	
Corrected Model	112.045[a]	2	12.022	3.256	.075	Not significant
Intercept	337.270	1	317.270	21.335	.001	
Pre-test	92.325	1	65.325	5.149	.013	
Gender	5.339	1	5.339	.373	.607	
Error	136.031	120	11.503			
Total	5374.000	123				
Corrected Total	225.077	122				

The result in the Table 9 show that there is no statistically significant difference on the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using jigsaw technique. This is because the p-value (.607) is greater than the level of significant (0.05). Based on the above, the null hypothesis is rejected, implying that there is no statistically significant difference on the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using jigsaw technique.

Hypothesis 5

There is no significant difference in the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using lecture method. The statistical test of the third hypothesis is presented in Table 10.

Table 10: ANCOVA on pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using lecture method

Source	Type III Sum of Squares	Df	Mean Square	F	P-value	
Corrected Model	7.580[a]	2	3.640	.567	.573	
Intercept	255.990	1	195.990	42.455	.000	
Pre-test	.114	1	.103	.017	.704	Significant
Gender	7.373	1	5.273	1.113	.520	
Error	51.229	120	7.554			
Total	1746.000	123				
Corrected Total	50.909	122				

The results in the Table 10 show that there is no statistically significant difference on the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using lecture method. This is because the p-value (.520) is greater than the level of significant (0.05). Based on the above, the null hypothesis is not rejected, implying that there is no statistically significant difference on the pre-test and post-test mean achievement scores of male and female business education students taught financial accounting using lecture method.

Discussion of Findings

The findings of the study are discussed as follows:

Effect of problem-solving technique on achievement of business education students in financial accounting

The findings of the study revealed that business education students who were taught financial accounting using problem-solving technique performed better than those taught financial accounting using lecture method.

Amadi, Ogwunte and Nwobike (2021) study revealed that students taught financial accounting using problem-solving performed better than those taught using lecture teaching method. In support, Ezeddine et al. (2023) study revealed that students taught physical education using problem-solving instructional method performed very well. Similarly, the findings are in line with Akinwumi and Falemu (2017) which stated that peer tutoring strategy was more effective in improving students' academic achievement in biology than those taught using lecture method. The relationship between the findings is that the use of problem-solving technique was more effective in enhancing academic achievement of students in various subjects.

Effect of jigsaw on the achievement business education students in financial accounting

The findings of the study showed that students taught business education using jigsaw performed better than those taught with lecture method. These findings are in line with the findings of Okonkwo and Okigbo (2021) which revealed that the students taught chemistry using jigsaw teaching method achieved higher than those taught using lecture method. This implies that jigsaw is more effective in improving academic achievement of business education students in financial accounting and other subjects. Therefore, peer tutoring can be a yardstick to improve students academically.

Conclusion

As a result of the findings of this study, it could be concluded that problem-solving and jigsaw is an effective instructional strategy capable of enhancing business education students' academic achievement in financial accounting. Similarly, the academic achievement of

business education students in financial accounting is not influenced by gender when problem-solving, jigsaw and lecture method are employed in teaching. However, it is necessary for business education teachers at the universities level to use problem-solving and jigsaw as an effective instructional strategy especially in teaching skill-based subjects. This strategy when properly used will continue to improve students' academic achievements.

Recommendations

Based on the findings of this study, the researcher makes the following recommendations:

1. The teachers need to diversify the method of teaching financial accounting such as problem-solving and jigsaw as it will assist in higher academic achievement of students.
2. Problem-solving and jigsaw technique should be adopted in universities by business education teachers for teaching of financial accounting so as to improve the academic achievement of students.
3. Governments should employ qualified hands to teach various vocational subjects because it is only a qualified teacher with effective teaching method that can remedy students' poor academic achievement in financial accounting and other vocational subjects.
4. All learners should be given equal opportunity and the same level of encouragement irrespective of the gender.

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