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EFFECT OF TEAM TEACHING ON LEARNING OUTCOMES OF UNDERGRADUATES OF FACULTY OF EDUCATION IN RIVERS STATE UNIVERSITY

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Abstract

This study investigated effect of team teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University Three research questions and three null hypotheses were formulated to guide the study. The population of the study is 140 undergraduates of 2020/2021 academic session of Faculty of Rivers State University. The entire population of 140 students were studied as an intact class without sampling. The study adopted the use of two different instructional methods, the team-teaching method and the conventional lecture method. An instrument titled Learning Outcomes Test was designed and used to address the three research questions of the study. The instrument was subjected to face and content validity by three experts, one expert in the Department of Educational Management and two others in Measurement and Evaluation. The reliability of the instrument was established using test-retest reliability method while z-test statistics was used to analyze the test scores of the experimental and control groups. The result showed that undergraduates taught using parallel teaching, differentiated teaching and one-teach-one-assist had a higher mean performance score than those taught using conventional technique in the learning outcomes test. Consequently, it was recommended among that, the university should address the question of operational support whenever it is considering parallel teaching because teachers are sometimes emotionally drained teaching diverse students, the university should support teachers' utilization of differentiated teaching by motivating them to maximize teacher leadership and one-teach-one-assist should be use when one teacher has more expertise in the topic and when individual student needs more assistance in the university.

Keywords:

Team Teaching, Learning Outcomes, Parallel Teaching, Differentiated Teaching, One-teach-one-assist

Introduction

Teaching is the process of facilitating learning and promoting student achievement through a variety of instructional strategies, techniques, and approaches. According to Hattie (2019) effective teaching involves creating a supportive and inclusive learning environment, building positive relationships with students, and using a range of teaching methods to meet the diverse needs of learners. In the view of Onwuegbu in Elenwo and Dike (2023) the requirement for effective teaching depends on collective knowledge and richness of diverse perspectives, hence, calls for the need for team teaching amongst the teaching staff of institutions of learning.

Team teaching is a collaborative instructional approach where two or more educators collaborate to plan, deliver, and assess instruction to a group of students. This approach promotes a collaborative learning environment, shared expertise, and diverse perspective (Friend, Cook and Hurley-Chamberlain, 2010). Team teaching has gained significant attention in recent years due to its potential to enhance student learning outcomes. By bringing together diverse perspectives, expertise, and teaching styles, team teaching can create a rich and inclusive learning environment that fosters deeper understanding, critical thinking, and problem-solving skills among undergraduates. Research has shown that team teaching can lead to improved student engagement, motivation, and academic achievement, as well as better preparation for the complexities of the 21st century workforce. According to Graham (2017) team teaching as a collaborative instructional approach, has the potential to revolutionize undergraduate education by enhancing student learning outcomes in various ways such as: bringing together educators from different disciplines, experiences, and teaching styles which offers the students a comprehensive understanding of the subject matter, helps students benefit from varied teaching methods, making learning more engaging and interactive, exposure to multiple viewpoints and teaching approaches develops critical thinking and problem-solving skills etcetera. Team teaching in this study refers to parallel teaching, differentiated teaching and one-teach-one-assist method of teaching used by teachers to enhance students' engagement towards the realization of a better students learning outcome.

Parallel teaching is an instructional approach where two or more teachers concurrently teach the same content to different groups of students. This approach allows for diverse teaching styles, perspectives, and expertise to be shared, promoting a richer learning experience for students. According to Bauwens and Hourcade (2015) parallel teaching allows; for smaller student-to-teacher ratios and enabling more individualized attention and tailored instruction, multiple teachers bring unique teaching styles, experiences, and expertise, exposing students to a broader range of ideas and approaches, incorporates varied instructional methods, making learning more engaging and interactive, improved students autonomy and multiple teachers can share resources, expertise, and materials, enriching the learning environment. National Research Council (2010) opined that, teachers using parallel teaching tailor instruction to meet diverse learning needs, promoting inclusivity, and equity leading to better understanding and retention of materials by students.

Differentiated teaching is an instructional approach that recognizes and responds to the diverse learning needs, interests, and abilities of students. It involves tailoring instruction to meet the unique needs of each learner, rather than using a one-size-fits all approach. Differentiated teaching promotes inclusive and effective learning environments by recognizing and responding to student diversity. Tomlinson (2015) found that students who receive differential instruction tend to perform better academically. Bergmann and Sams (2012) asserted that differentiated teaching increases student motivation and interest and participation in learning.

One-teach-one-assist is an instructional approach that involves one teacher providing direct instruction to one student while another teacher or assistant provides support and assistance to that student. This approach has been used in various educational settings to provide personalized instruction and support to the students with diverse learning needs. Bui, Quirk and Almazan (2016) stated that students who receive one-teach-one-assist instruction perform better academically. Friend, Cook and Hurley-Chamberlain (2010) found that one-teach-one-assist leads to higher levels of student engagement and motivation, as students receive personalized attention and support.

Statement of the Problem

Despite the growing popularity of team teaching in undergraduate education, there is a significant lack of understanding about its impact on student learning outcomes. While team teaching has been touted as an innovative approach to instruction, there is limited research on its effectiveness in improving academic achievement, critical thinking, and problem-solving skills among undergraduate students. Furthermore, the existing literature suggests that team teaching may have varying effects on different student populations, such as students from diverse cultural backgrounds or students with varying learning styles. Hence, the study investigated the effect of team teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University.

Purpose of the Study

The main purpose of the study was to investigate effect of team teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University.

Specifically, the objectives of the study were to;

1. ascertain the effect of parallel teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University.
2. determine the effect of differentiated teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University?
3. find out the effect of one-teach-one-assist method of teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University?

Research Questions

For this study, the following research questions are posed.

1. What is the effect of parallel teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University?
2. What is the effect of differentiated teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University?
3. What is the effect of one-teach–one-assist method of teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University?

Hypotheses

The following null hypotheses were formulated for the study.

1. There is no significant difference in the mean performance scores of undergraduates of Faculty of Education in Rivers State University taught using parallel teaching and those taught with conventional teaching method.
2. There is no significant difference in the mean performance scores of undergraduates of Faculty of Education in Rivers State University taught usingdifferentiated teaching and those taught with conventional teaching method.

3. There is no significant difference in the mean performance scores of undergraduates of Faculty of Education in Rivers State University taught using one-teach–one-assist method of teaching and those taught with conventional teaching method.

Methodology

The research adopted a quasi-experimental research design. Specifically, the study adopted the pretest-posttest non-randomized control design. The population of the study was 140 undergraduates of Faculty of Education, Rivers State University of 2020/2021. The entire population of 140 students were studied as an intact class without sampling. This is because the class is manageable. An instrument was designed and used to address the three research questions of the study. This was Learning Outcomes Test (LOT). The instrument had 20 multiple choice question items with response options A-D for each question. The questions were set based on the course outline for Educational Research Methods and Statistics which was a general course for undergraduates as drawn from the course descriptions of the courses in the faculty handbook. The instrument was subjected to face and content validity by three experts, one expert in the Department of Educational Management and two others in Measurement and Evaluation. Their expert opinion and suggestions were duly incorporated before final copies were produced and used. The reliability of the instrument was established using test-retest reliability method. A pilot test was conducted on 10 undergraduates of Faculty of Education, University of Port-Harcourt. The Pearson Product Moment Correlation statistics was adopted in correlating the scores of the test. Reliability coefficients of 0.81 was obtained for the instrument.

The study adopted the use of two different instructional methods. The team-teaching method and the conventional lecture method. The team-teaching method in teaching experimental group while the control group was taught using the conventional lecture method. Before the treatment, a pre-test was administered to the intact class in the Faculty of Education using LOT to determine their entry equivalence. z-test statistics was used to analyze the test scores of the experimental and control groups. A z-cal value of 0.89 was obtained which was less than the critical table value of ±1.96 which meant there was no significant difference in the mean scores of the experimental and control groups. This indicates the two groups are equivalent.

After this, the class was divided into two groups and the treatment was given. The experiment lasted for a duration of six weeks. The students in the experimental group were exposed to two hours lecture on educational research methods and statistics each week. The students were taught how to write research problem and identification, literature review, research questions/hypothesis, research design, population and sample, data gathering, research proposal and report, basic statistics tools, inferential statistics. Using team teaching method, students were asked to identify research problems in the class from which they were asked to write actual research according to the chapters each week. The data collected from the two groups were kept separately for analysis. For the control group, the conventional lecture method was adopted in teaching students the same topics in educational research methods and statistics while the hypotheses were tested using z-test at 0.05 level of significance. The null hypothesis was rejected when the calculated z-value is greater than the critical table value. Alternatively, the null hypothesis was accepted when the calculated z-value is less than the table value at 0.05 level of significance.

Results

Research Questions 1: What is the effect of parallel teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University.

Table 1: Mean of Pretest and Posttest Scores of Treatment and Control Groups Taught using Parallel Teaching and Conventional Teaching Method

Group	N	Pretest		Posttest		Mean	Mean Gain
		$\bar{X}$	SD	$\bar{X}$	SD	Difference	
Experimental	70	45.15	3.16	73.08	2.97	27.93	
							10.47
Control	70	44.15	3.06	61.61	2.68	17.46	

Source: Researcher's Field Result, 2023.

The results in Table 1 shows that the experimental group taught using parallel teaching had a mean score of 45.15 in the pre-test and a mean score of 73.08 in the post-test making a pretest, posttest mean difference of 27.93. The nonexperimental/control group taught using conventional teaching method had a mean score of 44.15 in the pretest and a posttest mean of 61.61 with a pretest posttest mean difference of 17.46. This, however, gave rise to mean gain of 10.47 for the class. With this results, undergraduates of Faculty of Education taught usingparallel teaching had a higher mean performance score than those taught using conventional technique in the learning outcomes test (LOT).

Research Question 2: What is the effect of differentiated teaching on learning outcomes of undergraduates of Faculty of Education in Rivers State University?

Table 2: Mean of Pretest and Posttest Scores of Treatment and Control Groups Taught using Differentiated Teaching and Conventional Teaching Method

Group	N	Pretest		Posttest		Mean	Mean Gain
		$\bar{X}$	SD	$\bar{X}$	SD	Difference	
Experimental	70	21.33	5.54	38.37	8.73	17.04	
							5.36
Control	70	19.56	4.36	31.24	6.42	11.68	

Source: Researcher's Field Result, 2023.

The results in Table 2 shows that the experimental group taught usingdifferentiated teaching had a mean score of 38.37 in the pre-test and a mean score of 21.33 in the post-test making a pretest, posttest mean difference of 17.04. The nonexperimental/control group taught using conventional teaching method had a mean score of 31.24 in the pretest and a posttest mean of 19.56 with a pretest posttest mean difference of 11.68. This, however, gave rise to mean gain of 5.36 for the class. With this result, it was deduced that undergraduate of Faculty of Education taught using differentiated

teaching perform better than those taught using conventional technique in the learning outcome test (LOT).

Research Question 3: What is the effect of one-teach–one-assist method on learning outcomes of undergraduates of Faculty of Education in Rivers State University?

Table 3: Mean of Pretest and Posttest Scores of Treatment and Control Groups Taught One-teach–One-assist Method and ConventionalTeaching Method

Group	N	Pretest		Posttest		Mean Difference	Mean Gain
		$\bar{X}$	SD	$\bar{X}$	SD		
Experimental	70	33.41	6.23	70.11	5.97	36.7	
							12.26
Control	70	26.30	5.88	50.74	5.10	24.44	

Source: Researcher's Field Result, 2023.

The results in Table 3 shows that the experimental group taught using one-teach–one-assist method had a mean score of 33.41 in the pre-test and a mean score of 70.11 in the post-test making a pretest, posttest mean difference of 36.7. The nonexperimental/control group taught using conventional teaching method had a mean score of 26.30 in the pretest and a posttest mean of 50.74 with a pretest posttest mean difference of 24.44. This, however, gave rise to mean gain of 12.26 for the class. With this result, it was inferred that undergraduates of Faculty of Education taught using one-teach–one-assist method performs better than those taught using conventional technique in the learning outcome test (LOT).

Hypothesis 1: There is no significant difference in the mean performance scores of undergraduates of Faculty of Education in Rivers State University taught using parallel teaching and those taught with conventional teaching method.

Table 4: z-Test Analysis for Mean Performance Scores of Students Taught Using Parallel Teaching and those Taught with Conventional Approach

Groups	N	Mean	SD	Df	z-cal	z-crit	Decision
Experimental	64	73.08	2.97	168	24.93	±1.96	
							Reject
Control	106	61.61	2.68				

Source: Researcher's Field Result, 2023.

The analyzed data in Table 4 showed that the z-cal was 24.93 while the critical table value was ±1.96 at 0.05 level of significance and 143 degree of freedom. Since the z-cal is greater than the z-crit, the null hypothesis that there is no significant difference in the mean performance scores of undergraduates of Faculty of Education taught Educational Research Methods and Statistics using team teaching approach and those taught with conventional teaching approach was rejected. The

alternate hypothesis was therefore, accepted indicating that there is a significant difference in the mean performance scores of the experimental group taught using parallel teaching and those nonexperimental/control group taught using conventional teaching method.

Hypothesis 2: There is no significant difference in the mean performance scores of undergraduates of Faculty of Education in Rivers State University taught using differentiated teaching and those taught with conventional teaching method.

Table 5: z-Test Analysis for Mean Performance Scores of Students Taught Using Differentiated Teaching and those Taught with Conventional Approach

Groups	N	Mean	SD	Df	z-cal	z-crit	Decision
Experimental	64	38.37	8.73	168	5.66	±1.96	Reject
Control	106	31.24	6.42				

Source: Researcher's Field Result, 2023.

The analyzed data in Table 5 showed that the z-cal was 5.66 while the critical table value was ±1.96 at 0.05 level of significance and 168 degree of freedom. Since the z-cal is greater than the z-crit, the null hypothesis that there is no significant difference in the mean performance scores of undergraduates of Faculty of Education taught Educational Research Methods and Statistics using team teaching approach and those taught with conventional teaching approach was rejected. The alternate hypothesis was therefore, accepted indicating that there is a significant difference in the mean performance scores of the experimental group taught using differential teaching and those nonexperimental/control group taught using conventional teaching method.

Hypothesis 3: There is no significant difference in the mean performance scores of undergraduates of Faculty of Education in Rivers State University taught using one-teach–one-assist method of teaching and those taught with conventional teaching method.

Table 6: z-Test Analysis for Mean Performance Scores of Students Taught Using One-teach–One-assist Method of Teaching and those Taught with Conventional Approach

Groups	N	Mean	SD	Df	z-cal	z-crit	Decision
Experimental	64	70.11	5.97	168	21.52	±1.96	Reject
Control	106	50.74	5.10				

Source: Researcher's Field Result, 2023.

The analyzed data in Table 6 showed that the z-cal was 21.52 while the critical table value was ±1.96 at 0.05 level of significance and 168 degree of freedom. Since the z-cal is greater than the z-crit, the null hypothesis that there is no significant difference in the mean performance scores of undergraduates of Faculty of Education taught Educational Research Methods and Statistics using

team teaching approach and those taught with conventional teaching approach was rejected. The alternate hypothesis was therefore, accepted indicating that there is a significant difference in the mean performance scores of the experimental group taught using one-teach–one-assist method of teaching and those nonexperimental/control group taught using conventional teaching method.

Discussion of Findings

The findings of the study in research question 1 revealed that undergraduates of Faculty of Education taught Educational Research Methods and Statistics using team teaching approach and those taught with conventional teaching approach have improved learning outcomes than those taught using the traditional lecture method. This was evident in 10.47 mean difference between the students taught using parallel teaching (experimental group) and those taught using conventional teaching method (control group). The corresponding hypothesis 1 further corroborated this finding as it revealed that there is no significant difference in the mean performance scores of undergraduates of Faculty of Education taught Educational Research Methods and Statistics using team teaching approach and those taught with conventional teaching approach. This decision was because the calculated z-value of 10.47 was less than the critical table value of ±1.96. This finding agreed with Tomlinson (2015) that students who receive differential instruction tend to perform better academically.

The findings of the study in research question 2 revealed that undergraduates of Faculty of Education taught Educational Research Methods and Statistics using team teaching approach and those taught with conventional teaching approach have improved learning outcomes than those taught using the traditional lecture method. This was evident in 5.36 mean difference between the students taught using differentiated teaching (experimental group) and those taught using conventional teaching method (control group). The corresponding hypothesis 2 further corroborated this finding as it revealed that there is no significant difference in the mean performance scores of undergraduates of Faculty of Education taught Educational Research Methods and Statistics using team teaching approach and those taught with conventional teaching approach. This decision was based on the fact that the calculated z-value of 10.47 was less than the critical table value of ±1.96. The finding validates Elenwo and Dike (2023) finding that there is high and positive relationship between selected co-teaching models and effective instructional delivery among educational management teaching staff in public universities in Rivers State

The findings of the study in research question 3 revealed that undergraduates of Faculty of Education taught Educational Research Methods and Statistics using team teaching approach and those taught with conventional teaching approach have improved learning outcomes than those taught using the traditional lecture method. This was evident in 12.26 mean difference between the students taught using one-teach-one-assist teaching (experimental group) and those taught using conventional teaching method (control group). The corresponding hypothesis 3 further corroborated this finding as it revealed that there is no significant difference in the mean performance scores of undergraduates of Faculty of Education taught Educational Research Methods and Statistics using team teaching approach and those taught with conventional teaching approach. This decision was since the calculated z-value of 12.26 was less than the critical table value of ±1.96. This finding agreed with the finding of Friend, Cook and Hurley-Chamberlain (2010) who found that one-teach-one-assist leads to higher levels of student engagement and motivation, as students receive personalized attention and support.

Conclusion

Based on the findings of the study, it was concluded that team teaching is more effective in improving students' assimilation and learning outcomes than the conventional method. Since team teaching exposes students to diverse teaching conditions, they easily adapt to it and make out the best from it.

Recommendations

Based on the findings and conclusion reached, it was generally recommended that:

1. The university should address the question of operational support whenever it is considering parallel teaching because teachers are sometimes emotionally drained teaching diverse students.
2. The university should support teachers' utilization of differentiated teaching by motivating them to maximize teacher leadership.
3. One-teach-one-assist should be use when one teacher has more expertise in the topic and when individual student needs more assistance in the university.

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