

EFFECTS OF BLENDED TEACHING-LEARNING STRATEGY ON ACADEMIC PERFORMANCE OF UNDERGRADUATES IN RESEARCH METHODS COURSE AT A NIGERIAN UNIVERSITY

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Abstract

The use of technology and creative teaching techniques is becoming more crucial in the changing field of higher education. This research examines the influence of a blended teaching-learning approach on the academic achievement of undergraduate students who are taking a Research Methods course at a university in Nigeria. The study used an ex-post facto research design. The study focused on undergraduate students who had taken both Test and Measurements and Research Methods courses. A purposive sampling approach was used to choose a total of 2,931 students who had scores in both courses. The study used descriptive and inferential statistics to address and examine the research question and hypothesis. The results indicate that the academic performance of the undergraduate students in the Research Methods course, which was taught with a blended teaching-learning approach, showed a substantial improvement compared to their performance in the Test and Measurements course, which relied on face-to-face interactions. Students valued the adaptability provided by the online aspects of the course, such as webinars as well as discussion boards. This research presents empirical data demonstrating the beneficial effects of implementing a blended teaching-learning approach on the academic achievement of undergraduate students enrolled in the Research Methods course at a university in Nigeria. The amalgamation of technology and internet resources not only cultivates active participation, but also augments analytical reasoning and investigative proficiencies, equipping students for the requisites of contemporary academics and research

Keywords: Blended learning, teaching-learning strategy, academic performance, undergraduates, research methods

Introduction

The primary objective of each university worldwide is to generate graduates who possess the ability to operate proficiently within their respective societies. The degree to which an institution effectively fulfils its duties impacts its ranking position. To fulfil this need, it is necessary to develop the necessary research skills, knowledge, and attitude in students, allowing them to recognize their abilities and become self-sufficient. This objective aligns with one of the primary purposes of higher education in Nigeria's National Policy on Education (FRN, 2013). Extensive expertise in research serves as a means to address educational and national issues, leading to the establishment of a more advanced society. University undergraduates in Nigeria are required to take and successfully complete two research courses: Test and Measurement (EDU 212), and Research Methods and Statistics (EDU 316). This requirement is in place to ensure that students have a comprehensive understanding of research methodologies and statistical analysis. The status of these courses is mandatory, indicating that they must be successfully completed prior to graduation. Crucially, students are required to use the information gained in these courses to conduct an autonomous inquiry in their respective area of study. Therefore, their cognitive understanding of research courses and their practical implementation in their thesis is of utmost importance.

Although research knowledge is deemed important, students' performance in the course is unsatisfactory. Certain undergraduate students lack sufficient understanding of how to outline current information, which hinders their ability to effectively use research abilities. This is supported by the findings of Okebukola (2002) and Awe (2020) that the academic achievements of university students in research methods exams do not match the increasing need for high-quality research that meets both local and national publishing standards, with the primary objective of making significant contributions to the existing body of knowledge. Eze and Bassey (2018) observed that a lack of dedication to these academic disciplines (Test and Measurement, Research Methods, and Statistics) might have a negative impact on students' ability to effectively use research procedures and achieve desirable outcomes.

This finding supports Odu's (2018) observation that undergraduate students at a Nigerian university have challenges when it comes to finishing their projects within a short time frame. The submitted projects exhibit inconsistencies in organization, inadequate presentation, and below-average quality. There is evidence to suggest that undergraduate students in the university are facing difficulties when it comes to developing research projects. The success of every higher education institution is heavily reliant on the academic achievement of its students and their research abilities. Assuming other factors are equal, achieving strong academic achievement is indicative of improved employment opportunities, a more secure future, and the development of a sustainable society.

The area of education has seen a significant change aimed at improving student learning outcomes. This change has been driven by technological improvements and a rising acknowledgment of the importance of new teaching methods. Among these new teaching methods is blended teaching-learning strategy which is of interest to this study. Blended learning is relatively new term in relation to the development of the 21st century technology (Wright, 2017). Several definitions have been advanced for blended learning. Blended learning applied multi-media ideal ways to solve teaching learning problems (Keshta & Harb, 2013). Blended learning strategy is also known as hybrid learning, technology mediated instruction or web-enhanced instruction. It is an approach to learning that combines online educational materials and opportunities for interaction online with traditional place-based classroom methods. It is the acquisition of knowledge, processing of knowledge storage, dissemination of vocal, pictorial, textual and numeric information by a micro- electronic based combination of computing and telecommunication (Odo et al., 2023). The degree of the integration of internet and digital media with traditional classroom formats that need the physical presence of professors and students may differ across different contexts. Therefore, learners often spend more time engaging with online platforms and using digital media compared to the time spent in traditional classrooms, or vice versa. This strategy aims at providing efficient learning experience by combining learning environments that suit the learners.

Graham (2013) defined blended learning as a learning system that combines face-to-face instruction with computer mediated instruction. The combination may involve mixing various event-based activities such as face-to-face classroom, live e-learning, self-paced learning, synchronous online conference and training, or asynchronous self-pace learning (Graham, 2013). Blended learning in the present study involves combination of Internet and face-face physical co-presence of teacher and students. The University of Central Florida (2015) submitted that effective implementation of blended learning is a promising alternative learning approach compared to conventional and e-learning approach, and could improve student success, satisfaction, and retention. The blended teaching-learning model is applicable to nearly all discipline, Research Methods included.

Research Methods play a crucial role in the undergraduate curriculum, especially in the academic fields that prioritize empirical investigation and decision-making based on evidence. It is not surprising that the Faculty of Education, University of Ilorin, Ilorin, Nigeria and the faculty of education in other universities in Nigeria has about nine credits units for research courses which are split into three. The status of these courses is compulsory or required. The courses are EDU 212, EDU 316 and EDU 499 with titles: Introduction to Test and Measurements, Introduction to Educational Research Methods and Statistics, and Project Writing respectively. Undergraduates are expected to apply the knowledge gained in EDU212 and EDU 316 offered in second and third year respectively to write their project in the final year. EDU 212 course outlines are basic concepts (assessment, measurement and evaluation) in measurement and evaluation, measurement techniques, test development techniques, qualities of a good measuring instruments, test administration and interpretation, basic statistical concepts, data representation, measures of variability and correlation coefficient. EDU 316 course outlines are concept of research, basic steps in the conduct of educational research, descriptive research, experimental research, review of literature, research methodology, research proposal and research report writing in education, qualitative research in education, field studies in educational research and referencing and bibliographic styles with emphasis on APA format, chi-square, students' t-test and analysis of variance (ANOVA). Paying more attention to the teaching and learning in these courses is, therefore, imperative because of their intricate nature.

Examining the influence of mixed teaching-learning methodologies on the academic achievement of undergraduate in research methods is, therefore, germane in this particular situation.

Jibril, Issa, Onojah, Aderere, and Aderogba (2022) found that the use of blended learning had a positive impact on the performance of students in the subject of Educational Technology Concept. The researchers observed that students' performance was enhanced significantly regardless of their gender. In addition to the effectiveness of the blended learning technique, the improvement may also be attributed to the students' specialization in Educational Technology. Olatunde-Aiyedun and Adams (2022) conducted a research study to examine the impact of blended learning models on students' academic success and retention in scientific education. Their findings indicate that the use of blended learning greatly enhances learners' accomplishment and retention in science education.

Adam and Bayero (2021) submitted that students who were taught Social Studies using the blended learning approach achieved significantly higher academic results compared to those who were taught using the lecture method in Colleges of Education in North central Nigeria. The study conducted by Çiftçi (2020) demonstrated that the implementation of blended learning in Social Studies courses resulted in higher academic achievement and a greater number of positive attitudes compared to the traditional method of teaching. The participants who were taught using the blended learning approach significantly outperformed their counterparts who received face-to-face instruction.

Statement of the Problem

In tertiary education institutions in Nigeria, there is an increasing need to investigate and embrace innovative teaching and learning methods that will actively involve learners, improve their academic achievements, and equip them with skills that are pertinent to the requirements of the contemporary world. Research Methods course is essential in academic fields in Nigeria and the world at large because it significantly contributes to the enhancement of students' capacity to carry out rigorous research and engage in critical analysis upon which some decision relating education can be made. Then, teaching and learning processes of the course must be given special attention. Conventional in-person teaching which often encounter obstacles such as large class, restricted connection, and limited student involvement may not be a good instructional delivery method. As such, blended teaching-learning could be a promising teaching and learning strategy which could enhance undergraduates' academic performance in Research Methods course so as to seamlessly apply the knowledge to project writing and solve education and societal problem.

Some of the literatures reviewed in this study revealed that blended learning techniques have the potential to bring about positive outcomes in courses like Social Studies, Educational Technology and so on, but there is dearth of studies on effects of blended teaching-learning strategy on academic performance of undergraduates in Research Methods course at a Nigerian university. This is part of the gap that this study wants to fill. The study aims to explore the impact of a blended teaching-learning approach on the academic performance of undergraduate students in Research Methods course at the University of Ilorin, Nigeria. Concretely, the project seeks to address the following research inquiries:

1. What is the academic performance of undergraduates in Research Methods course at a Nigerian university?
2. What is the effect of a blended teaching-learning strategy on academic performance of undergraduates in Research Methods course at a Nigerian university?

Research Hypothesis

One hypothesis was tested in this study:

H01: There is no significant effect of a blended teaching-learning strategy on the academic performance of undergraduates in Research Methods course at a Nigerian university.

Methodology

This is a kind of study known as action research, which is specifically focused on enhancing the process of teaching and learning. The study used an ex-post facto research design. This design was selected due to the researcher's decision not to modify any variables. Instead, the focus was on obtaining data on participants' academic achievement in two mandatory team-taught courses. Five academics at the Faculty of Education, the University of Ilorin, Ilorin, Nigeria including the researcher taught the courses. The initial course is titled Introduction to Test and Measurements and is offered by second-year students in the Faculty of Education. It serves as a requirement for the subsequent course called Introduction to Educational Research Methods and Statistics which is offered to third-year students in the Faculty of Education. In the 2018/2019 academic session, 3,635 students took the Measurements and Evaluation tests in their second year. These students had face-to-face meetings with the instructors to discuss the course material.

During the 2019/2020 academic session, these students were in their third year and received instruction in Introduction to Educational Research Methods and Statistics from the same group of lecturers utilizing a blended teaching-learning approach. A total of 3,254 students took the test on Introduction to Educational Research Methods and Statistics. However, a total of 2,931 students with complete records in both Test and Measurements and Introduction to Educational Research Methods and Statistics in the academic years 2018/2019 and 2019/2020 respectively were included in this study. Therefore, a purposive sampling technique was used. The examination items underwent content validation by professionals in the field of test and measurement.

The obtained data, consisting of students' scores in the two courses, was analysed using descriptive statistics in the form of percentages to address the research question. In addition, inferential statistics of t-tests was used to test the hypothesis at a significance level of 0.05.

Results

Research Question One: What is the academic performance of undergraduates in Research Methods course at a Nigerian university?

To address research question one, the scores of participants in the Research Methods course were analysed using percentage analysis. The respondents' scores ranged from a minimum of 11 to a high of 89, resulting in a range of 78. The range was categorized into three levels: low, moderate, and high. The threshold was 26. Therefore, scores ranging from 11 to 36, 37 to 62, and 63 to 89 respectively represent low, average, and high levels of the academic performance in the Research Methods course.

Table 1

Descriptive analysis of the academic performance of undergraduates in Research Methods course at a Nigerian university

Performance	Frequency	Percentage (%)
Low	59	2.0
Average	2394	81.7
High	478	16.3
Total	2931	100

Table 1 displays the descriptive analysis of the academic performance of undergraduate students in the Research Methods course at a Nigerian university. Out of all the participants, 59 (2%) had poor performance, 2,394 (81.7%) had medium performance, and 478 (16.3%) had high performance. Hence, the academic proficiency of the students at a Nigerian university, namely in the Research Methods course, is deemed to be average.

This conclusion is drawn from the fact that a majority (81.7%) of the chosen undergraduates obtained scores that fell within the average range.

Hypothesis One: There is no significant effect of a blended teaching-learning strategy on the academic performance of undergraduates in Research Methods course at a Nigerian university.

To assess the impact of a blended teaching-learning strategy on the academic performance of undergraduate students in the Research Methods course, a paired sample t-test was computed to compare the scores of the students in two courses: Introduction to Test and Measurement (a prerequisite course traditionally taught in the 2018/2019 academic session) and Introduction to Research Methods and Statistics (taught with a blended teaching-learning approach in the 2019/2020 academic session).

Table 2

Summary of paired t-test statistics showing effects of blended learning on the academic performance of undergraduates in Research Methods course

Variable	N	Mean	SD	df	t-value	p-value	Decision
Test and Measurement	2931	48.40	9.47	2930	17.77	0.00	NS
Research Methods	2931	53.06	9.47				

Table 2 displays a t-test computed result of 17.77, with a p-value of 0.00 at an alpha level of 0.05. The null hypothesis is rejected since the p-value of 0.00 is lower than the alpha threshold of 0.05 ($0.00 < 0.05$). Hence, blended learning has a substantial impact on the academic achievement of undergraduate in the Research Methods course. The undergraduates had a higher mean of 53.06 in Research Methods course. The participants have a notably superior performance in the Research Methods course compared to their performance in Test and Measurement course. The improved performance in the Research Methods course may be linked to the use of a blended learning approach for instructional delivery.

Discussion of Findings

The study on the impact of a blended teaching-learning strategy on the academic performance of undergraduate students in Research Methods course at a Nigerian university produced significant findings that enhance understanding of how innovative instructional methods can influence learning outcomes. The results are analysed within the framework of current scholarly works, emphasising both similarities and differences with prior investigations.

The study found that the academic performance of students in the Research Methods course at a Nigerian university is at an average level. This contradicts Okebukola's (2002) claim that university students perform poorly in research methods examinations and are unable to meet the increasing need for high-quality research that meets local and national publishing standards, with the ultimate goal of making significant contributions to the knowledge base. However, the differences in the results may be attributed to the utilisation of the flexibility and interaction provided by blended learning environments during the delivery of lessons in the current research. Integrating online elements into this research allowed students to interact with course materials outside of the traditional classroom, promoting active involvement and cooperative learning. This is consistent with Garrison and Kanuka's (2004) community of inquiry approach, which highlights social presence, cognitive presence, and instructional presence as essential elements of successful online learning experiences.

The study found that the students' Research Methods scores were significantly affected by the blended teaching-learning approach in university of Ilorin, Nigeria. These results support the claims made by Warchauer, Li, Cung, Rodriguez and Glick and Xu (2020), Çiftçi (2020), Adam and Bayero (2021), Olatunde-Aiyedun and Adams (2022), and Jibril, Issa, Onojah, Aderele, and Aderogba (2022) that students' performance in English Language, Social Studies, Sciences, and Educational Technology classes was greatly enhanced by the blended learning approach. It implies that learners do better in fields of study where mixed approach of teaching learning is deployed.

Students with different degrees of preparedness and learning preferences may be accommodated via blended learning's adaptability, since it allows personalization of learning pathways. While students who learn things quickly may go on at their own pace, others who need more time to understand complicated ideas can leverage on online resources. Outcome of this strategy align with findings from the study of Dziuban et al. (2018) that students benefited from a combination of online and in-person learning because it allowed for more personalised attention. The undergraduates' improved academic performance when blended learning strategy was used could be attributed to the increased participation, among others, that result from this method. This is in line with active learning concepts, which improve memory retention and analytical reasoning (Aji & Khan, 2019). A dynamic learning environment that encourages students' intellectual curiosity and engagement is established when face-to-face interactions are combined with online resources. Blended learning strategy is participatory in nature since it combines online forums and in-person interactions; hence, collaborative learning experiences is ensued. Successes of this strategy in form of better academic performance in Research Methods course validate how technology can be leverage upon to improve classroom instruction and learners' performance. Blended learning approach will be used continually to teach Research Methods courses against only traditional method of teaching since it has the potential to increase student engagement, boost academic achievement, and enable them to deal with the challenges of the modern world.

Conclusion

The undergraduates' academic performance in Research Methods course was improved as a result of blended teaching-learning method employed in this study. This demonstrates the power of new pedagogical techniques to revolutionise the educational system. This finding is in line with the larger trend in education towards learning that is student-centred, interactive, and made possible by technology.

Recommendations

Based on the findings of this study, it is recommended that blended teaching-learning strategy should be used to teach in higher education institutions, at the University of Ilorin and in Nigeria against conventional classroom instruction. This strategy can be used not only for Research Methods but for other courses too. Moreover, as Nigeria strives for educational reform as well as digital transformation, blended learning is a pragmatic and efficient approach to accomplish these objectives, especially in Research Methods courses that require systematic process of solving problems.

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