



*Effects of Blended and Collaborative Instructional Strategies on ... Durkwa, H. & Umar, H. (2026)*

## Effects of Blended and Collaborative Instructional Strategies on Academic Performance in Economics among Public University Undergraduate Students in Borno State, Nigeria

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### Abstract

*This study investigated the effect of blended and collaborative learning instruction on the academic performance of undergraduate Economics students in universities in Borno State, Nigeria. A quasi-experimental pre-test–post-test control group design was adopted. The population comprised of 672 Level III economics students across four universities, from which a sample of 120 students was purposively selected. Intact classes were maintained to preserve institutional structures. The Economics Academic Performance Test (EAPT), validated by experts and pilot-tested ( $r = .74$ ), was used for data collection. Hypothesis one was tested using a paired-samples *t*-test, while Hypothesis two was analysed using an independent-samples *t*-test. Findings revealed a statistically significant improvement in academic performance among students exposed to blended learning from pre-test to post-test. However, no statistically significant difference was found between students taught using blended learning and those taught using collaborative learning. The study concluded that both instructional strategies are effective in enhancing academic performance and therefore, recommended the integration of blended and collaborative learning strategies in economics instruction in Nigerian universities.*

**Keywords:** Blended learning, Collaborative learning, Academic performance, Economics.

### Introduction

Transformation of higher education through digital technologies has significantly reshaped instructional delivery worldwide. The integration of technology into teaching has led to innovative pedagogical models, particularly blended learning, which combines face-to-face instruction with online learning components. According to Hrastinski (2019), blended learning represents a purposeful integration of online and traditional learning activities to maximise learning outcomes. Blended learning enhances flexibility, accessibility, and learner engagement through digital platforms such as Moodle Learning Management Systems (LMS), enabling students to access materials, participate in discussions, and receive feedback beyond classroom boundaries. Empirical studies (e.g., Porter et al., 2014; Vallée et al., 2020) indicate that blended learning improves academic performance by promoting active engagement and self-regulated learning. Further empirical evidence supports the effectiveness of blended learning across educational contexts. In Nigeria, Bulus and Bwari (2023) examined the impact of blended learning on the achievement and interest of senior secondary school students in economics and found that students exposed to a WhatsApp-supported blended approach performed significantly better than those taught using conventional methods. Similarly, Bupo and Ibeneme (2020) reported that Moodle-based blended learning significantly improved both academic achievement and retention among undergraduate business education students, with evidence of sustained learning gains through delayed post-testing. Internationally, Kiviniemi (2014) found that blended learning enhanced students' performance and satisfaction in a graduate-level public health course in the United States, while Vallée et al. (2020) reported improved performance among medical residents in France following the adoption of blended learning strategies. Likewise, Mersal and Mersal (2014) demonstrated that nursing students taught using blended learning outperformed those taught through traditional methods. However, Li et al. (2014) reported no significant improvement in academic performance among nursing students after adopting blended learning, attributing the outcome partly to students' resistance to online components. These mixed findings suggest that the effectiveness of blended learning depends on contextual factors, instructional design, learner support, and engagement strategies.



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Parallel to blended learning is collaborative learning, a student-centred approach in which learners work in groups to solve problems and construct knowledge collectively. Grounded in social constructivist principles, collaborative learning emphasises peer interaction, shared reasoning, scaffolding, and collective knowledge construction. Dindar, Järvelä, and Järvenoja (2020) reported in *computers and education* that collaborative engagement enhances metacognitive awareness and academic performance. Supporting this view, Chak and Fung (2015) found that participation in online quizzes within a blended learning environment significantly improved undergraduate students' performance in cost and management accounting in Malaysia. In Nigeria, Chukwuka and Pius (2024) reported a significant positive relationship between collaborative learning styles and academic performance among business education students. Further evidence from Sun et al. (2025) showed that students engaged in computer-supported collaborative learning (CSCL), whether online or face-to-face, achieved comparable levels of conceptual understanding, highlighting the importance of structured interaction and learner engagement. Similarly, collaborative learning has been shown to promote cognitive growth and meaningful learning through shared reasoning and peer explanation (Chak & Fung, 2015; Zheng et al., 2025).

Academic performance remains a central indicator of instructional effectiveness. It is typically measured through grades, test scores, and standardised assessments. According to Schunk and Greene (2018), academic performance reflects the extent to which students demonstrate understanding and mastery of academic content. In economics education, performance extends beyond the mere recall of theoretical concepts to include analytical reasoning, quantitative problem-solving, and the practical application of economic principles such as demand and supply analysis, price elasticity, and equilibrium determination. Empirical evidence indicates that blended learning positively influences academic performance by providing diverse instructional materials, fostering interactive learning experiences, and enabling timely feedback (Adedoyin & Soykan, 2020; Ameloot & Schellens, 2018). Undergraduate Economics students in universities across Borno State have continued to record unsatisfactory academic performance. In most institutions, economics is typically taught using the traditional classroom approach, where lecturers present learning materials during face-to-face sessions and students participate by asking questions and engaging in limited classroom activities. However, traditional lecture-based teaching methods often restrict active student engagement and limit the practical application of economic principles. Over the years, students' performance in economics has consistently remained below average (Obuikwu, Obiukwu, & Amanze, 2024; Yunisa, Oha, & Iweho, 2024). Although blended learning and collaborative learning are widely recommended as student-centred instructional approaches capable of enhancing engagement, motivation, and deeper understanding, empirical evidence regarding their comparative effectiveness in economics instruction within universities in Borno State remains limited. This situation underscores the need to investigate whether blended learning significantly improves academic performance, motivation, and retention in economics, and whether it performs better than collaborative learning within the context of universities in Borno State, Nigeria. While some studies suggest that blended learning may produce superior academic outcomes (Kiviniemi, 2014; Mersal & Mersal, 2014; Vallée et al., 2020), others report inconclusive results (Li et al., 2014). Similarly, collaborative learning has demonstrated positive associations with academic performance (Chukwuka & Pius, 2024; Sun et al., 2025), yet few studies have directly compared it with structured blended learning models within the same disciplinary and regional context. Studies combining blended and collaborative learning approaches suggest even stronger outcomes. Yapici (2016) found that a blended cooperative learning environment significantly improved students' academic achievement and satisfaction, while Malsakpak and Pourteimour (2024) demonstrated that e-learning integrated with collaborative learning strategies led to greater gains in academic self-efficacy than lecture-based blended learning alone. These findings indicate that integrating collaborative structures within technology-mediated environments may enhance both cognitive and affective learning outcomes.

Despite the growing body of international and national evidence, there remains limited context-specific empirical research comparing blended learning instruction and collaborative learning instruction in undergraduate economics programmes within universities in Borno State, Nigeria. Addressing this gap is essential for informing pedagogical practice, institutional policy, and instructional innovation in Nigerian higher education. Therefore, this study investigates the effects of blended and collaborative learning instruction on the academic performance of undergraduate economics students in universities in Borno State, Nigeria, to determine which instructional approach yields superior learning outcomes within this context.



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### Objectives of the Study

1. To determine the effect of blended learning instruction on students' academic performance before and after treatment in universities in Borno State.
2. To compare the academic performance of students taught using blended learning and collaborative learning instruction in universities in Borno State.

### Hypotheses

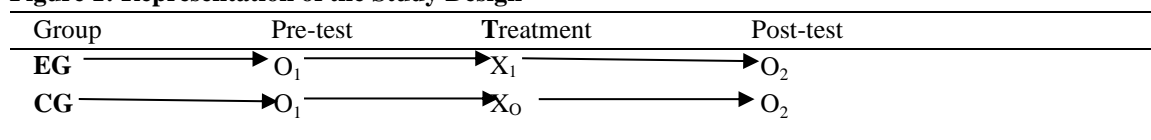
H<sub>01</sub>: There is no significant effect of blended learning instruction on students' academic performance before and after treatment in universities in Borno State.

H<sub>02</sub>: There is no significant difference in academic performance between students taught using blended learning and those taught using collaborative learning instruction in universities in Borno State.

### Research Methodology

A quasi-experimental pre-test–post-test control group design was employed. Intact classes were assigned to experimental and control groups to minimise disruption. The experiment design pattern is shown in Figure 1. In the pattern below:

**Figure 1: Representation of the Study Design**



**Keys:** EG = Experimental group, O<sub>1</sub> = Pre-test, O<sub>2</sub> = Post-test, X<sub>1</sub>= Blended Learning Instruction (BLI), (CLI), X<sub>0</sub>= Collaborative Learning Instruction.

The target population comprised 672 Level III economics students across four universities in Borno State. A purposive sample of 120 students from three universities was selected. Two universities formed the experimental group (n = 98), while one university served as the control group (n = 22). The Economics Academic Performance Test (EAPT), consisting of 60 multiple-choice items, was used. The instrument was validated by experts and pilot-tested, yielding a reliability coefficient of  $r = 0.74$  (test–retest method). The treatment lasted four weeks. The experimental group received instruction through blended learning using Moodle, while the control group received face-to-face collaborative learning instruction. Pre-tests and post-tests were administered to both groups. Hypothesis one was tested using a paired-samples t-test, while hypothesis two was analysed using an independent-samples t-test. at  $\alpha = 0.05$ .

### Presentation of Results

Hypothesis one was tested using paired sample t-tests, while Hypothesis two used independent samples t-tests. All null hypotheses were tested at the 0.05 level of significance.

**Hypothesis One:** There is no significant effect of blended learning instruction on the academic performance of undergraduate economics students in universities in Borno State.

To test this hypothesis, a paired sample t-test was used to determine the difference between pre-test and post-test scores administered to students. The summary of the result is presented in Table 1:

**Table 1: Summary of t-test results of the Mean Difference between pre-test and Post-test Performance of Students Exposed to Blended Learning Instruction in Universities in Borno State.**

Test Phase	N	df	Mean	SD	t	p-value	Decision
Pre-Test	98		33.98	13.06			
		194			-17.42	0.000	Significant
Post-Test	98		52.18	13.36			

Source: Field Work (2025)

Level of Significance  $\alpha \leq 0.05$

Table 1 presents the results of the t-test examining the significant difference between pre-test and post-test performance of students exposed to blended learning instruction. The analysis showed  $t(194) = -17.42$ ,  $p = 0.000$ , which is statistically significant. Thus, the null hypothesis stating that there is no significant effect of blended learning instruction on the academic performance of undergraduate economics students in universities in Borno State is rejected. The results indicate



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a significant improvement in academic performance following blended learning instruction, with mean scores increasing from 33.98 (pre-test) to 52.18 (post-test). Therefore, the null hypothesis of no significant effect is rejected, confirming that blended learning positively impacted students' academic performance.

**Hypothesis Two:** There is no significant difference in the academic performance of students taught Economics using blended learning instruction and those taught using collaborative learning instruction.

To test this hypothesis, an independent samples t-test was used to determine the difference between post-test scores of students in blended learning and collaborative learning groups. The summary of the result is presented in Table 2.

**Table 2: Summary of Independent Sample t-test Results of Mean Difference Comparing the Academic Performance of Students taught Economics using Blended Learning and Collaborative Learning Instructions**

Instruction	N	df	Mean	SD	t	p-value	Decision
Blended Learning	98		52.18	13.36			
		118			-2.35	0.175	Not Significant
Collaborative Learning	22		55.55	5.08			

**Source:** Field Work (2025)

Level of Significance  $\alpha \geq 0.05$

Table 2 presents the results of the independent-samples t-test comparing the academic performance of undergraduate economics students taught using blended learning and collaborative learning. The analysis yielded a p-value of 0.175, which exceeds the 0.05 level of significance, indicating no statistically significant difference between the two groups. Although the collaborative learning group recorded a slightly higher mean score (Mean = 55.55) than the blended learning group (Mean = 52.18), the difference was not significant. Consequently, the null hypothesis is retained, suggesting that both instructional strategies were comparably effective in improving students' academic performance in economics.

### Summary of Findings

The Findings of the Study are Summarised as Follows:

1. There was a statistically significant difference in the pre- and post-test performance of participants exposed to blended-learning instruction across universities in Borno State.
2. There was no statistically significant difference in academic performance between students taught using blended learning instruction and those taught using collaborative learning instruction in universities in Borno State.

### Discussion of Findings

The first finding of the study revealed that undergraduate economics students taught using blended learning (BL) instruction in universities in Borno State achieved higher mean scores in the post-test compared to the pre-test. Based on this result, the null hypothesis stating no significant effect of blended learning on students' academic performance was rejected. This suggests that blended learning created a flexible, engaging, and technology-enhanced environment that improved students' understanding and academic achievement in economics. These findings align with those of Bulus and Bwari (2023), Kiviniemi (2014), and Chak and Fung (2015), who reported that blended learning significantly enhanced academic performance. While Chak and Fung (2015) discovered that students' performance improved significantly in the online quiz model, Kiviniemi (2014) study showed that students indicated more interest in the blended learning class and as such their participation was higher. Similarly, Bupo and Ibeneme (2020) found that Moodle-based blended learning improved undergraduate students' achievement. However, the result of this study contrasts with the findings of Li, Tsai, Tao, and Lorentz (2014), who reported no significant improvement in the academic performance of undergraduate nursing students after the introduction of blended learning. Their participants initially resisted the online components and required additional interventions, such as pop quizzes, to remain engaged. The disparity with the present study suggests that the success of blended learning depends heavily on instructional design quality, technological readiness, learner support, and the relevance of digital activities. The present study's structured use of Moodle, clear learning materials, and supportive blended strategies may have contributed to better performance outcomes.

The second finding of the study revealed that although undergraduate economics students taught using Collaborative Learning (CLI) obtained slightly higher mean scores than those taught using Blended Learning (BLI), the difference in their academic performance was not statistically significant. Consequently, the null hypothesis stating that there is no significant difference in the academic performance of students exposed to blended learning instruction and those exposed to collaborative learning instruction was retained. This indicates that both instructional approaches, technology-enhanced



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blended learning delivered through LMS Moodle and face-to-face collaborative learning anchored on peer interaction, were equally effective in improving students' academic achievement in economics. The result further suggests that collaborative learning instruction, even without digital tools, can produce academic gains comparable to blended learning instruction, which integrates online resources, multimedia content, and LMS-driven activities. This outcome aligns with several empirical studies that highlight the academic effectiveness of both blended and collaborative learning environments. For example, Bulus and Bwari (2023) found that blended learning significantly enhanced secondary school students' achievement and interest in economics when deployed through WhatsApp as a virtual learning platform. Similarly, Bupo and Ibeneme (2020) reported that Moodle-based blended learning improved students' achievement and retention in university-level financial accounting. Kiviniemi (2014) also demonstrated that blended learning increased graduate students' performance and classroom engagement in public health courses, while Mersal and Mersal (2014) showed that nursing students taught using blended learning outperformed those taught through traditional methods.

However, the result of this study contrasts with the findings of Li, Tsai, Tao, and Lorentz (2014), who reported no significant improvement in the academic performance of undergraduate nursing students after the introduction of blended learning. Collectively, these studies reinforce the conclusion that blended learning can enhance cognitive outcomes when well implemented. In parallel, several studies substantiate the effectiveness of collaborative learning in promoting academic achievement. Chukwuka and Pius (2024) found that collaborative learning styles positively correlate with higher academic performance among business education students, emphasizing the importance of interaction, shared explanation, and peer-supported problem-solving. Similarly, Sun, Looi, Yang, and Jia (2025) established that students engaged in computer-supported collaborative learning achieved comparable conceptual understanding in both online and face-to-face settings, demonstrating the robustness of collaboration-driven instructional models. These findings underscore the value of social interaction, co-construction of knowledge, and dialogical reasoning in enhancing students' learning outcomes. The present study's findings also resonate with those of Yapici (2016), who employed a blended cooperative learning environment in Biology and reported significant improvements in students' academic achievement, satisfaction, and sense of classroom community. Both studies share a reliance on structured, student-centered pedagogies that emphasize active engagement and collaboration, although Yapici blended cooperative learning with online instruction, whereas the present study comparatively examined blended learning instruction and collaborative learning instruction as distinct strategies. This positions the present study as an important contribution, offering clarity on the comparative effectiveness of blended learning instruction and collaborative learning instruction in a different disciplinary and cultural context. Furthermore, the findings correspond with the quasi-experimental research conducted by Malsakpak and Pourteimour (2024) among nursing undergraduates in Iran. Their study compared e-learning combined with collaborative learning (EL+CL) and e-learning combined with lecture-based teaching (EL+LBT), revealing that the EL+CL group achieved significantly higher improvements in academic self-efficacy. Overall, the evidence suggests that both blended learning and collaborative learning are strong pedagogical approaches capable of boosting students' academic performance. Blended learning supports flexible access to materials, multimedia content, and self-paced engagement, which foster deeper understanding and learner autonomy (Li *et al.*, 2014; Vallée *et al.*, 2020). Conversely, collaborative learning enhances peer interaction, shared reasoning, and collective knowledge construction, all of which promote cognitive growth and meaningful learning (Chak & Fung, 2015; Zheng *et al.*, 2025). The absence of a significant difference between blended learning instruction and collaborative learning instruction in this study underscores that both strategies are equally viable for enhancing academic achievement in economics. Therefore, instructors may adopt either method depending on institutional resources, course demands, and learner needs while still achieving effective learning outcomes. This reinforces the broader conclusion that well-designed student-centred instructional approaches, whether technology-based or peer-driven, can produce comparable and effective results in higher education.

## **Conclusion**

Blended learning significantly improved students' academic performance. However, no significant difference was found between blended and collaborative learning approaches. Both instructional strategies are effective for teaching undergraduate economics in Borno State universities.



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## Recommendations

1. Universities in Borno State should adopt blended learning instruction in economics courses, as it significantly improves students' academic performance from pre-test to post-test.
2. Universities should integrate both blended and collaborative learning instructional strategies in teaching Economics, since both approaches are equally effective in enhancing students' academic performance.

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