Microsoft Teams for Online Learning and Students' Academic Performance in Educational Technology in Tertiary Institutions in Cross River State, Nigeria

[1]Ekpo O. Ekpo-Eloma, [2]Chukwurah, Margaret U. & [3]Ayah, Grace Bassey

Department of Educational Technology, College of Education, University of Calabar, Nigeria,

[1]https://orcid.org/0002-8770-3966; [2]https://orcid.org/0000 0003 1609 8383; [3]https://orcid.org/0000-0003-0799-5314

joneseloma@gmail.com, marchurac2013@gmail.com & gracebasseyayah@gmail.com

Received February, 2026, Accepted April, 2026, Published, April, 2026

Abstract

The study examined the effect of Microsoft Teams integration and students' academic performance in Educational Technology in two tertiary institutions in Cross River State, Nigeria. One research question and one hypothesis were formulated to guide the study. The sample comprised of 100 undergraduate students drawn from two intact classes from two institutions. A 20-item researcher designed Educational Technology Performance Test (ETPT) with a reliability coefficient of 0.88 was the only instruments used for data collection. All data collected were analyzed using Mean and Standard deviation for the research question and ANCOVA for the hypothesis. The results obtained indicate that Microsoft Teams App significantly impacted students' academic performance more than those exposed to face-to-face instruction. It was therefore, recommended that National Universities Commission (NUC) should incorporate Microsoft Teams in the curriculum of Educational Technology to improve the teaching and learning of the course, while the lecturers and students should acquaint themselves with the requisite skills to teach and learn respectively using Microsoft Teams to improve students' learning outcomes.

Keywords: Microsoft teams, online learning, educational technology, student's academic performance

Introduction

The evolution and integration of technology in education has radically altered and reshaped the pedagogical process in school and non-school settings. Technology integration in education is simply the deployment of technology to support, facilitate and sustain teaching and learning. According to Ajuzie (2022), technology integration involves the infusion of technology as a tool to enhance the teaching-learning process. Effective technology integration is achieved when students are able to select technology tools to help them obtain information in a timely manner, analyze and synthesize the information and present it professionally. Ajuzie (2020) further maintains that technology integration has to do with utilizing technology as an integral part of the instructional

system to plan, design and implement an instructional package for the actualization of worthwhile learning outcomes.

The application of technology in the teaching-learning process represents a significant shift from the traditional face-to-face mode of instructional delivery to online learning. This has a persuasive effect on learners' attributes to interact, collaborate, communicate and share learning experiences, all in real time.

The central prop of technology integration is to prepare students to function maximally in the digital age, increase accessibility, promote students' engagement and enhance learning outcomes. Therefore, effective technology integration must align with learning objectives as well as address students' learning needs and learning styles. Technology application, especially video-conferencing tools, has the potential to increase access to information, personalize learning, promote inclusivity, and promote optimal learning outcomes.

Instructors can create a more engaging, accessible and effective learning environment that prepares students for success in the digital age. This technology, with its tracking features, instructors can monitor students' participation and engagement. According to Bates (2019), the integration of technology into education has become increasingly prominent, transforming traditional teaching methods and creating new opportunities for learning. This is with special reference to the use of Microsoft Teams in the study of Educational Technology courses in tertiary institutions in Cross River State, Nigeria. Ebenezar (2022) posited that technology integration provides productive teaching and learning thereby increasing learners' creative and intellectual capabilities development. One of such platforms or technological platforms is Microsoft Team.

Microsoft Teams is the ultimate messaging app-a workspace for real-time collaboration and communication, meetings, file and app sharing. It is a hub for team work in Microsoft 365. The Teams service enables instant messaging and video calling, rich online meetings, mobile experiences, and extensive web conferencing capabilities. In recent years, the integration of

collaborative platforms in educational settings has witnessed a significant uptick, with Microsoft Teams emerging as prominent players in the field.

The dominant features of Microsoft Teams include:

1. Microsoft Teams allows educators to create organized spaces for different classes or groups. These channels and teams facilitate structured communication and resource sharing, ensuring that all class materials, discussions, and announcement are centralized and easily accessible.
2. Research indicates that the use of video-conferencing tools like Microsoft Teams can positively impact students' academic performance. Ghavifekr and Rosdy (2018) posit that technology enhanced collaborative learning environments contributes to improved students' engagement and academic achievements in educational technology where practical understanding and application of concepts are crucial. The collaborative and interactive nature of Microsoft Teams can lead to better understanding and retention of information. Zou et al (2019) maintain that the ability to integrate multimedia resources and interactive tools within teams can enhance the learning experience and support different learning styles.
3. Furthermore, the collaborative nature of Microsoft Teams, with features such as chat, file sharing, and real-time collaboration, contributes to a sense of connectedness among students. This interconnectedness can positively impact students' engagement with course content and collaborative learning experiences (Bhuasiri et al., 2020).
4. The organization of resources and communication channels within Microsoft Teams aligns with the Community of Inquiry (COI) framework, which emphasizes the importance of social presence, cognitive presence, and teaching presence in online learning environments (Garrison et al., 2000). Microsoft Teams' structure supports the development of these presences, fostering a sense of community and facilitating meaningful interactions.

Quantitative assessment of academic performance metrics is essential to understanding the impact of Microsoft Teams on students' outcomes. Aung et al. (2021) conducted a study examining the influence of Microsoft Teams on academic performance in higher education. The findings

revealed a positive correlation between students' usage of Teams and their academic achievement. However, the study acknowledged the need for further research to explore the specific aspects of Teams usage that contribute to academic success.

According to Ekpo-Eloma (2025), Microsoft Teams is a virtual or digital classroom platform that allows both teachers and students to meet, collaborate, share materials communicate and complete coursework online. The platform allows teachers to teach and learners to learn from anywhere using video classes, assignments, and collaboration tools such as chat, channels, breakout rooms, file sharing, mentions, Microsoft whiteboard, reactions and emotions is a vital video live, indeed tool that supports live and recorded virtual classes real time communication through chat and video, allows easy sharing of learning materials, promotes collaborative group work on documents, integrate quizzes, notes and whiteboards, keeps teaching and learning activities more organized, and manages assignments, submissions and feedback.

The organized communication channels and real-time collaboration made possible by Teams' structured character, according to research by Okon and Udoh (2021), greatly increased student involvement in postsecondary institutions. The researchers observed that the incorporation of Microsoft Teams' features - such as chat, file sharing, and video conferencing created a favourable atmosphere for active involvement and peer-to-peer cooperation in their study of final-year educational technology students. The impact of Microsoft Teams on student collaboration in virtual classrooms was also investigated by Olayinka and Adeola (2022). The results of their study showed that the platform's collaborative features, such as shared documents and breakout rooms, promoted group projects among students and enhanced the interaction between them and the instructor. Better academic achievement was found because of this teamwork, which improved students' understanding of the course topics.

Numerical research conducted in Nigeria has yielded significant insights about the correlation between students' academic achievement and their use of Microsoft Teams. The academic performance of educational technology students who used Microsoft Teams for learning

was compared to those who only used traditional face-to-face techniques in a study by Ibrahim and Etim (2023). Using a quasi-experimental approach, the study discovered that students who regularly utilized Microsoft Teams showed improved completion rates and course grades.

According to the study, this was caused by the course materials' accessibility, which allowed students to review lectures that had been recorded and get immediate feedback from their teachers. This boosted students' academic performance. In a similar study by Obinna and Chukwu (2021), the role of Microsoft Teams in enhancing academic performance was explored through the lens of student assessments. The research focused on the effect of Teams' integration in assessment activities, such as quizzes and assignments, and how this affected students' grades. The findings showed that students who used Microsoft Teams had better organization and timely submission of assignments, which resulted in higher scores compared to those in traditional classroom settings.

Anderson and Smith (2021), in a study compared the academic performance of students using Microsoft Teams and traditional learning methods. The quasi-experimental research design with pre-test and post-test was adopted for the study. A sample of 200 undergraduate students from a large public university was used for the study. Instruments for data collection were academic records, pre-and post-surveys assessing engagement factors on Microsoft Teams data was analyzed using independent t-test and regression analysis. The major findings of the study showed that students using Microsoft Teams outperformed their colleagues not exposed to it. It is therefore recommended that Microsoft Teams should be integrated in teaching and learning to improve students' academic performance. In a study carried out by Carter and Taylor (2020), on the dynamics of Microsoft Teams and students' academic performance, using a sample of 300 students, it was observed that a structured students' interaction on Microsoft Teams positively correlated with academic success.

Martinez and Walker (2022), carried out a study on Microsoft Teams and students' engagements. The objective of the study was to assess the level of students' engagement on Microsoft Teams across different institutions. A cross institutional comparative research design was adopted. A sample of 500 students drawn from three diverse institutions in San Francisco,

USA was used for the study. Data obtained from the research was analyzed using Analysis of Variance (ANOVA). The findings of the study reveal that the use of Microsoft Teams platform significantly influences students' engagement and academic performance. Patel and Kim (2021) investigated students' perceptions of Microsoft Teams on students' academic outcomes. The study was a survey design, and the sample consisted of 150 undergraduate students across diverse disciplines from University of Punjab, India. Data obtained from the survey study were analyzed using the descriptive statistics. While students generally had positive perceptions of Microsoft Teams, there were variations in perceived benefits. The study revealed a moderate relationship between positive perceptions and academic outcomes.

Nguyen and Jackson (2023), examined the effectiveness of Microsoft Teams in a blended learning environment. The study design used was a randomized controlled trial within a blended learning course. The sample consisted of 200 undergraduate students consisting of experimental and controls groups. The instrument used for data collection was logs from Microsoft Teams, course evaluations, and academic records. A comparative analysis of academic outcomes using independence t-test patterns on Microsoft Teams was examined and quantitative analysis was applied. The finding revealed that the experimental group using Microsoft Teams showed a statistically significant improvement in academic performance. Features like discussion forums and collaborative document editing were positively associated with engagement.

Ahmed and Singh (2019), conducted a study on the impact of Microsoft Teams on students' academic performance in University of Syndey, Australia. The longitudinal study consisting of a sample of 250 students from South Wells was used for the study. Data was obtained using questionnaire and analyzed using Chi-square statistics. The findings of the study shows that sustained use of Microsoft Teams significantly enhanced students' academic performance overtime.

The implementation of Microsoft Teams in educational settings has significantly transformed how teaching and learning occur, particularly in the context of online education. This empirical review focuses on the impact of Microsoft Teams on students' academic performance,

highlighting studies that utilized quantitative research designs. The review summarizes methods, sample sizes, data collection techniques, and key findings from research conducted in Nigeria, providing insights into how Microsoft Teams influences student engagement, participation, and overall academic success.

Okonkwo and Udeh (2021) conducted a remarkable study on the impact of Microsoft Teams on academic achievement of students participating in educational technology courses at a Nigerian institution. This study used a quasi-experimental design with 250 students divided into two groups: an experimental group that used Microsoft Teams and a control group that received traditional face-to-face training. Pre- and post-tests were used to examine students' comprehension of course materials. The results showed that the experimental group had a considerable improvement in academic performance, with an average 20% rise in course grades after intervention. The researchers determined that Microsoft Teams' collaboration tools, such as document sharing and real-time feedback, were critical in helping students learn complicated topics.

In another study, Ibrahim and Eze (2022) investigated the association between Microsoft Teams usage and student engagement in a mixed learning environment among Nigerian undergraduate students. The researchers employed a survey research approach to collect data from 300 university students enrolled in various programs. The poll looked at engagement levels, participation rates in Microsoft Teams sessions, and academic achievement measures including assignment completion rates and final grades. The findings revealed a link between high levels of involvement in Microsoft Teams and increased academic performance. Students who frequently participated in Microsoft Teams discussions reported 15% greater average assignment completion rates than their less active counterparts. The study emphasized the significance of interactive features such as chat functions and breakout.

Furthermore, Nwafor and Eze (2023) investigated the efficacy of Microsoft Teams in improving academic achievement among students in educational technology courses during the COVID-19 pandemic. This study used a comparative research approach with a sample of 200 students. Structured surveys were used to collect data on students' impressions of Microsoft Teams

as well as their academic performance, which was measured by course grades and completion rates. The data revealed that students who used Microsoft Teams for their coursework had higher course marks and had greater completion rates (80%) than those who did not use the platform (60% completion). The authors observed that Microsoft Teams' flexibility, combined with its multimedia features, enabled students to engage with course contents more effectively, resulting in better academic accomplishment.

Statement of the Problem

Educational Technology is a fluid and eclectic field of study that focuses on the design, development, implementation, and evaluation of the overall teaching and learning process. The main objective of Educational Technology is to enhance learning and improve educational outcomes by integrating an array of technologies into the pedagogical process. Because it is technology-driven, practitioners can create a more effective, collaborative, engaging and flexible learner-centred educational situation by deploying technological devices or software like video-conferencing tools and applications to facilitate a more effective communication, engagement, accessibility and flexible learning environment among instructors and instructed.

Admittedly, the adoption of Microsoft Teams has radically transformed tertiary education in Cross River State, Nigeria. This tool holds brighter prospects for online learning of Educational Technology in terms of collaboration, real-time communication, flexibility and interactivity. There are, however, concerns regarding technical issues like paucity of equipment and infrastructure, institutional readiness, technophobia issues etc.

Whereas the deployment of video-conferencing tools has great potential for education, this study seeks to investigate the extent to which Microsoft Teams impact on students' academic performance in Educational Technology in Cross River State tertiary institutions.

Purpose of the Study

To examine the difference in the academic performance of Educational Technology students taught using Microsoft Teams App and those taught using face-to-face strategy.

Research Question: What is the difference in the academic performance of Educational Technology students taught using Microsoft Teams App and those taught using face-to-face strategy?

Hypothesis: There is no significant difference in the academic performance of Educational Technology students taught using Microsoft Teams App and those taught using face-to-face strategy.

Research design and methods

This study adopted a quasi-experimental, non-randomized-control group-pretest-posttest design. This design was considered appropriate because it allowed for the comparison of two groups; an experimental group exposed to Microsoft Teams for online learning and a control group receiving conventional instruction; without random assignment. The quasi-experimental nature of the design was suited for real-life educational settings where randomization was not feasible due to institutional constraints. However, intact classes were used for the purpose of instructing and data collection.

The design involves administering a pretest to both groups to determine their baseline knowledge in Educational Technology. After the intervention – use of Microsoft Teams for the experimental group, and the face-to-face discussion method for the control group a posttest was conducted for both groups to measure any differences in academic performance. This design enabled the researcher observe the effect of the treatment (Microsoft Teams) while controlling extraneous variables using of pretest and posttest measures. It also facilitates the assessment of learning gains attributable to the online learning approach using Microsoft Teams.

X_1 - pretest for experimental group 1

Y_1 - intervention to the experimental group 1

Z_1 - posttest for the experimental group 1

Population of the Study: The study consisted of Three hundred and twelve (312) Educational Technology undergraduate students of 2024/2025 academic session in the Departments of

Educational Technology from two tertiary institutions – University of Calabar and University of Education and Entrepreneurship, Akamkpa all in Cross River State.

Sample and Sampling Techniques: The sample for the study comprised of one hundred (100) final year Educational Technology students drawn from two intact classes and two tertiary institutions in Cross River State. The final year Educational Technology students of the two institutions were sampled because they have been sufficiently exposed to online learning in the course of their programme.

The purposive sampling technique was used to select the level (final year student) of students used for the study. This was to ensure that there is no substantial disparity in the exposure of the students to both the technology used and the concepts taught across the institutions used for the study. Furthermore, since intact classes were used, no further sampling was carried out.

Table 1: Sample distribution of the selected final year students

Institutions	Group	Intervention used	Sample
University of Calabar	C	Face-to-Face	**72**
University of Education and Entrepreneurship	E	Microsoft	**28**
		Total	**100**

Source: Researcher's Fieldwork, 2025

Instrument for Data Collection: Since the study sought to uncover the effect of Microsoft Teams tools for online learning and students' academic performance in Educational Technology, a twenty (20) item researcher developed test titled "Microsoft Teams and Educational Technology Students' Performance Test" (MTAETSPT) was used for data collection. The multiple-choice test comprised of three options lettered A-C. The three options comprised of one correct option and two detractors. This was used to measure students' academic performance in Educational Technology. The instrument was administered twice as pre-test and post-test. The pre-test was

administered to both the experimental and control groups before treatment. The post-test was given after two days of treatment to both the experimental and control groups.

Validity of the Instrument: The researcher-designed Microsoft Teams and Educational Technology Students' Performance Test (MTAETSPT), which focused on one aspect of Educational Technology – Instructional Material Design, Production, Utilization and Management was presented to two experts in Educational Technology, for proper scrutiny. Their comments, corrections and suggestions accounted for the face and content validity of the instrument. The table of specifications is shown in Table 2.

Reliability of the Instrument: The reliability of the instrument was determined using the test re-test method to measure each stability. Twenty copies of the instrument were administered to twenty final year Educational Technology students in a school not used for the study. The initial and final scores were correlated using Pearson Product Moment Correlation Coefficient to establish a reliability coefficient of 0.88. The result showed that the instrument was reliable and so was used for data collection.

Table 2: Table of Specification for Educational Technology Performance Test (ETPT)

Content	**Revised Cognitive Behavioural Objectives**						
	REM	**UND**	**APPL**	**ANALY**	**EVAL**	**CRT**	**Total**
Design of Instructional Materials	**1**(1)	**1**(8)	**1**(20)	**1**(4)	**1**(13)	-	**5 (25%)**
Production of Instructional materials	**1**(16)	**1**(19)	**1**(18)	**1**(14)	-	**1**(15)	**5 (25%)**
Utilization of Instructional materials	-	**1**(2)	**1**(9)	**1**(11)	**1**(3)	**1**(12)	**5 (25%)**
Management of Instructional materials	**1**(5)	**1**(17)	**1**(7)	**1**(6)	**1**(10)	-	**5 (25%)**
Total	**3(15%)**	**4(20%)**	**4(20%)**	**4(20%)**	**3(15%)**	**2(10%)**	**20 (100%)**

Key: REM – Remember, UND –Understand, APPL – Apply, ANALY – Analyze, EVAL – Evaluate, CRT – Create.

Administration of the Instrument: First of all, the researcher developed a lesson plan on the topics: Instructional material design, production, utilization and management of instructional delivery. The

lessons for the experimental groups were taught using the digital applications; reflecting the specific video-conferencing tools of Microsoft Team, while the control group was taught using the face-to-face instructional method. All lessons were delivered through the researcher for the control group.

The researcher then visited the two institutions selected for the study with a letter of introduction from the supervisor for permission to conduct the study. The researcher interacted with the Heads of Departments and a cross-section of staff, explaining the purpose of study and soliciting their cooperation. Thus, engaged some selected lecturers of Educational Technology to aid the collection of data for the study.

The study lasted for two (2) months. Students from experimental group were given intervention in line with one Microsoft Teams App, while students in the second institution were the control group, taught using the Face-to-Face instructional method.

To collect the required data from the students, all the students in the two classes, were given a 20-item Educational Technology Performance Test as pre-test for twenty (20) minutes, after which the scores were collected for the study. While Google forms with link [ ] was used to administer the test to students in the experimental group, the hard copy version was used to administer to students in the control group.

The first class was taught selected topics in Education Technology using Microsoft Teams, the second class was taught selected topics in Education Technology using the Face-to-Face instructional strategies.

At the end of the intervention or treatment, the Educational Technology Performance Test was re-administered to the two groups as post-test, and scores were collated for the study. While Google forms with link [ ] was used to administer the test to students in the experimental group, the hard copy version was used to administer to students in the control group.

Method of Data Analysis: Descriptive statistics of Mean and Standard Deviation were used to answer the research question while Analysis of Covariance (ANCOVA) was used to test the

hypothesis at 0.05 level of significance. The choice of ANCOVA is because the study is of quasi-experimental design which involves the comparison of the means of two independent variables affecting the dependent variable. The data analyses were carried out using the Statistical Package for Social Sciences (SPSS) version 22.

Results and discussions

Research Question: What is the difference in the academic performance of Educational Technology students taught using Microsoft Teams App and those taught using face-to-face strategy?

Table 3: Mean and standard deviation of the difference in the academic performance of Educational Technology students taught using Microsoft Teams App and those taughtusing face-to-face strategy

Instructional Strategy	N	Pretest		Posttest		Mean Gain
		$\bar{x}$	SD	$\bar{x}$	SD	
Microsoft Teams App	28	30.36	3.77	60.25	7.70	29.89
Face-to-Face	72	30.28	5.08	39.85	5.32	9.57

Table 1 shows the difference in the academic performance of Educational Technology students taught using Microsoft Teams App and those taught using face-to-face strategy. The result indicated that students taught Educational Technology concepts using Microsoft Teams App performed better (Pretest; $\bar{x}$ = 30.36, SD = 3.77, Post-test; $\bar{x}$ = 60.25, SD = 7.70, Mean gain = 28.89) than those taught using the face-to-face instructional approach (Pretest; $\bar{x}$ = 30.28, SD = 5.08, Post-test; $\bar{x}$ = 39.85, SD = 5.32, Mean gain = 9.57). These results imply that students taught Educational Technology concepts using Microsoft Teams App performed better than their counterparts taught using face-to-face strategy.

Hypothesis: There is no significant difference in the academic performance of Educational Technology students taught using Microsoft Teams App and those taught using face-to-face strategy.

Table 4 shows that there is a significant difference in the academic performance of Educational Technology students taught using Microsoft Teams App and those taught using face-to-face

strategy (F_1, = 228.04, df = 98, P = 0.00< 0.05). Thus, null hypothesis is rejected at 0.05 alpha levels, suggesting that Microsoft Teams App instructional approach used in teaching Educational Technology concepts has a notable effect on the academic performance of students.

Table 4: Summary of ANCOVA in the mean difference in academic performance of Educational Technology students taught using Microsoft Teams App and those taught using face-to-face strategy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8392.07[a]	1	8392.07	228.04	0.00
Intercept	201992.19	1	201992.19	5488.66	0.00
Group	**8392.07**	**1**	**8392.07**	**228.04**	**0.00**
Error	3606.57	98	36.80		
Total	219570.00	100			
Corrected Total	11998.64	99			

a. R Squared = .699 (Adjusted R Squared = .696)

Discussion of findings

The findings of research question showed that students taught Educational Technology concepts using Microsoft Teams App performed better than their counterparts taught using face-to-face strategy. Furthermore, the result of hypothesis showed that there is a significant difference in the academic performance of Educational Technology students taught using Microsoft Teams App and those taught using face-to-face strategy. These findings are consistent with the findings of Anderson and Smith (2021), which revealed that students using Microsoft Teams out-performed their colleagues not exposed to it. Also, the study by Nguyen and Jackson (2023) revealed that the experimental group using Microsoft Teams showed a statistically significant improvement in academic performance. The study by Ibrahim and Eze (2022) revealed a link between high levels of involvement in Microsoft Teams and increased academic performance. Students who frequently participated in Microsoft Teams discussions reported 15% greater average assignment completion rates than their less active counterparts.

The result of this study is in tandem with the views of Zou et al (2019) that the ability to integrate multi-media resources and interactive tools within Teams has great potentials to enhance

learning experiences and support different learning styles which contribute to students' overall academic performance.

Conclusion

The study investigated the impact of Microsoft Teams on the academic performance of undergraduate students of Educational Technology in two tertiary institutions in Cross River State, Nigeria. The study adopted a quasi-experimental research design. The findings revealed that Microsoft Teams significantly enhanced students' academic performance in Educational Technology when compared to the traditional face-to-face instruction. The study, therefore, advocated the integration of Microsoft Teams into the teaching of Educational Technology for improved student learning outcomes in Educational Technology in tertiary institutions.

Recommendations

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

Tertiary education regulatory bodies, such as the National Universities Commission (NUC), should enforce the inclusion of Microsoft Teams in the teaching of Educational Technology considering its significant impact on learning outcomes.

Lecturers of Educational Technology should acquaint themselves with the use of this App for effective instructional delivery.

Undergraduate students of Educational Technology should also be sufficiently equipped with the requisite skills to seamlessly use this App to improve their learning outcomes.

References

Ajuzie, N. E. (2022). *Technology integration in classroom lesson delivery*. In Achuonye, K. A. (Ed.). Instruction: Process and assessment Tetfund. University of Port Harcourt Press Ltd.

Anderson, K., & Smith, L. (2021). Impact of Microsoft Teams on Academic Performance: A Comparative Study. *Journal of Online Learning Research*, 7(2), 123-145.

Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Kim, D., & Jones, P. (2020). The role of value, compatibility, and trust in the acceptance of synchronous mobile learning in an organization. *Computers in Human Behavior*, 110, 106398. https://doi.org/10.1016/j.chb.2020.106398

Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J. J., & Ciganek, A. P. (2020). Critical success factors for E-learning in developing countries: A comparative analysis between ICT experts and faculty. *Computers in Human Behavior, 102*, 144–154.

Carter, A., & Taylor, B. (2020). Exploring the Dynamics of Microsoft Teams in Higher Education: A Longitudinal Analysis. *Journal of Educational Technology and Society*, *23*(4), 67-89.

Ebenezar, A. N. (2022). Technology integration in classroom lesson delivery. In Achuonye, K. A. (Ed). Instruction: Process and assessment. University of Port Harcourt Press Ltd.

Ekpo-Eloma, E. O. (2025). Video conferencing tools for online learning and undergraduate students' academic performance in Educational Technology in tertiary institutions in Cross River State, Nigeria. Unpublished Ph.D Thesis, IAUE

Ibrahim, A., & Etim, P. (2023). The effect of Microsoft Teams on academic performance in educational technology courses: A quasi-experimental study. *Nigerian Journal of Educational Technology*, *18*(2), 65-78.

Ibrahim, A., & Eze, P. (2022). The relationship between Microsoft Teams usage and student engagement in Nigerian universities. *Journal of Digital Learning*, 16(2), 99-114.

Martinez, C., & Walker, D. (2022). Microsoft Teams and Student Engagement: A Cross-Institutional Analysis. *Qualitative Research in Education, 11*(3), 345-367.

Nguyen, T., & Jackson, L. (2023). Effectiveness of Microsoft Teams in a Blended Learning Environment: An Experimental Study. *Educational Technology Research and Development, 71*(2), 189-210.

Nwafor, K., & Eze, C. (2023). Effectiveness of Microsoft Teams on academic performance in educational technology courses during the COVID-19 pandemic. *Nigerian Journal of Educational Technology*, 19(1), 45-60.

Obinna, U., & Chukwu, I. (2021). Student assessments and academic outcomes: The role of Microsoft Teams in Nigerian tertiary institutions. *Journal of Educational Development, 17*(2), 59-72.

Okon, U., & Udoh, A. (2021). Microsoft Teams and student engagement in Nigerian universities: A case study of educational technology programs. *Journal of Digital Learning, 15*(3), 71-85.

Okonkwo, C. C. & Nwankwo, L. E. (2022). Use of synchronous learning platforms and academic achievement in Educational Technology courses. *African Journal of Educational Research and Development, 14*(3), 112-124.

Okonkwo, I., & Udeh, E. (2021). Impact of Microsoft Teams on students' academic performance in educational technology. *International Journal of Educational Research*, *10*(1), 123-137.

Olayinka, T., & Adeola, O. (2022). Collaborative learning in virtual classrooms: The impact of Microsoft Teams in Nigerian tertiary education. *Journal of Modern Educational Practices*, *10*(1), 23-38.

Patel, R., & Kim, S. (2021). Perceptions and Realities: A Mixed-Methods Study on Cisco Webex in Undergraduate Courses. *Journal of Online Learning and Teaching*, *17*(1), 45-62.

Zou, D., Xie, H. & Wang, F. L. (2019). Impact of interactive features in online learning environments on student learning. *Journal of Educational Technology & Society*, *22*(2), 84-96.