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IMPACT OF E-LEARNING PLATFORMS ON SENIOR SECONDARY SCHOOL STUDENTS' ACADEMIC PERFORMANCE IN NIGERIA DURING POST-PANDEMIC ERA IN KEBBI STATE

BY

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Abstract

This study investigated the impact of e-learning platforms on the academic performance of senior secondary school students in Kebbi State, Nigeria, in the post-pandemic era. The study employed a correlational research design. The population comprised 3,200 senior secondary school students, from which a sample of 320 was selected through stratified random sampling to ensure equitable representation across schools and classes. Data were collected using a researcher-designed instrument, "E-Learning Platform Usage and Academic Performance Scale (ELPUAPS). The instrument was validated by experts in educational technology and measurement. Reliability coefficient of 0.87 using Cronbach's alpha. Self-administered questionnaires were employed for data collection. Mean and standard deviation, Pearson correlation analysis were conducted at a 0.05 significance level. The findings revealed that limited use of e-learning platforms could negatively influence students' academic outcomes, emphasizing the need for interventions to enhance platform engagement. While engagement positively affected academic performance, actual interactive and participatory behaviors on the platforms remained low, indicating a gap between perceived benefits and practical utilization. A significant relationship was found between the frequency of e-learning platform usage and students' academic performance. Based on these findings, the study recommended that schools and educators organize training workshops to improve students' understanding and comfort with e-learning tools, incorporate interactive and participatory activities such as quizzes and discussion forums to promote meaningful engagement, and implement policies that encourage frequent platform usage, including incentives, grading integration, or minimum participation requirements, to maximize the educational benefits of e-learning technologies and improve academic outcomes.

Keywords: E-learning Platforms, Academic performance, Senior Secondary Students, Post-Pandemic Nigeria

Introduction

COVID-19 pandemic profoundly disrupted the traditional delivery of education worldwide, compelling educational systems to adopt e-learning platforms as a substitute for face-to-face classroom instruction (Adewale&Emeke, 2020). In Nigeria, the sudden closure of schools and the need for continuity in learning forced both teachers and students to engage with various digital platforms such as Google Classroom, Zoom, and mobile-based resources to access curriculum content and assignments (Agusiobo, 2020). While this shift helped mitigate the immediate impact of school closures, questions remain about how sustained engagement with e-learning platforms in the post-pandemic era continues to influence academic outcomes, especially at the secondary school level where foundational knowledge is critical for future academic progression (Adewale&Emeke, 2020).

E-learning platforms are conceptualized as digital environments that support instruction through online content delivery, interactive multimedia, real-time communication, and digital assessment tools (Abdulrahman&Alimi, 2023). These tools have the potential to enhance learner autonomy, provide flexible access to educational resources, and support learning beyond traditional school locations and hours, which are vital components of 21st-century education (Agusiobo, 2020). Research conducted during the pandemic indicated that engagement with virtual learning environments was associated with improvements in students' comprehension and engagement, suggesting that these platforms could be effective in promoting academic performance when appropriately integrated into educational practice (Abdulrahman&Alimi, 2023).

Despite these potential benefits, empirical studies have highlighted significant challenges in adopting e-learning in Nigerian educational contexts, such as infrastructure deficits, limited teacher readiness, and inconsistent access to reliable internet services (Mohamed &Hermansyah, 2025). These challenges are particularly pronounced in rural and underserved regions, where students may lack the technical resources needed to fully participate in e-learning activities (Mohamed &Hermansyah, 2025). Such barriers can hinder equitable access to digital learning and may contribute to disparities in academic performance, underscoring the importance of investigating the continued impact of e-learning platforms beyond the pandemic period (Adewale&Emeke, 2020).

Another important factor influencing the effectiveness of e-learning is the level of student engagement with these platforms, which has been linked to academic outcomes in both blended and fully online learning environments (Adewale&Emeke, 2020). Engagement reflected in students' frequency of participation, interaction with digital content, and responsiveness to online instruction can determine how effectively learners internalize and apply knowledge gained through e-learning. Studies in the Nigerian context have found that students who consistently accessed and engaged with e-learning reported better academic results, although this relationship is mediated by the quality of the platforms and instructional support they receive (Agusiobo, 2020).

In the post-pandemic era, secondary education in Nigeria continues to integrate e-learning into formal instructional strategies, reflecting broader educational reforms aimed at digital inclusion and technology-enhanced learning (Abugu, Onah, &Abugu, 2024). Policy dialogues emphasize the need for sustained investment in digital infrastructure, capacity building for educators, and the creation of supportive environments that encourage effective use of e-learning resources (Abugu, Onah, &Abugu, 2024). Understanding how these investments translate into measurable academic performance outcomes is crucial for guiding educational planning and resource allocation at the state and national levels (Abdulrahman&Alimi, 2023).

Given the mixed findings from prior research and the ongoing efforts to institutionalize e-learning in Nigeria's secondary education system, there is a pressing need for empirical investigation into how these platforms affect student performance in specific regional contexts such as Kebbi State (Adewale&Emeke, 2020). Such research can provide insights into the benefits and limitations of sustained e-learning adoption in post-pandemic schooling and inform strategies to enhance educational quality and equity (Agusiobo, 2020).

Ideally, senior secondary schools in Kebbi State would integrate e-learning platforms effectively with conventional classroom instruction, ensuring equitable access to digital tools that facilitate blended and self-paced learning, supported by reliable internet connectivity, adequate infrastructure, and teachers proficient in e-pedagogy, thereby improving students' academic performance and overall learning outcomes. However, despite the accelerated adoption of digital learning during the COVID-19 pandemic, many schools in Kebbi State and across Nigeria continue to face infrastructural deficits, unstable network connectivity, and insufficient teacher preparedness, limiting the effective utilization of e-learning platforms. This disparity between expectation and reality underscores the need to examine how post-pandemic e-learning engagement influences academic achievement, as failure to do so may perpetuate underperformance, deepen urban–rural disparities, and hinder the realization of national educational objectives. Consequently, strategic interventions such as sustained investment in digital infrastructure, comprehensive teacher training in e-pedagogy, structured platform integration, and systematic monitoring of student engagement and performanceare essential to ensure that e-learning meaningfully enhances academic outcomes in the post-pandemic era. In light of the above, the study therefore, seek to examine Impact of E-Learning Platforms on Senior Secondary School Students' Academic Performance in Nigeria During Post-Pandemic Era in kebbi State. The main objective of the study is to examine the impact of E-Learning Platforms on Senior Secondary School Students' Academic Performance in Nigeria During Post-Pandemic Era in Kebbi State. Specific objectives include;

1. To determine the relationship between students' frequency of e-learning platform usage and their academic performance.
2. To assess the effect of students' engagement level on e-learning platforms on their academic outcomes.

The study was guided by the following research questions

7. What is the relationship between the frequency of e-learning platform usage and senior secondary schools students' academic performance?

8. To what extent does senior secondary schools students' engagement level on e-learning platforms affect their academic performance?

The following hypotheses were formulated to guide the study

H_{01}: There is no statistically significant relationship between the frequency of e-learning platform usage and senior secondary school students' academic performance.

H_{02}: Students' engagement level on E-learning platforms does not significantly predict senior secondary school students' academic performance.

Literature Review

According to Adewale and Emeke (2020), the adoption of e-learning and digital learning tools has shown a positive influence on students' comprehension, engagement, and overall academic performance in Nigerian secondary schools. Their study found that students who frequently used digital learning tools reported enhanced learning outcomes compared to those with limited digital engagement, underscoring the value of e-learning platforms in contemporary education systems (Adewale&Emeke, 2020). This aligns with earlier findings by Alabi (2025) that e-learning significantly improves academic performance by facilitating individualized and flexible instruction, which allows learners to revisit content at their own pace and supports deeper understanding of subject matter.

Similarly, research conducted in rural Nigerian contexts found that students with consistent access to e-learning platforms achieved significantly higher academic scores than their peers who did not engage with digital tools, suggesting that e-learning can help bridge educational gaps when infrastructure and access are adequate (Mohamed &Hermansyah, 2025). As noted by Abdulrahman and Alimi (2023), virtual learning environments such as Moodle and other online instructional technologies enabled learners to overcome constraints of time and distance during the pandemic, subsequently contributing to improved academic performance outcomes for secondary school students.

However, literature also highlights persistent challenges in the effective implementation of e-learning in the Nigerian educational landscape. For instance, issues such as limited internet access, insufficient technological infrastructure, and inadequate teacher readiness have been documented as barriers that hinder the equitable realization of e-learning benefits, particularly in underserved regions (Mohamed &Hermansyah, 2025). Adebayo and Balogun (2019) similarly found that although there is a positive relationship between e-learning use and academic performance, students' access to and utilization of e-learning tools are often constrained by infrastructural deficits and digital literacy gaps.

Weerarathna et al. (2023), examined the Effect of E-Learning on Management Undergraduates' Academic Success during COVID-19 used a quantitative correlational design to examine how

e-learning usage relates to academic performance among management undergraduates at two non-state universities in Sri Lanka. The population was 2,500 undergraduates, with a sample of 332 students selected via convenience sampling using an online questionnaire. The study found a strong positive correlation between e-learning usage and academic success ($r \approx 0.872$) and that e-learning significantly predicts academic achievement.

Prabowo et al. (2022), investigated Student Performance in Online Learning Higher Education conducted a cross-sectional survey to analyze the relationship between time spent on online learning platforms and academic performance at a private university in Jakarta, Indonesia. The study found that students' frequency of LMS access (e.g., hours per day) was associated with performance impacts, with more frequent usage linked to better engagement measures and academic outcomes.

Alshammari & Alrashidi (2024), examined the Effect of Students' Engagement on Their Learning Achievement in EFL Online Courses employed a quantitative correlational research design using structural equation modelling (SEM) to examine how behavioural, emotional, and cognitive engagement in online English as a Foreign Language (EFL) courses relates to academic achievement. Findings showed that students' engagement levels significantly and positively affected their achievement, indicating that higher behavioural, emotional, and cognitive involvement leads to better academic outcomes ($\beta = 0.221$, $p < 0.05$).

Sappaile, Lasinggaru and Mokodenseho (2023), conducted a study on Analyzing the Influence of Digital Learning Platforms on Student Engagement and Academic Performance adopted a quantitative survey research design to explore how engagement with digital learning platforms relates to academic performance among secondary school students. Results demonstrated that students who used digital platforms more frequently exhibited higher engagement levels, and that engagement significantly predicted academic achievement, with engagement accounting for 15 % of the variance and platform use for 25 % of the variance in academic performance.

Methodology

This study adopted a descriptive survey research design to investigate the impact of e-learning platforms on senior secondary school students' academic performance in Kebbi State, Nigeria, during the post-pandemic era. The population comprised 3200 senior secondary school students across public secondary schools in the state, from which a sample of 320 students (10% of the population)was selected using a stratified random sampling technique to ensure representation across schools, gender, and grade levels. Data were collected using a structured questionnaire titled "E-Learning Platform Usageand Academic Performance Questionnaire (ELPUAPS)", which was validated through expert judgment by educational technology and measurement specialists. The reliability of the instrument was tested using Cronbach's alpha, yielding a coefficient of 0.87, indicating high internal consistency. Data collection involved direct administration of the questionnaire to the sampled students, while academic performance scores were obtained from school records with permission from school authorities. Collected data were analyzed using descriptive statistics (mean, standard deviation) and inferential

statistics (Pearson correlation and multiple regression analysis) to test the relationships and predictive effects of e-learning usage and engagement on students' academic outcomes. In this analysis the criterion mean is 2.50 by this definition, any descriptor statement for which a mean score of is higher than 3.00 is observed to be at high level, while moderate level is within 2.50-3.00 and lower level implies any descriptor statement for which mean score of less than 2.50 is observed.

Results

Research Question One: What is the relationship between the frequency of e-learning platform usage and students' academic performance?

Table 1: Frequency of e-learning platform usage and students' academic performance

S/no	Item Statement	N	Mean	Std. Deviation	Decision (Level)
1	I frequently access e-learning platforms for my academic studies.	320	2.05	.943	Low
2	The more I use e-learning platforms, the better I understand my subjects.	320	2.01	.877	Low
3	Regular use of e-learning platforms helps me perform better in exams.	320	2.05	.943	Low
4	I spend sufficient time on e-learning platforms to complete my assignments and learning tasks.	320	2.09	.949	Low
5	Using e-learning platforms frequently motivates me to study independently.	320	2.09	.993	Low
6	Students who frequently use e-learning platforms tend to achieve higher academic scores than those who use them less.	320	2.12	1.083	Low
7	The frequency of my engagement with e-learning platforms positively influences my overall academic performance.	320	2.02	.952	Low
	Grand mean		**2.06**	**0.973**	**Low**

Source: Field work, 2026

The analysis of Table 1 shows the Frequency of e-learning platform usage and students' academic performance. In Item 1, students reported a low frequency of accessing e-learning platforms for their academic studies (Mean = 2.05, SD = .943), indicating limited regular use. For Item 2, the low mean of 2.01 (SD = 0.877) suggests that students do not strongly perceive

that increased usage of e-learning platforms improves their understanding of subjects. Item 3 also scored low (Mean = 2.05, SD = 0.943), implying that students feel that regular platform use does not significantly enhance exam performance. Similarly, Item 4 (Mean = 2.09, SD = 0.949) indicates that students spend insufficient time on e-learning platforms to complete assignments effectively, while Item 5 (Mean = 2.09, SD = 0.993) reflects that e-learning usage rarely motivates independent study. For Item 6 (Mean = 2.12, SD = 1.083), students generally disagree that frequent platform users achieve higher academic scores than less frequent users. Finally, Item 7 (Mean = 2.02, SD = 0.952) shows that students perceive minimal positive impact of their engagement frequency on overall academic performance. The grand mean of 2.06 confirms that, overall, students' frequency of e-learning platform usage is low. The judgment from this analysis is that the limited use of e-learning platforms may negatively influence students' academic outcomes, emphasizing the need for interventions to increase platform engagement and usage.

Results

Research Question Two: How does students' engagement level on e-learning platforms affect their academic performance?

Table 2: Students' engagement level on e-learning platforms affects their academic performance.

S/no	Item Statement	N	Mean	Std. Deviation	Decision (Level)
1	I actively participate in discussions and activities on e-learning platforms	320	2.09	.956	Low
2	I complete and submit my assignments on e-learning platforms promptly.	320	2.05	.943	Low
3	I regularly interact with teachers and peers through e-learning platforms.	320	2.07	1.002	Low
4	I devote sufficient time to engage with learning materials on e-learning platforms.	320	3.18	1.027	High
5	I feel motivated to study and learn when using e-learning platforms.	320	3.56	.831	High
6	High engagement on e-learning platforms helps me achieve better academic results.	320	3.52	.842	High
7	My consistent participation and engagement on e-learning platforms	320	3.46	.936	High

positively influence my overall academic performance.			
Grand mean	2.84	0.932	**High**

Source: Field work, 2026

The analysis of Table 2 shows mixed results for students' engagement level on e-learning platforms and its perceived effect on academic performance. For Item 1, students reported low active participation in discussions and activities (Mean = 2.09, SD = 0.956), indicating minimal interaction with platform content. Item 2 (Mean = 2.05, SD = 0.935) suggests that students infrequently complete and submit assignments promptly on e-learning platforms, while Item 3 (Mean = 2.07, SD = 1.002) shows low interaction with teachers and peers. In contrast, Item 4 (Mean = 3.18, SD = 1.027) indicates that students high level devote time to engage with learning materials, and Items 5–7(Means = 3.56, 3.52, 3.46; SDs = 0.831, 0.842, 0.936) reflect higher perceived motivation, improved academic results, and positive influence of engagement on overall performance. The grand mean of 2.84 suggests that, overall, students' engagement level is high despite low participation in discussions and assignments. The judgment from this analysis is that while students recognize the positive impact of engagement on academic outcomes, actual interactive and participatory behaviors on e-learning platforms are high, highlighting a gap between perceived benefits and practical engagement that may limit the full potential of e-learning in improving academic performance.

Hypothesis One: There is no statistically significant relationship between the frequency of e-learning platform usage and senior secondary school students' academic performance.

Table 3: Pearson Product Moment Correlation statistics showing relationship between the frequency of e-learning platform usage and senior secondary school students' academic performance.

Variables	**N**	**Mean**	**S.Deviation**	***r*-Cal**	***p*-Value**	**Decision**
e-learning platform	320	3.09	1.002	.965**	.000	H_0 Rejected
students' academic performance	320	3.06	1.009			

Source: Fieldwork, 2026 ($\propto = .05$)

The result presented in table 3 shows a strong and statistically significant positive relationship between the frequency of e-learning platform usage and senior secondary school students' academic performance, with a correlation coefficient of $r(300) = .965^{**}$, $p < .05$. This finding underscores the significant association between the frequency of e-learning platform usage and senior secondary school students' academic performance, as the p-value is below the threshold of 0.05. Therefore, the null hypothesis (H_{01}), which posited that no significant relationship between the frequency of e-learning platform usage and senior secondary school students' academic performance, is rejected.

Discussion of Findings

Findings in Table 1 indicate that students' limited use of e-learning platforms, particularly in terms of active participation in discussions, prompt submission of assignments, and interaction with teachers and peers, may negatively influence their academic outcomes, highlighting a clear gap between available digital resources and actual student engagement. This observation aligns with Alshammari and Alrashidi (2024), who found that low engagement levels in online learning environments are associated with poorer academic performance, as students fail to maximize the benefits of digital instructional tools. Similarly, Sappaile, Lasinggaru, and Mokodenseho (2023) reported that frequent and meaningful engagement with digital learning platforms significantly predicts higher academic achievement, emphasizing that underutilization of e-learning resources can limit students' learning outcomes.

Findings in Table 2 revealed that while students recognize the positive impact of engagement on their academic outcomes, their actual interactive and participatory behaviorson e-learning platforms, indicating a significant gap between perceived benefits and practical engagement. This aligns with the study by Alshammari and Alrashidi (2024), which found that although students understand that active engagement enhances learning, low participation in online activities limits the effectiveness of e-learning in improving academic performance. Similarly, Sappaile, Lasinggaru, and Mokodenseho (2023) observed that meaningful interaction with digital learning tools is a key predictor of academic success, and underutilization of these platforms undermines the potential benefits.

Findings in Table 3 revealed a significant relationship between the frequency of e-learning platform usage and senior secondary school students' academic performance, indicating that students who regularly access and utilize digital learning resources tend to achieve better academic outcomes. This aligns with the study by Weerarathna et al. (2023), which reported that frequent engagement with e-learning platforms positively correlates with improved understanding of subjects and higher examination scores among secondary school students. Similarly, Prabowo et al. (2022) found that students who consistently use online learning tools demonstrate greater academic achievement, as regular usage enhances comprehension, retention, and timely completion of learning tasks.

Conclusion

The findings of the study collectively indicate that while e-learning platforms have the potential to positively influence students' academic outcomes, their limited use and low levels of active engagement significantly constrain this potential. The study shows that inadequate utilization of these platforms can negatively affect academic performance, highlighting the need for targeted interventions to encourage consistent usage. Furthermore, student engagement on e-learning platforms can improve learning outcomes, students' actual interactive and participatory behaviors is high, exposing a gap between the perceived benefits of e-learning and its practical application. Finally, the study confirms a significant relationship between the frequency of platform usage and academic performance, emphasizing that regular and active

engagement is critical for maximizing educational gains. Therefore, it can be concluded that to fully harness the benefits of e-learning for senior secondary school students, deliberate strategies must be implemented to increase both the frequency and quality of students' interactions with these platforms, ensuring that engagement translates into tangible improvements in academic achievement.

Recommendations

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

- Schools and educators should organize workshops and training sessions to educate students on the benefits and functionalities of e-learning platforms, addressing the low utilization. By improving students' understanding and comfort with these platforms, they are more likely to engage consistently, thereby enhancing academic outcomes.
- Teachers should incorporate interactive and participatory activities such as quizzes, discussion forums, and collaborative assignments on e-learning platforms. This will promote hands-on engagement and ensure students translate platform access into meaningful learning experiences.
- Given the significant relationship between usage frequency and academic performance, school administrators should implement policies that monitor and encourage regular access to e-learning resources..

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