

Assessing The Impact of Canvas Learning Management System (LMS) on Undergraduates Engagement and Performance in Educational Technology Courses at Adeyemi Federal University of Education, Ondo, Ondo State

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Abstract

The study examined the impact, usage, effectiveness and challenges associated with the use of canvas LMS among undergraduate students enrolled in Educational Technology courses. The descriptive survey was adopted for this study. The sample size consisted of 250 undergraduates from Adeyemi Federal University of Education, Ondo, Ondo State, Nigeria were selected from the five (5) faculties. The instrument for data collection was the researcher's structured questionnaire titled "Impact of the Canvas LMS on Undergraduate Students' Engagement and Academic Performance Questionnaire, ICLMUSEAPQ". The instrument was validated by 3 experts. The reliability co-efficient value of 0.88 was obtained for the Impact, 0.92 was obtained for Usage and 0.79 was obtained for the challenges facing the use of Canvas LMS by undergraduate students using Cronbach's Alpha analysis. The research questions were answered using mean and standard deviation, while the hypotheses was tested using and Linear Multiple Regression (LMR). The findings of the study revealed that undergraduate students' influence of canvas LMS increases their involvement and participation in group learning activities and that overall usage and effectiveness of Canvas LMS is high and effective. It was confirmed that undergraduate students faced challenges when using Canvas LMS and it was revealed that impact usage and challenges have a significant influence on undergraduate students' use of canvas LMS in educational technology courses. The study recommends that lecturers should intentional integrate collaborative learning strategies into Canvas LMS to further strengthen students' participation in group learning activities.

Keywords: Canvas learning Management (LMS), collaborative Learning, Educational Technology courses, Academic Performance Technology Adoption Challenges

1. Introduction

Assessing the impact of the Canvas Learning management System (LMS) on undergraduate engagement and performance in educational technology courses at Adeyemi Federal University of Education, Ondo, is both timely and necessary given the rapid digitalization of higher education since 2020. Research during and after the COVID-19 Pandemic shows that LMS platforms can Scaffold course organization, enable time feedback, and produce activity logs that correlate with engagement indicators and students outcomes (Bond et al., 2021; Jayasekan, 2022). Institutional reports and research on canvas specifically point to improvements in student access to resources and instructor-student interaction when the system is intentionally integrated into course design, however, the benefits are largely determined by well pedagogical is aligned and the extent of staff competence in utilizing platform features effectively although gains depend heavily on pedagogical alignment and staff capacity to use platform affordances effectively (Instructure, 2020; Rapanta et. al., 2020).

Empirical studies further indicate that specific LMS tools such as assignment modules, discussion boards, and analytics dashboards can increase participation and support formative assessment, which in turn relates to better academic performance when accompanied by lecturers guidance and active learning strategies (Simelane-Mni 2023). Framing this study within the local context of Adeyemi Federal University of Education, Ondo will illuminate how canvas-mediated practices translate into measureable engagement and performance outcomes for

undergraduates in educational technology courses and will highlight instructional and institutional factors that strengthen or weaken those effects.

Learning management systems influence undergraduate engagement by providing features that support access, interaction, formative feedback and analytics-based monitoring. Empirical research indicates that system usability, assessment automation, communication tools (discussion boards, announcements, messaging and learning-analytics features are positively associated with cognitive, behavioural and social dimensions of engagement when lecturers design courses to exploit those features (Al-Fraihat, 2020). Studies focused on canvas specifically show that perceived usefulness and ease of use strongly influence students' intention to adopt the platform and that institutional support and lecturer readiness moderate actual uptake (Garcial, et. al., 2021). Evidence from higher education settings across different regions demonstrates that carefully configured LMS activities such as regular low-stakes quizzes, prompts and transparent grade books such as increase time-on-task, submission rates and self-reported motivation (Bond, 2021; Simelane-Muisi, 2023). Vendor and practitioner reports of Canvas implementations likewise highlights the platform's capacity to centralize course resources, streamline assessment workflows and provide student activity data that, when used formatively, support retention and engagement (Instructure, 2020).

Translating these general findings to Adeyemi Federal University of Education, Ondo requires attention to local conditions: network reliability, device access,

instructor training and culturally appropriate course design will shape how canvas influences engagement in Educational-Technology modules. International Studies, caution that platform potential alone does not guarantee better engagement; instructor practices, curriculum alignment, and institutional practices, curriculum alignment, and institutional policies that enable time feedback and analytics use are decisive (AI-Fraihat et al., 2020; Garcia et al., 2021)

Research situated in contexts with constraints infrastructure shows that interactive LMS features (synchronous sessions, embedded multimedia) improve engagement only where minimum connectivity and device access are available; otherwise simpler asynchronous designs-with robust offline/mobile options work better (Bond et al. 2021; Simelane-Muisi, 2023). For Adeyemi Federal University of Education, Ondo, the literature therefore suggests a mixed-methods evaluation that combines canvas learning-analytics (logins, time on task, assignment completion), standardized engagement surveys and focus groups with students and lecturers to measure the platform's real-world influence and to surface implementation barriers and training needs. Such localized evidence will be essential to move from assumed engagement and learning outcomes in educational-technology courses.

The usability of canvas LMS is a recurrent focus in recent student-centred research. Undergraduates commonly report that canvas supports organized access to course materials, asynchronous study, and streamlined submission/feedback process, attributes that students associate with improved manageability of study tasks (AI-Fraihat et al., 2020; JNEP, 2024). Usability evaluations using heuristic and task-based methods identify strengths-clear course structure and integrated tools and weaknesses, notably in mobile app consistency, navigation for less experienced users, and occasional interface friction that can raise cognitive load, (Algamdi & Ludi, 2023; Schreiner, 2021). Institutional pilot studies further indicate that perceived usability improves when administration couples canvas rollout with contextual training and responsive support, signaling that student perceptions are shaped not only by interface design but by local implementation practices (Pepperdine LMS study, 2024).

Evidence on perceived learning effectiveness shows a cautiously positive student view when canvas is used to enable interaction, rapid feedback, and analytics-informed supports. Studies applying social-network and activity analytics-informed supports. Studies applying social-network and activity analysis find that canvas discussion, group tools and embedded quizzes can foster collaboration and give lecturers timely signals for intervention that features students report as helpful for course engagement and clarity of expectations (Furgon, 2023). Research exploring emergency remote teaching also suggests that while effective course design is the key driver of learning gains, LMS capabilities such as structured modules, formative quizzes, and instructor feedback contribute to perceived learning quality when aligned with sound pedagogy (Iglesias-Pradas et al., 2021; Garcia-Morales, et al., 2021). Altogether, the literature suggest undergraduates generally find canvas usable and beneficial for learning, but

their judgement depend heavily on instructor practices, institutional support; and attention to mobile/accessibility issues.

Digital platforms such as Canvas became central to course delivery during and after the pandemic, yet evidence indicates undergraduates confront persistent technical and usability barriers that hinder learning. Studies support that unreliable internet access, limited device capacity, and inconsistent platform performance create significant obstacles to participation and timely submission of work (Hodges et al., 2020; Nishitha et al., 2021). Usability evaluations of canvas identify navigation issues, confusing interface elements, and tasks flows that increase cognitive load for students and problems that are particularly acute for the first-time users and for students with disabilities or limited digital literacy (Algamdi & Ludi, 2023). Accessibility shortfalls such as missing captions, poorly structured content or items not compatible with assistive technologies can further marginalize learners who require accommodations and reduce the equity of LMS-mediated instruction (Nishitha et al, 2021).

Beyond technical constraints, pedagogical and organizational factors shape students' experiences of canvas in educational-technology courses. Rapid transitions to remote delivery exposed gaps in course design, instructor training, and support systems, so that students often encounter inconsistent procedure, and limited formative feedback such as factors associated with reduce engagement and motivation (AI-Fraihat et al., 2020; Rapanta et al., 2020), Empirical work also links perceived system quality, instructor responsiveness, and available help resources to students' acceptance and sustained use of LMS tools; where service quality and pedagogical integration are weak, adoption falters despite robust platform capabilities (AI-Fraihat et al., 2020; Algamdi & Ludi, 2023). By and large, the literature suggests that addressing canvas-related challenges requires coordinated action on infrastructure usability and accessibility, and above all targeted capacity building so instructors can design coherent, inclusive and well-supported canvas learning experiences for undergraduates.

1.1 Statement of the Problem.

Despite the increasing in adoption of digital learning platforms institutions of higher learning, the effective use of Learning Management Systems (LMS) such as Canvas remains uneven, particularly in developing contexts like Nigeria. At Adeyemi Federal University of Education, Ondo, where educational technology courses are intended to foster digital competence and learner autonomy, the integration of canvas has not been systematically assessed in relation to students' engagement and academic performance.

Preliminary observations suggests that while canvas offers interactive tools for communication assessment and collaboration, many undergraduates still exhibit low participation rates and inconsistent performance outcomes. Factors such as digital literacy, accessibility, instructional design, and lecturer competency may influence how students engage with the platform. Therefore, there is a pressing need to empirically evaluate the impact of canvas on students' engagement and learning outcomes to inform

pedagogical practices and optimize digital learning experiences within educational technology programmes.

1.2 Objectives of the Study

The objectives of the study are to:

1. examine the extent to which the Canvas Learning Management System (LMS) influences undergraduate engagement in educational technology courses at Adeyemi Federal University of Education, Ondo.
2. explore the perceptions of undergraduates, the usability, and effectiveness of Canvas LMS in supporting learning activities.
3. investigate the challenges faced by undergraduates when using canvas LMS for learning in educational technology courses. .

1.3 Research Questions

In order to achieve the objectives of the study, the following research questions were raised and answered.

1. To what extent does the Canvas Learning Management System influence undergraduate engagement in educational technology courses at Adeyemi Federal University of Education, Ondo?
2. How do undergraduates perceive the usability and effectiveness of Canvas LMS supporting their learning?
3. What challenges do undergraduates face when using Canvas LMS in educational technology courses?

1.4 Research Hypothesis

The following research hypothesis was formulated and tested at 0.05 level of significant.

H₀₁: Impact, usage and challenges using Canvas LMS for educational technology courses do not jointly significant influence the use of Canvas LMS among undergraduate students.

2. Methodology

This study adopted a descriptive survey research design. The approach was chosen because it allows for the systematic collection of data from a large group of respondents to describe existing conditions, practices and perceptions. The target population comprised all undergraduates students enrolled in Educational Technology courses during the 2024/2025 academic session at Adeyemi Federal University of Education, Ondo. Specifically, students in the second to fourth years were considered because of their consistent interaction with Canvas for coursework, assessment and peer collaboration. The total population was estimated at 320 students across various levels and course combinations within the faculties in University. A sample of 250 was selected using a stratified random sampling technique to ensure equal representation across year levels and gender. The strata were formed based on academic level (200 level – 101 students, 300 level-60 students, and 400 level- 89 students). A structured questionnaire was developed as the main instrument for data collection titled: “Impact of the Canvas Learning Management System on Undergraduate Students’ Engagement and Academic Performance, Questionnaire, ICLMSUSEAPQ” consisted of four sections focusing on

demographic data, engagement indicators, perceived use of Canvas, and challenges faced when using Canvas. The instrument was subjected to three (3) experts’ validation by specialists in educational technology and measurement to ensure content and used to refine the items for clarity, relevance, and alignment with the study’s objectives.

The reliability of the questionnaire was established using a pilot study conducted among 50 randomly selected undergraduates from University of Medical Sciences, Ondo (UNIMED) who were not part of the main study. The Cronbach’s Alpha Coefficient obtained was 0.89, indicating high internal consistency of the instrument. Data collection was conducted over a four-week period during the second semester of the 2024/2025 academic session. The researcher sought ethical clearance from the university management. The questionnaire was administered electronically via Google forms to ensure convenience and accessibility.

Collected data were analysed using both descriptive and inferential statistics. Descriptive statistics such as mean and standard deviation were used to answer the research questions, and Linear Multiple Regression determine significant differences in academic performance on Canvas utilization. The findings were presented in tables for clarity and ease of interpretation.

3. Results

Research Question 1: To what extent does the Canvas Learning Management Systems Influence undergraduates’ engagement and Educational Technology Courses at Adeyemi Federal University of Education, Ondo?

Table 1: Influence of Canvas Learning Management Systems.

Item	SA	A	D	SD	Mean	Item
Canvas makes course materials easy to find and organized, which increase my willingness to engage with the course.	114	83	41	12	3.19	0.88
Canvas discussion boards and announcements encourage me to participate more frequently in class-related conversations.	109	85	38	18	3.14	0.92
Timely feedback provided through canvas (assignments, quizzes, comments) motivates me to improve my work.	119	84	37	10	3.24	0.85
The multimedia and interactive resources (videos, quizzes, embedded activities) on canvas make course activities more engaging.	106	90	39	15	3.14	0.89
Canvas tools (gradebook, progress indicators) help me monitor my learning and stay motivated to participate.	120	82	40	8	3.25	0.83
Collaborative features in Canvas (group spaces, shared documents, peer review) increase my involvement in group learning activities.	22	72	45	11	3.22	0.89
Notifications and reminders from canvas improve my attendance in synchronous or scheduled online sessions	109	90	46	5	3.21	0.81
The convenience of accessing canvas from mobile devices on off-campus increases how often I engage with course tasks.	121	86	33	10	3.27	0.83

Learning analytics/insight features in canvas enhance the personal relevance of learning tasks and my engagement.	111	96	34	93	3.23	0.81
The use of canvas in my educational technology courses has led to higher levels of active participation and engagement compared with courses without an LMS.	123	80	42	53	3.28	0.81
Weighted Average	3.22					

Key; SD = Strongly Disagree, D = Disagree, A = Agree, SA = Strongly Agree,

Decision Value: Low Influence = 0.00-2.44, High Influence =, 2.45 – 4.00.

The result in table 1 show consistently high influence value of using AI among undergraduate students. Across the ten items, the mean scores range from 3.14 to 3.28, all of which fall within the high influence category based on the decision rule (2.45-4.00). The respondents indicated that they were influenced with the usage of AI tools for a range of academic tasks. The highest rated item was the use of canvas in my educational technology courses has led to higher levels of active participation and engagement compared with courses without an LMS (Mean = 3.28), suggesting that canvas has increasingly led to higher levels of active participation and engagements in the course. Similarly, the convenience of accessing canvas from mobile devices on off-campus increases how often the respondents engage with course tasks (Mean = 3.27) and help the monitoring of learning and stay motivated to participate (Mean = 3.25), also ranked highly, showing that respondents used canvas extensively in educational technology courses. The respondents also reported that timely feedback through canvas motivates them to improve their academic tasks (Mean = 3.24) and canvas enhances personal relevance of learning tasks and engagement (Mean = 3.23), which signals that canvas influence the undergraduates in the learning tasks. The lowest mean values, canvas discussion boards and announcements encourage to participate more frequently in class related conversations (Mean = 3.14) and multimedia and interactive resources on canvas make course activities more engaging (Mean = 3.14), remain with the high range, indicating that even the least-influenced canvas contributed greatly to learning tasks. Overall, the weighted average of 3.22 confirms that the respondents using canvas LMS increases their involvement in group learning activities.

Research Question 2: How do undergraduates perceive the usability and effectiveness of canvas LMS in supporting their learning?

Table 2: Perceive the Usability and effectiveness of Canvas

Item	SA	A	D	SD	Mean	Item
The interface of canvas LMS is user-friendly and easy to navigate.	123	87	33	7	3.30	0.88
I can access course material on canvas LMS without difficult.	116	83	44	7	3.23	0.83
The layout of canvas LMS makes it easy for me to find out information.	106	91	37	16	3.15	0.89

I experience technical difficulties when using canvas LMS	109	89	38	14	3.17	0.88
Canvas LMS integrated in devices use.	111	89	33	17	3.18	0.90
Canvas LMS helps me organize my learning activities effectively.	111	96	30	13	3.22	0.85
I believe canvas LMS improves my engagement with course content.	99	96	45	10	3.14	0.84
The platform makes it easier for me to track my learning progress.	119	81	34	16	3.21	0.90
Canvas LMS enhances collaboration with lecturers and peers.	120	87	29	14	3.25	0.87
Using Canvas LMS has improved the quality of my academic performance.	110	36	36	17	3.16	0.91
Weighted Average	3.20					

Key; SD = Strongly Disagree, D = Disagree, A = Agree, SA = Strongly Agree,

Decision Value: Low Influence = 0.00-2.44, High Influence =, 2.45 – 4.00.

Table 2 shows how undergraduates perceive the usability and effectiveness of Canvas LMS in supporting their learning. All ten items recorded mean scores between 3.14 and 3.30, which fall within the high usability and effectiveness based on the decision benchmark (2.45-4.00). The strongest agreement emerged on the (2.45-4.00). The strongest agreement emerged on the belief that canvas LMS is user-friendly (Mean=3.30) and they can access course materials without difficult (Mean= 3.25). The respondents also showed high regard for canvas LMS and easier to track learning progress (Mean = 3.21). This indicates that undergraduates recognize the usability and effectiveness of canvas LMS performance (Mean 3.17) and that canvas LMS has improved the quality of academic performance (Mean = 3.16) further strengthen the picture of high and effectiveness disposition. The items with relatively lower means, canvas LMS improves engagement with course content (mean – 3.14) and that canvas LMS made easy to find out information, still fall well within the high and effective usage of canvas LMS. Taken together, the overall weighted average mean of 3.20 confirms that the overall usage and effectiveness of canvas LMS is high and effective.

Research Question 3: What challenges do undergraduates face when using Canvas LMS in educational technology courses?

Table 3: Challenges of Using Canvas LMS

Item	SA	A	D	SD	Mean	Item
I find it difficult to navigate the canvas LMS interface when accessing course materials.	119	88	33	10	3.26	0.83
The internet connectivity required effectively use canvas LMS is often a challenge for me.	106	89	41	14	3.14	0.89
Submitting assignments on Canvas LMS is sometimes stressful due to technical issues.	119	82	41	8	3.25	0.84
I face challenges in participating in Online discussions through Canvas LMS.	127	71	41	11	3.25	0.88
Notification and announcements on Canvas	112	97	29	12	3.23	0.83

LMS are not always clear or easy to follow.						
I struggle with accessing multimedia resources on Canvas LMS.	115	89	35	11	3.23	0.85
Using Canvas LMS requires digital skills that I sometimes find challenging to apply.	116	79	42	13	3.19	0.94
I experience delay or difficulties when communicating with lecturers through Canvas LMS.	121	76	40	13	3.22	0.86
The assessment tools (e.g. quizzes, texts) on canvas LMS sometimes create confusion for me.	113	89	36	12	3.21	0.86
I believe that using Canvas LMS for my Educational Technology course is more difficult compared to traditional classroom methods.	118	87	26	19	3.21	0.91
Weighted Average	3.23					

Key; *SD* = Strongly Disagree, *D* = Disagree, *A* = Agree, *SA* = Strongly Agree,

Decision Value: Significant Challenge = 0.00-2.44, Major Challenge = 2.45 – 4.00.

The results in table 3 indicate that undergraduate students show that they face major challenges when using Canvas LMS. All the items recorded mean scores between 3.14 and 3.26, which fall within the major challenges category according to the decision benchmark (2.45-4.00). The highest major challenge agreement was observed in respondents find it difficult to navigate the canvas LMS interface when accessing course materials (Mean = 3.26) and face challenges in participating in online discussion through Canvas LMS (Mean = 3.25). Respondents also reported to face major challenges when submitting assignments on canvas LMS (Mean = 3.24) and that notification and announcements on canvas LMS are always clear or easy to follow (Mean = 3.23) and the respondents struggle with accessing multimedia resources on canvas LMS (Mean = 3.23), using canvas LMS required digital skills which is a challenge (Mean = 3.19) and the delay or difficulties when communicating with lecturers through canvas LMS is also a major challenge (Mean = 3.22). The respondents reported that the assessment tools on canvas LMS creates confusion (mean 3.21 and the respondents believe that using Canvas LMS for their educational technology course is more difficult compared to traditional classroom methods (Means = 3.21). The weight average of 3.23 confirms that undergraduate students faced major challenges when using canvas LMS for educational technology courses.

H_{01} : Impact, usage, and challenges of using Canvas LMS for educational technology courses do not jointly significantly influence the use of canvas LMS among undergraduate students.

Table 4: Summary of Linear Multiple Regression showing the Joint Influence of Canvas LMS Impact, Usage and Challenges on the use of Canvas LMS by Undergraduate Students.

$R = .341$

$R^2 = .116$

Adjusted $R^2 = .105$

Standard Error of the Estimate = 3.17193

Model	Sum of Squares	df	Mean Square	F	Sig.	Remark
Regression	325.281	3	108.427	10.777	.001	Significant
Residual	2475.043	246	10.061			
Total	2800.324	249				

Dependent Variable = Use of Canvas LMS

Independent Variables = Impact, Usage and Challenges

A multiple linear regression analysis was conducted to determine whether canvas LMS impact, usage, and challenges jointly predicted undergraduate students' use of Canvas LMS in educational technology courses. The results indicated a statistically significant model, $F(3, 246) = 10.78$, $P = .001$ with the three predictors accounting for approximately 11.6% of the variance of Canvas LMS Usage ($R^2 = .116$, Adjusted $R^2 = .105$). The positive R value (.341) suggests a moderate jointly relationship between the predictors of Canvas LMS use. This result leads to the rejection of the null hypothesis, indicating that impact, usage and challenges collectively has a significant influence on undergraduate students' use of canvas LMS in educational technology courses.

4. Discussion of Finding

The findings show that canvas LMS increased undergraduate students' involvement in group learning activities. This supports the argument of Martin and Bollinger (2018), who observed that LMS discussion forums and collaborative tools enhance peer interaction and academic engagement. Similarly, Dziuban et al. (2016) caution that collaborative participation largely depends on how instructors design group activities within the platform. The present result therefore suggests that Canvas LMS can strengthen collaborative learning when pedagogically structured.

It was revealed that a high level of usage and perceived effectiveness of Canvas LMS among undergraduate students. This finding aligns with Al-Bu Saidi and Al-Shiki (2012), who reported that LMS platforms improve access to learning resources and facilitate academic communication. Similarly, Dziuban et al. (2016) found that students perceive LMS platforms as essential tools in blended learning environments. In a contrast, Tarhini et al. (2015) argues that system effectiveness may vary depending on institutional infrastructure and user readiness. The current result suggests that, when adequately supported, Canvas LMS can serve as reliable instructional platform. Despite the positive outcomes, the study identified several challenges experienced by undergraduate students when using Canvas LMS. These challenges include unstable internet connectivity, limited digital literacy, and occasional system difficulties. Tarhini et al. (2015) similarly reported that technological barriers can limit the effectiveness of LMS adoption in higher education. In contrast, Martin and Bollinger (2018) emphasized that adequate training and support can significantly reduce that institutional support and digital infrastructure remain essential for effective LMS utilization. The study further revealed that the

combined effects of LMS impact, usage level, and encountered challenges significantly determine students' utilization of Canvas LMS. The result supports Al-Busaidi and Al-Shihi (2012), who emphasized that LMS adoption is influenced by technological, organizational and individual factors. Tarhini et al. (2015) similarly argued that user behaviour toward educational technologies is shaped by multiple interacting variables. In contrast, some researchers emphasize technological design as the primary determinant of system use. The present findings therefore highlight the importance of considering both enabling factors and existing constraints in LMS implementation.

5. Conclusion.

The study concludes that the integration of Canvas Learning Management System significantly contributes to improving undergraduate learning experiences in educational Technology courses. The findings demonstrate that the platform enhances students' participation in collaboration learning activities while maintaining a high level of usage and perceived instructional effectiveness. At the same time, students encounter certain operational challenges, particularly those related to internet connectivity and technical familiarity. Describe these limitations, consistent use of Canvas LMS appears to support improved academic performance among students. Furthermore, the results indicate that the combined effects of LMS impact level of usage, and associated challenges significantly shape students' overall engagement with the platform.

6. Recommendations

Based on the findings, the following recommendations were made:

- (1) Lecturers should intentionally integrate collaborative learning strategies into Canvas LMS to further strengthen students' participation in group learning activities.
- (2) Institutions should continue to promote the use of Canvas LMS by ensuring that lecturers and students receive adequate training on its instructional features.
- (3) Universities should address the challenges faced by students when using Canvas LMS by improving digital infrastructure and internet accessibility.
- (4) Higher education institution should adopt a comprehensive strategy that addresses the technological, pedagogical and institutional factors influencing LMS utilization.

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