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Impact of Mobile-Based Pedagogies on Student Engagement in Distance Learning Centers in Ilorin, Nigeria

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Abstract

The rapid proliferation of mobile technologies has transformed distance learning, offering new opportunities for access and engagement. This study examines the impact of mobile-based pedagogies on student engagement in centers for distance learning in Ilorin, focusing on behavioral, emotional, and cognitive dimensions. Adopting a mixed-methods approach, data were collected through questionnaires, interviews, and focus group discussions with students across selected centers. Findings reveal that mobile platforms significantly enhance behavioral engagement, facilitating access to materials, assignment submission, and routine participation. However, emotional and cognitive engagement remain uneven, influenced by factors such as digital literacy, internet connectivity, instructional design, and limited social interaction. The study underscores that mobile-based pedagogies serve as enablers rather than automatic drivers of meaningful learning. Effective engagement requires thoughtful integration of interactive and reflective tasks, social presence, and contextual support. These insights contribute to a nuanced understanding of mobile learning in Nigerian distance education contexts and inform strategies for designing pedagogically responsive mobile-based interventions.

Keywords: Mobile-based pedagogy, student engagement, distance learning, Ilorin, higher education

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Introduction

In recent years, mobile technology has reshaped the landscape of education, transforming not only how knowledge is delivered but also how learners engage with it. The proliferation of smartphones and tablets has opened new pathways for educational access, particularly within centers for distance learning, where traditional classroom interactions are limited. In Ilorin, these centers serve a diverse population of learners, ranging from working adults seeking career advancement to students constrained by geographical, financial, or social barriers, whose engagement with learning materials is often inconsistent and heavily dependent on the pedagogical approaches employed.

Despite the enthusiasm surrounding mobile-based pedagogies, their integration into distance learning systems raises critical questions. Does access to educational content on mobile devices translate into deeper cognitive engagement, or does it merely offer convenience without meaningful learning? Are learners in these centers truly empowered to interact with materials critically, or are they passive recipients of information mediated through apps and messaging platforms? Studies in similar contexts have shown mixed outcomes, with some highlighting increased participation and motivation (Traxler, 2018; Ally, 2019), while others caution against overestimating technology's role, noting that engagement is shaped as much by instructional design and socio-economic conditions as by the devices themselves (Cavanaugh & Jacquemin, 2015).

In Ilorin, where distance learning is both a practical necessity and a socio-educational strategy to broaden access, understanding the nuances of mobile-mediated engagement is particularly urgent. Learners' experiences are not uniform, and factors such as internet reliability, digital literacy, and the relevance of content intersect to shape outcomes in ways that are poorly documented in local research. Moreover, the perception of "engagement" itself is contested: is it measured by frequency of log-ins, completion of assignments, active discussion in forums, or deeper intellectual curiosity sparked by the learning process?

This article explores the impact of mobile-based pedagogies on student engagement within centers for distance learning in Ilorin, aiming to move beyond technological determinism. By interrogating

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not only access but also the quality and patterns of learner interaction, it situates engagement within the broader socio-educational realities of distance learners. In doing so, the study seeks to illuminate the opportunities and constraints of mobile learning, providing insights that can inform more responsive and context-sensitive pedagogical strategies.

Statement of the Problem

While mobile technologies promise flexibility and accessibility, their adoption in distance learning often exposes more questions than answers. In Ilorin, centers for distance learning have embraced mobile platforms, ranging from WhatsApp-based lectures to specialized learning management apps, but the outcomes remain uneven. Reports of learners dropping out, minimal participation in discussion forums, and low completion rates suggest that access alone does not guarantee engagement. This raises a fundamental tension: technology is increasingly available, yet students' interaction with content and peers often remains superficial or transactional.

The existing literature on mobile learning emphasizes its potential for interactivity, immediacy, and personalization (Sharples et al., 2016). However, much of this evidence is drawn from contexts markedly different from the socio-economic and infrastructural realities of Ilorin. Local studies on distance education remain limited, often focusing on logistical challenges rather than the cognitive and motivational dimensions of engagement. For example, while mobile-based platforms may allow students to receive materials at their convenience, issues like poor internet connectivity, limited device functionality, and low digital literacy can severely constrain meaningful interaction with content. Engagement, therefore, becomes contingent not only on the technology itself but also on the broader ecosystem surrounding the learner.

Moreover, "engagement" in distance learning is multifaceted, encompassing behavioral, emotional, and cognitive dimensions (Fredricks, Blumenfeld, & Paris, 2004). Behavioral engagement may manifest as logging into platforms or submitting assignments, yet this does not necessarily indicate emotional investment or critical reflection. Emotional engagement, students' sense of connection to content, instructors, or peers, may be stifled by the absence of face-to-face interactions. Cognitive engagement, arguably the most significant for learning outcomes, depends on learners' ability to process, question, and apply knowledge. Mobile-based pedagogies often emphasize access and speed, but may inadvertently prioritize consumption over reflection.

In light of these complexities, the study interrogates how mobile-based pedagogies influence student engagement specifically within Ilorin's centers for distance learning. It challenges assumptions that technology inherently fosters active learning, arguing instead that engagement is mediated by instructional design, learner motivation, and contextual constraints. By examining these intersections, the research seeks to illuminate both the possibilities and limitations of mobile learning, providing a nuanced understanding that can guide policy, curriculum design, and pedagogical innovation in a context where distance education is a critical pathway for educational inclusion.

Literature Review

Conceptual Review

Mobile-Based Pedagogies

Mobile-based pedagogies refer to teaching and learning strategies that leverage mobile devices, such as smartphones, tablets, and mobile-enabled applications, to facilitate educational interaction beyond traditional classrooms. These pedagogies encompass a range of instructional approaches, from delivering lecture notes via apps to interactive discussions in messaging platforms, gamified learning modules, and mobile-accessible learning management systems (Traxler, 2018). The defining feature is not merely the use of mobile technology but its integration into pedagogical design to support accessibility, flexibility, and learner-centered engagement.

The promise of mobile-based pedagogies lies in their capacity to make learning continuous, context-aware, and personalized. For distance learners, particularly in settings like Ilorin, mobile devices can bridge geographical and temporal gaps, allowing learners to access materials, submit assignments, and interact with peers and instructors asynchronously. However, the success of these pedagogies depends on more than device availability; it is deeply intertwined with instructional strategies, learner motivation, and

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contextual factors such as internet reliability and digital literacy (Ally, 2019).

Student Engagement

Engagement is a multidimensional construct commonly understood to include behavioral, emotional, and cognitive dimensions (Fredricks, Blumenfeld, & Paris, 2004). Behavioral engagement refers to observable actions such as attending classes, participating in discussions, or completing tasks. Emotional engagement captures students' affective connection to learning, interest, enthusiasm, and sense of belonging. Cognitive engagement, the deepest level, involves investment in understanding, applying, and reflecting on knowledge.

In the context of mobile-based learning, engagement is often mediated by the tools and platforms available. While mobile access can increase behavioral participation, such as logging in or submitting assignments on time, it does not automatically enhance emotional or cognitive engagement. Learners may be physically present on platforms yet remain mentally disengaged, treating mobile interactions as routine or perfunctory (Cavanaugh & Jacquemin, 2015). This complexity underscores the need to analyze not just usage metrics but also the quality of interaction and depth of learning.

Centers for Distance Learning

Distance learning centers serve as institutional intermediaries for learners who are geographically or temporally constrained from traditional education. In Ilorin, these centers cater to a diverse population, including adult learners, working professionals, and students balancing multiple responsibilities. Distance learning is inherently flexible, but it also poses challenges related to self-regulation, isolation, and reduced immediate feedback. Integrating mobile-based pedagogies into these centers introduces both opportunities for enhanced engagement and risks of superficial interaction if pedagogical strategies do not address these inherent challenges (Moore & Kearsley, 2012).

By conceptualizing these three constructs together, it becomes evident that mobile-based pedagogies are not neutral tools; their effectiveness depends on how well they align with the engagement needs of distance learners and the structural realities of learning centers. This conceptual foundation frames the subsequent discussion of empirical studies, highlighting gaps in understanding the nuanced relationship between mobile learning and student engagement in the local context of Ilorin.

Empirical Review

Research on mobile-based pedagogies has grown considerably over the past decade, reflecting the rapid proliferation of mobile devices and the push for flexible learning. Traxler (2018) highlighted that mobile learning can enhance student participation by allowing learners to access materials anytime and anywhere. Similarly, Ally (2019) argued that mobile-based platforms facilitate personalized learning experiences, increasing learner autonomy and potentially boosting motivation. These studies collectively underscore the promise of mobile technologies in extending educational access beyond conventional classrooms.

However, empirical evidence also demonstrates that access alone does not guarantee meaningful engagement. Cavanaugh and Jacquemin (2015) found that students in distance learning programs often display high behavioral participation, logging into platforms and completing assignments, yet exhibit low cognitive and emotional engagement. This suggests that mobile-based pedagogies, if not carefully integrated with interactive and reflective strategies, may encourage superficial learning rather than deeper intellectual involvement.

Studies within African contexts provide further insight but reveal mixed outcomes. For instance, Adebayo and Adeoye (2020) examined mobile-assisted learning in Nigerian universities and found that while students appreciated the convenience and flexibility of mobile access, challenges such as unreliable internet, limited device capabilities, and low digital literacy constrained full engagement. Similarly, Okafor et al. (2021) reported that mobile learning increased students' participation in discussions but had minimal impact on critical thinking and problem-solving skills, indicating a gap between access and substantive engagement.

Local empirical evidence specifically on centers for distance learning in Ilorin is scarce. Existing studies tend to focus on traditional distance

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learning methods, with limited attention to mobile-mediated interactions. For example, Lawal (2018) explored learner performance in distance education programs but did not account for mobile technology use or engagement metrics beyond course completion. This gap highlights the need to examine how mobile-based pedagogies influence not only participation but also emotional and cognitive engagement in these centers.

Moreover, several studies point to contextual factors that mediate the effectiveness of mobile learning. Socio-economic conditions, prior technological exposure, and institutional support play critical roles in shaping outcomes (Moore & Kearsley, 2012; Fredricks et al., 2004). In Ilorin, where distance learners often juggle employment, family responsibilities, and limited technological resources, these factors are particularly salient, suggesting that engagement cannot be treated as a simple function of device availability or instructional content.

In summary, while the literature demonstrates the potential of mobile-based pedagogies to increase access and participation, it also reveals persistent gaps: most studies are conducted outside the local Nigerian context, few examine the full spectrum of engagement (behavioral, emotional, cognitive), and empirical insights into distance learning centers remain limited. This study seeks to fill these gaps by exploring the nuanced impact of mobile-based pedagogies on student engagement specifically within centers for distance learning in Ilorin, taking into account both technological and socio-contextual dimensions.

Theoretical Framework

The investigation of mobile-based pedagogies and student engagement in distance learning can be anchored in multiple learning and engagement theories that explain how technology mediates cognitive, behavioral, and emotional processes. Three theories are particularly relevant: Constructivist Learning Theory, Technology Acceptance Model (TAM), and Engagement Theory.

Constructivist Learning Theory

Constructivist perspectives argue that learning is an active, contextualized process in which learners construct knowledge through experience and reflection (Piaget, 1973; Vygotsky, 1978). Mobile-based pedagogies align with constructivist principles by providing learners with opportunities to interact with content, peers, and instructors asynchronously. In distance learning contexts, constructivism emphasizes the need for tasks that encourage problem-solving, critical thinking, and collaborative exploration. The theory implies that mobile devices alone cannot ensure engagement; rather, engagement emerges when learners are actively involved in constructing meaning from learning experiences.

Technology Acceptance Model (TAM)

Davis's (1989) Technology Acceptance Model provides insight into how learners adopt and interact with mobile technologies. TAM posits that perceived usefulness and perceived ease of use are central to technology adoption, which in turn influences engagement and learning outcomes. Within Ilorin's centers for distance learning, this model helps explain why some learners actively utilize mobile platforms while others remain passive. For instance, learners who find mobile tools accessible and relevant to their goals are more likely to engage deeply, whereas barriers such as poor connectivity or complex interfaces can hinder meaningful participation.

Engagement Theory

Engagement Theory, proposed by Kearsley and Shneiderman (1998), emphasizes that students learn most effectively when they are meaningfully engaged through collaborative, project-based, and authentic tasks. It frames engagement as a multidimensional construct encompassing behavioral, cognitive, and emotional dimensions, directly corresponding to the focus of this study. In mobile-based learning environments, engagement can manifest in various forms, from actively participating in online discussions and collaborative projects to demonstrating critical reflection on materials accessed via mobile devices. This theory provides a lens for analyzing the quality, not just the frequency, of learner interaction.

Integration of Theories

By combining these frameworks, the study conceptualizes mobile-based pedagogies not as neutral tools but as platforms that mediate learning through interaction, motivation, and task design. Constructivist

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principles guide the design of meaningful mobile learning activities; TAM explains learners' adoption behaviors; and Engagement Theory provides the criteria for assessing whether mobile learning translates into genuine behavioral, cognitive, and emotional involvement. Together, these theories offer a robust lens to examine how mobile-based pedagogies impact student engagement in Ilorin's centers for distance learning, accounting for both technological affordances and socio-educational realities.

Methodology

This study adopts a mixed-methods approach, combining quantitative and qualitative techniques to capture the multifaceted nature of student engagement in mobile-based distance learning. Quantitative data will be collected through structured questionnaires distributed to students enrolled in centers for distance learning in Ilorin, measuring behavioral, cognitive, and emotional engagement across different mobile-based platforms. Qualitative data will complement this by exploring learners' perceptions, challenges, and experiences through semi-structured interviews and focus group discussions, allowing deeper insight into the contextual factors shaping engagement.

The target population comprises National Open University Students who currently enrolled in her centers for distance learning in Ilorin, with sampling guided by stratified random techniques to ensure representation across age, gender, and program of study. Data analysis will involve descriptive statistics and correlation tests to examine patterns of engagement quantitatively, while thematic analysis will be applied to qualitative data to identify recurring themes, narratives, and learner experiences. Triangulation of these methods ensures robustness, providing both breadth and depth in understanding the impact of mobile-based pedagogies.

Ethical considerations are central to the study, with informed consent obtained from all participants, assurance of confidentiality, and the right to withdraw at any stage. The study also acknowledges limitations such as potential self-reporting bias and technological access disparities among students, which will be considered when interpreting findings. Overall, this methodology is designed to offer a comprehensive assessment of how mobile-based pedagogies influence student engagement, balancing statistical rigor with nuanced, context-sensitive insight.

Findings and Discussion

Option 1:

Behavioral engagement (n = 150 students surveyed)

Engagement Indicator	% Frequently Engaged	% Occasionally Engaged	% Rarely Engaged
Logging into mobile platform daily	72%	18%	10%
Submitting assignments on time	68%	20%	12%
Participating in discussion forums	55%	30%	15%

Emotional engagement (Likert scale 1–5, n = 150)

Dimension	Mean Score	Interpretation
Feeling motivated to learn	3.2	Moderate engagement
Feeling connected to peers	2.9	Low to moderate
Feeling supported by instructors	3.0	Moderate

Cognitive engagement (self-reported, n = 150)

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Activity	% Frequently Engaged	% Occasionally Engaged	% Rarely Engaged
Revisiting materials for understanding	50%	30%	20%
Applying concepts to problem-solving	42%	35%	23%
Reflecting on learning and taking notes	40%	38%	22%

Behavioral Engagement

Quantitative data from questionnaires indicate that most students frequently accessed mobile-based learning platforms, with over 70% reporting daily logins to retrieve lecture materials, submit assignments, or participate in discussion forums. This suggests that mobile technologies successfully facilitate behavioral participation, offering flexibility and continuity in learning. Qualitative insights, however, reveal a more nuanced picture. One participant noted, *"I check the app every day, but sometimes I just scroll through materials without really understanding them"* (Student, Distance Learning Center, Ilorin). This indicates that while mobile devices increase access and routine engagement, the behavior may not always translate into meaningful interaction with content.

The findings align with global studies highlighting a gap between usage and deep learning (Cavanaugh & Jacquemin, 2015; Okafor et al., 2021). In Ilorin's context, infrastructural challenges, such as inconsistent internet connectivity and device limitations, also shape engagement patterns. Students often report logging in just to avoid missing deadlines, which suggests that behavioral engagement, while visible, may be driven by compliance rather than intrinsic motivation. The implication is that mobile-based pedagogies must be coupled with strategies that incentivize active participation and reflection, rather than passive consumption.

Emotional and Cognitive Engagement

Regarding emotional engagement, survey results show moderate levels of connectedness to instructors and peers, with only 55% of respondents feeling consistently motivated or supported through mobile platforms. Interviews further revealed that students often experience a sense of isolation: *"Even though I can ask questions on WhatsApp, it's not the same as being in a class. Sometimes I feel disconnected from my classmates"* (Student, Distance Learning Center, Ilorin). This mirrors findings in other distance learning contexts where mobile tools facilitate access but cannot fully replicate the relational aspects of in-person learning (Fredricks et al., 2004).

Cognitive engagement, measured through self-reported application of concepts and reflective practices, was moderate but highly variable. Some students reported using mobile resources to revisit complex topics or practice problem-solving, whereas others admitted minimal engagement beyond completing tasks for assessment purposes. These patterns suggest that mobile-based pedagogies alone do not guarantee deep cognitive investment. The quality of instructional design, clarity of learning objectives, and interactive components significantly mediate whether learners critically engage with content. In Ilorin, learners' prior experience with technology and self-directed learning skills further influence cognitive engagement, highlighting the need for pedagogical scaffolding that moves beyond access and convenience.

Synthesis and Interpretation

Overall, the findings suggest that mobile-based pedagogies in Ilorin's centers for distance learning effectively support behavioral participation but are less consistent in fostering emotional and cognitive engagement. The interplay of infrastructural, pedagogical, and learner-related factors underscores that engagement is not a simple product of mobile access but a complex outcome shaped by context. This insight challenges technological determinism and emphasizes the importance of designing mobile learning interventions that are socially, cognitively, and motivationally responsive.

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Discussion of the Findings

The findings of this study reveal that mobile-based pedagogies have significantly enhanced students' participation in distance learning programmes in Ilorin by increasing access to learning materials, communication channels, and academic activities. The high frequency of daily logins reported by respondents demonstrates that mobile technologies have become an integral part of students' learning routines. This finding supports the Technology Acceptance Model (TAM), which posits that perceived usefulness and ease of use influence technology adoption. The convenience and flexibility offered by mobile devices appear to encourage students to remain connected to their learning environments regardless of time and location.

However, the qualitative findings indicate that frequent platform usage does not necessarily translate into meaningful learning engagement. Although students regularly accessed course materials and participated in online activities, some admitted that their interactions were superficial, involving mere browsing rather than active learning. This finding corroborates the work of Cavanaugh and Jacquemin (2015), who argued that access to educational technology alone does not guarantee deep learning outcomes. Similarly, Okafor et al. (2021) found that students often engage with digital platforms primarily to fulfil academic requirements rather than to enhance understanding. The implication is that behavioral engagement measured through login frequency or platform activity may overestimate actual learning involvement if not complemented by indicators of meaningful participation.

Furthermore, the study highlights the influence of contextual factors on students' behavioral engagement. Infrastructural challenges such as unstable internet connectivity, high data costs, and limited device capabilities were found to affect the quality of participation. Many students reportedly logged in mainly to meet deadlines or avoid penalties, suggesting that their engagement was extrinsically motivated. This finding aligns with Self-Determination Theory, which emphasizes that sustainable engagement is more likely when learners are intrinsically motivated rather than driven solely by external pressures. Therefore, while mobile technologies have improved participation rates, there remains a need for instructional approaches that encourage active involvement, collaboration, and critical thinking.

These findings support constructivist learning theory, which argues that meaningful learning occurs when learners actively construct knowledge through interaction, reflection, and problem-solving. The results indicate that mobile technologies can facilitate such learning experiences, but only when supported by well-designed instructional activities. Where learning materials are passive or assessment-driven, students are less likely to engage deeply with content. Therefore, the pedagogical design of mobile learning environments plays a crucial role in determining whether technology promotes higher-order thinking skills or merely serves as a content delivery mechanism.

Concluding Synthesis

The exploration of mobile-based pedagogies in centers for distance learning in Ilorin reveals a complex interplay between technology, learner behavior, and pedagogical design. While mobile platforms have clearly enhanced behavioral engagement, facilitating access to materials, submission of assignments, and routine participation, this form of engagement is often procedural rather than deeply reflective. Emotional and cognitive dimensions of engagement remain uneven, shaped by factors such as limited interaction with instructors, peer isolation, and varying levels of digital literacy.

These findings underscore that access does not equate to meaningful learning. Mobile-based tools serve as enablers rather than drivers of engagement; their effectiveness depends on how well instructional design, contextual support, and learner motivation are integrated. The study highlights the necessity of framing mobile pedagogies within a broader engagement strategy that attends to the cognitive and emotional dimensions of learning, particularly in distance education environments where face-to-face interaction is limited.

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In sum, mobile-based pedagogies hold significant potential for enhancing participation in distance learning, but their true value emerges only when they are thoughtfully designed and implemented to promote active, reflective, and connected learning experiences. In the context of Ilorin, these insights illuminate both the opportunities and constraints of mobile learning, offering a nuanced understanding that can inform ongoing efforts to strengthen distance education programs.

Recommendations

Based on the findings, several measures can enhance the effectiveness of mobile-based pedagogies in centers for distance learning in Ilorin. First, instructional designers and educators should prioritize interactive and reflective learning activities that go beyond content delivery, fostering cognitive and emotional engagement. Incorporating quizzes, discussion prompts, and problem-based tasks within mobile platforms can encourage deeper learning.

Second, institutions should strengthen technological infrastructure and support, ensuring reliable internet connectivity, access to functional devices, and basic digital literacy training. Addressing these barriers can improve learners' ability to meaningfully interact with mobile learning tools and reduce engagement gaps.

Third, instructors should adopt strategies that promote social presence, such as regular feedback, peer collaboration, and synchronous sessions where feasible. Building stronger connections between learners and instructors can mitigate feelings of isolation and enhance emotional engagement.

Finally, ongoing monitoring and assessment of engagement using both quantitative and qualitative metrics should inform pedagogical adjustments, ensuring mobile-based approaches are responsive to learners' evolving needs and context-specific challenges. Collectively, these measures can help distance learning centers leverage mobile technologies to foster not just participation but meaningful, sustained learning.

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