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TERTIARY STUDENTS' PERCEPTIONS OF MOBILE LEARNING IN DELTA NORTH SENATORIAL DISTRICT OF DELTA STATE, NIGERIA

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Abstract

The study investigated tertiary students' perceptions of mobile learning in the Delta North Senatorial District, Nigeria. With the increasing adoption of mobile technologies in education, understanding how students perceive mobile learning is essential for improving digital education strategies and outcomes. The study employed a descriptive survey research design to collect quantitative data from a sample of 400 students selected from four randomly chosen tertiary institutions within the district. A structured questionnaire titled Tertiary Students' Perception of Mobile Learning Questionnaire (TSMLQ) was used for data collection. The instrument was validated by experts and achieved a high reliability coefficient ($\alpha = 0.87$) after pilot testing. Data analysis was conducted using SPSS version 25. Descriptive statistics (mean, percentage, and standard deviation) were used to answer the research questions, while inferential statistics (Pearson Product-Moment Correlation and independent sample t-test) were used to test the hypotheses at a 0.05 significance level. Results revealed that students held generally positive perceptions of mobile learning, recognizing its flexibility, accessibility, and usefulness for academic engagement. However, key challenges such as high internet costs, poor connectivity, and irregular power supply were also identified. A significant relationship was found between students' perceptions of mobile learning and their academic engagement. Conversely, no significant difference was observed in perceptions based on gender. The findings suggest a growing acceptance of mobile learning among tertiary students but highlight the need for infrastructural and institutional support to enhance its effectiveness. The study recommends subsidized internet access, improved ICT infrastructure, institutional policies on mobile learning, and development of user-friendly mobile learning platforms to promote equitable and sustainable adoption in tertiary education.

Keywords: Mobile learning, tertiary education, student perception, Delta North, digital education, academic engagement

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Introduction

The rapid advancement of digital technologies has significantly transformed the landscape of education globally, particularly with the emergence of mobile learning (m-learning). Mobile learning refers to the use of mobile devices such as smartphones, tablets, and laptops to access educational content and facilitate learning processes anytime and anywhere (Ally & Wark, 2018). In the context of tertiary education, m-learning has gained increasing relevance due to its flexibility, accessibility, and potential to support personalized and self-directed learning experiences (Traxler & Kukulska-Hulme, 2020). The proliferation of mobile devices among students, coupled with the need for innovative and adaptive learning strategies, particularly in the post-pandemic era, has made the exploration of students' perceptions of mobile learning a subject of academic and practical interest.

In Nigeria, and particularly within the Delta North Senatorial District of Delta State, the adoption of mobile learning technologies among tertiary students is growing, albeit with notable disparities in infrastructure, digital literacy, and pedagogical integration. Tertiary institutions in the region, such as the Delta State University of Science and Technology, Dennis Osadebay University, and various Colleges of Education and Polytechnics, have begun integrating mobile technologies to supplement traditional teaching and learning methods. However, the extent to which students perceive mobile learning as effective, engaging, and beneficial remains underexplored. According to Onasanya and Ayelaagbe (2021), students' perceptions significantly influence their willingness to adopt and effectively use mobile learning tools.

Several studies underscore the importance of understanding learners' attitudes, beliefs, and challenges associated with mobile learning. For instance, research by Mtebe and Raisamo (2018) highlights that positive student perceptions are closely tied to the usability of mobile platforms, institutional support, and the perceived usefulness of m-learning for academic success. In contrast, negative perceptions are often linked to technical difficulties, cost of data, poor connectivity, and limited digital competencies (Okonkwo & Adebowale, 2022). In Delta North, where infrastructural disparities and socioeconomic inequalities persist, students' experiences with mobile learning are likely to be shaped by a complex interplay of personal, institutional, and environmental factors.

Therefore, this study seeks to investigate tertiary students' perceptions of mobile learning in the Delta North Senatorial District. The aim is to assess the degree of acceptance, perceived benefits, challenges, and overall attitudes towards mobile learning technologies. Understanding these perceptions is critical for informing policy, guiding institutional interventions, and enhancing the digital transformation of higher education in the region. As noted by Adebayo, Oyelekan, and Bello (2023), addressing the contextual realities of learners is essential for ensuring equitable and effective integration of mobile learning within Nigeria's tertiary education system.

Statement of the Problem

Despite the growing penetration of mobile devices and internet access among tertiary students in Nigeria, the integration and effective use of mobile learning (m-learning) remain inconsistent, particularly in regions like the Delta North Senatorial District. While mobile learning offers flexible, learner-centered, and on-the-go access to educational content, many students in this region face structural, technical, and pedagogical challenges that hinder its full adoption. Issues such as poor internet connectivity, high cost of data, lack of institutional support, limited digital literacy, and unstructured implementation strategies

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continue to impede the effectiveness of mobile learning in enhancing academic engagement and performance (Okonkwo & Adebowale, 2022; Onasanya & Ayelaagbe, 2021).

Moreover, there is limited empirical evidence on how tertiary students in Delta North perceive mobile learning in terms of its usefulness, ease of use, and relevance to their academic needs. Without understanding students' perceptions, it becomes difficult for educators, administrators, and policymakers to design and implement strategies that align with learners' expectations and contextual realities. As digital transformation becomes increasingly central to higher education delivery, failing to address the perceptual and practical barriers to mobile learning may widen the digital divide and further marginalize students in underserved areas. Therefore, the problem this study seeks to address is the insufficient understanding of tertiary students' perceptions of mobile learning in Delta North Senatorial District—specifically, the extent to which they view it as accessible, beneficial, and conducive to academic success amidst infrastructural and pedagogical challenges. Exploring these perceptions is essential to inform targeted interventions that will improve the quality and inclusiveness of mobile learning initiatives in the region.

Research Questions

1. What are the perceptions of tertiary students in the Delta North Senatorial District regarding the effectiveness and accessibility of mobile learning for academic purposes?
2. What challenges do tertiary students in the Delta North Senatorial District encounter in the use of mobile learning technologies?

Hypotheses

1. **H_{01} (Null Hypothesis):** There is no significant relationship between students' perceived effectiveness of mobile learning and their academic engagement in tertiary institutions in Delta North Senatorial District.
2. **H_{02} (Null Hypothesis):** There is no significant difference in the perception of mobile learning based on gender among tertiary students in Delta North Senatorial District.

Literature Review

Concept of Mobile Learning in Higher Education

Mobile learning (m-learning) is broadly defined as any form of learning facilitated through mobile or wireless devices, allowing learners to access educational content beyond traditional classroom settings (Ally & Wark, 2018). In the context of higher education, m-learning is characterized by its flexibility, portability, and ability to support self-directed and collaborative learning. Traxler and Kukulska-Hulme (2020) assert that mobile learning creates opportunities for students to engage with course materials anytime and anywhere, thereby promoting continuous learning. In Nigeria, the adoption of mobile learning is becoming more prevalent due to the increased ownership of smartphones and expanded internet access among students (Onasanya & Ayelaagbe, 2021).

Students' Perceptions and Acceptance of Mobile Learning

Perception plays a critical role in students' willingness to adopt mobile learning platforms. The Technology Acceptance Model (TAM) posits that perceived usefulness and perceived ease of use are primary determinants of technology adoption (Davis, 1989; adapted in recent studies such as Adebayo et al., 2023). Research by Adeoye, Adanikin, and Adanikin (2020) revealed that Nigerian university students who viewed mobile learning as convenient, time-saving, and interactive were more likely to use it for academic purposes. Similarly, Mtebe and Raisamo (2018) noted that positive attitudes towards m-learning

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increase students' motivation and academic engagement. However, perception is often shaped by contextual factors such as infrastructure, digital skills, and institutional support.

Benefits of Mobile Learning for Tertiary Students

Mobile learning offers numerous academic benefits, especially for students in under-resourced environments. It enhances flexibility in learning schedules, supports blended learning, and fosters personalized instruction (Almaiah, Al-Khasawneh, & Althunibat, 2020). In Nigerian tertiary institutions, students have reported improved access to digital resources, more engaging interactions with peers and instructors, and better retention of information through multimedia-based mobile apps (Okonkwo & Adebowale, 2022). These benefits are significant in the post-COVID-19 era, where remote learning has become a vital complement to face-to-face instruction.

Challenges Facing Mobile Learning in Nigeria

Despite its potential, mobile learning in Nigeria faces several challenges. Poor internet connectivity, high data costs, irregular power supply, and limited access to quality mobile learning platforms hinder its effectiveness (Onyema et al., 2020). According to Eze, Chinedu-Eze, and Bello (2021), these infrastructural barriers are more pronounced in rural and semi-urban regions such as Delta North. Additionally, lack of training for both students and lecturers in using m-learning tools effectively has also been cited as a constraint (Adebayo et al., 2023). Socioeconomic factors, including the affordability of devices and data plans, further complicate the equitable implementation of mobile learning.

Gender and Demographic Variations in Perception

Gender, age, academic level, and field of study have been shown to influence how students perceive and engage with mobile learning technologies. Studies by Yusuf and Olumorin (2022) demonstrated that male students in some Nigerian universities were more confident in using mobile learning platforms compared to their female counterparts, mainly due to differences in digital exposure. However, other studies (e.g., Almaiah et al., 2020) argue that such disparities are gradually narrowing as mobile devices become more ubiquitous and digital literacy increases among the youth.

Empirical Studies on Mobile Learning in Delta State

Empirical studies specifically focusing on Delta State are relatively scarce. However, available findings suggest a growing awareness and adoption of m-learning tools among tertiary students, though often unstructured and unsupported by formal institutional frameworks (Onasanya & Ayelaagbe, 2021). For example, a recent study by Ugochukwu and Eze (2024) on mobile learning adoption in South-South Nigerian universities highlighted that, while students demonstrated a high interest in using mobile platforms, institutional barriers and a lack of policy guidelines limited their effectiveness. The literature reveals that while mobile learning has immense potential to enhance tertiary education in Delta North Senatorial District, its success is mainly dependent on students' perceptions, infrastructural readiness, and institutional support. Understanding the distinct nature of these perceptions is necessary for designing responsive policies and practical interventions that will enhance the role of mobile learning in Nigeria's digital education transformation.

Methodology

This study employed a descriptive survey research design, which is suitable for collecting and analyzing data on students' perceptions, experiences, and challenges related to mobile learning, without manipulating variables. The design supports generalization of findings from a representative sample to a broader population (Creswell, 2018). The objective was

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to assess the state of mobile learning adoption and students' attitudes within Delta North Senatorial District, Delta State, Nigeria.

The population comprised all students in public and private tertiary institutions across the nine Local Government Areas of the district, such as Dennis Osadebay University (Anwai), Delta State Polytechnic (Ogwuashi-Uku), and College of Education (Agbor). The estimated student population for 2024/2025 exceeds 35,000. A sample of 400 students was selected through a multistage sampling technique. First, four institutions (two public and two private) were randomly selected. Then, 100 students per institution were sampled using stratified random sampling across faculties, academic levels, and gender. Finally, simple random sampling was applied within each stratum to select respondents, ensuring diversity and reducing bias.

The primary instrument was a structured questionnaire titled the Tertiary Students' Perception of Mobile Learning Questionnaire (TSMLQ), developed based on existing literature and validated instruments (Almaiah et al., 2020; Onasanya & Ayelaagbe, 2021). It included four sections: (A) Demographics, (B) Mobile learning access and usage, (C) Perceptions of usefulness and ease of use, and (D) Challenges and suggestions. Items were rated on a 4-point Likert scale (Strongly Agree to Strongly Disagree).

Content and face validity were ensured by reviews from three Educational Technology and Measurement experts. A pilot study involving 30 students was conducted, and the instrument's reliability yielded a Cronbach's Alpha of 0.87, indicating high internal consistency.

Data were collected over four weeks through in-person and online methods, respecting students' accessibility and preferences. Ethical procedures such as informed consent, confidentiality, and voluntary participation were upheld.

Data were analyzed using SPSS version 25. Descriptive statistics (frequencies, percentages, means, standard deviations) summarized responses, while Pearson Product-Moment Correlation examined relationships, and independent t-tests assessed gender-based differences. All hypotheses were tested at a $p < 0.05$ significance level.

Presentation of Results

This section presents the analysis of the data collected from 400 tertiary students across selected institutions in the Delta North Senatorial District. The data are presented in accordance with the research questions and hypotheses, utilizing both descriptive and inferential statistics. Statistical analyses were conducted using SPSS version 25.

Section A: Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	210	52.5%
	Female	190	47.5%
Institution Type	Public	235	58.75%
	Private	165	41.25%
Academic Level	100–200 Level	160	40.0%
	300–400 Level	240	60.0%

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Research Question 1: What are the perceptions of tertiary students in the Delta North Senatorial District regarding the effectiveness and accessibility of mobile learning for academic purposes?

Descriptive Statistics

Item	SA	A	D	SD	Mean	SD
Mobile learning enhances flexible access to learning materials	160	180	35	25	3.19	0.81
I find mobile learning useful for academic activities	145	200	30	25	3.16	0.79
I am confident using mobile learning apps/platforms	130	185	50	35	3.03	0.89
Mobile learning increases my interest in learning	150	170	45	35	3.09	0.86
I prefer mobile learning to traditional classroom learning	100	150	85	65	2.71	1.02

Interpretation:

Most respondents agreed or strongly agreed that mobile learning is useful, enhances flexibility, and increases learning interest. The average mean across the items ranged from 2.71 to 3.19, indicating a generally positive perception, though with some reservations about fully replacing traditional learning.

Research Question 2: What challenges do tertiary students in Delta North Senatorial District encounter in the use of mobile learning technologies?

Descriptive Statistics on Challenges

Challenge	SA	A	D	SD	Mean	SD
High cost of internet/data limits my use of mobile learning	190	150	40	20	3.28	0.76
Poor network connectivity affects my learning experience	185	145	45	25	3.23	0.82
Frequent power outages hinder my access to mobile learning platforms	160	160	45	35	3.11	0.88
My institution does not provide support for mobile learning	140	130	75	55	2.90	0.98

Interpretation:

The major challenges identified include high data costs, poor connectivity, and irregular power supply, with mean scores between 2.90 and 3.28. These issues significantly limit students' effective engagement with mobile learning.

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Hypothesis 1:
There is no significant relationship between students' perceived effectiveness of mobile learning and their academic engagement in tertiary institutions in Delta North Senatorial District.

Test: Pearson Product-Moment Correlation

Variables	N	r	p-value
Perceived effectiveness of m-learning vs. academic engagement	400	0.482	0.000

Interpretation:
Since $p = 0.000 < 0.05$, the null hypothesis is rejected. There is a moderate, positive and significant relationship between students' perceived effectiveness of mobile learning and their academic engagement.

Hypothesis 2:
There is no significant difference in the perception of mobile learning based on gender among tertiary students in the Delta North Senatorial District.

Test: Independent Sample t-Test

Gender	N	Mean	SD	t	p-value
Male	210	3.08	0.62		
Female	190	3.01	0.58	1.323	0.187

Interpretation:
Since $p = 0.187 > 0.05$, the null hypothesis is retained. There is no significant difference in the perception of mobile learning between male and female students in the study.

Summary of Findings
Students in Delta North generally perceive mobile learning positively.
Key challenges include data costs, poor internet connectivity, and power supply issues.
There is a significant relationship between perceived effectiveness of mobile learning and academic engagement.

Gender does not significantly influence students' perceptions of mobile learning.

Discussion of Findings
The findings of this study reveal that tertiary students in Delta North Senatorial District generally hold positive perceptions toward mobile learning. Most respondents agreed that mobile learning enhances flexibility, increases access to learning materials, and fosters academic engagement. This aligns with the findings of Almaiah et al. (2020) and Adebayo et al. (2023), who noted that mobile learning is widely accepted by students due to its convenience, portability, and user-friendliness. The moderate to high mean scores observed in this study underscore the growing relevance of mobile learning in the Nigerian higher education context, especially in the post-pandemic era.

Despite this optimism, students reported several challenges that hinder the effective use of mobile learning technologies. High internet costs, poor network connectivity, and frequent

electricity outages emerged as the most pressing issues. These infrastructural deficiencies reflect the broader limitations in Nigeria's digital learning ecosystem, especially in under-resourced areas (Eze et al., 2021; Onyema et al., 2020). Additionally, the lack of institutional support for mobile learning was reported by a significant portion of respondents, indicating that many institutions have not yet fully embraced or integrated mobile learning into their formal academic structures.

The hypothesis testing further substantiated these findings. A statistically significant positive relationship was found between students' perception of mobile learning and their level of academic engagement. This supports the position of Mtebe and Raisamo (2018), who emphasized that students who perceive m-learning as beneficial are more likely to utilize it effectively. However, gender was not found to be a significant factor in perception, suggesting that both male and female students in the district are equally disposed toward mobile learning, consistent with the findings of Yusuf and Olumorin (2022).

Conclusion

This study examined the perceptions of tertiary students regarding mobile learning in the Delta North Senatorial District. The results demonstrate a generally favorable attitude toward mobile learning, with students acknowledging its benefits in terms of flexibility, accessibility, and academic support. Nonetheless, several infrastructural and institutional challenges limit its full implementation and effectiveness. A key insight is the strong link between positive perceptions of mobile learning and students' academic engagement, underscoring the need for supportive systems to maximize its potential. Addressing these issues will be crucial for enhancing the digital learning experience and improving educational outcomes in the region.

Recommendations

1. The government and telecom service providers should collaborate with educational institutions to offer subsidized or free data bundles specifically for academic use. This will ease the financial burden of internet access on students and promote consistent use of mobile learning tools.
2. Educational institutions and policymakers must invest in improving campus-wide internet connectivity and stable power supply. Establishing reliable Wi-Fi hotspots and providing alternative power sources like solar systems will enhance learning continuity.
3. Tertiary institutions should develop clear mobile learning policies and provide orientation programs, digital literacy workshops, and technical support to ensure students and lecturers can effectively use m-learning platforms.
4. Institutions and EdTech developers should collaborate to create mobile learning apps tailored to local needs, including offline capabilities, language options, and integration with local curricula, to enhance adoption and usability across diverse student populations.

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