BRIDGING THE TECHNOLOGY ACCESS GAP TO ENHANCE DIGITAL LITERACY AMONG DISTANCE LEARNING STUDENTS IN ENUGU STATE, NIGERIA

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Abstract
The study focused on bridging the technology access gap to enhance digital literacy among distance learning students in Enugu State, Nigeria. The study was guided by two specific purposes, and two research questions. The study employed a descriptive survey design, with a total population of 5,181 respondents, comprising 3563 learners and 64 facilitators in National Open University of Nigeria, 646 learners and 43 facilitators in Center for Distance and e-Learning University of Nigeria, and 843 learners and 22 facilitators in National Teachers Institute. 782 learners and facilitators in open and distance learning programme in Enugu State were sampled through simple random sampling technique by balloting without replacement. The instrument used for data collection was the researchers' self-developed instrument titled Bridging the Technology Access Gap to Enhance Digital Literacy among Distance Learning Students Questionnaire (BTAGEDLDLSQ). The instrument was face-validated by three experts with overall reliability coefficient of 0.88 calculated through Cronbach Alpha method. The data collected from the field was analyzed using mean and standard deviation. The findings revealed among others that distance learners have access to smartphones, video conferencing tools, mobile applications, multimedia learning tools, and collaborative platforms Whereas majority of the learners do not have access to desktop or laptop, internet connectivity, Moodle, Cinema8, and e-libraries. Based on these findings, some recommendations were made among which includes that distance learning institutions in Enugu State should prioritize integrating affordable and accessible digital learning tools, such as smartphones, mobile applications, and video conferencing platforms, into their curricula.

Keywords: Technology, Access gap, Digital literacy, Learners, Distance learning programme

Introduction
In the 21st century, access to digital technologies and digital literacy has become indispensable to effective teaching and learning, particularly in distance learning programmes where physical separation between learners and instructors necessitates a reliance on technology. Digital literacy enables learners to access, evaluate, create, and communicate information effectively through digital tools, thus facilitating autonomous and interactive learning experiences (UNESCO, 2022). However, in Nigeria, the reality of unequal access to digital technologies among learners, coupled with wide disparities in digital competencies, poses a serious threat to the success of distance education programmes. These disparities in access and skills continue to widen educational inequalities across different regions and social groups (UNICEF Nigeria, 2025).

Recent statistics reveal a troubling picture: only 36% of Nigerians actively use the internet, and an overwhelming 78% of Nigerian youth lack essential digital literacy skills (UNICEF Nigeria, 2025). The challenge is not limited to learners alone fewer than half (47%) of Nigerian teachers possess basic ICT skills, indicating systemic issues in digital education preparedness (Azubuike et al., 2020). In rural and underserved areas, these challenges are exacerbated by poor infrastructure, high costs of digital devices, and irregular electricity supply, which collectively hinder learners' ability to engage meaningfully with digital platforms and tools (Azubuike et al., 2020; Olanrewaju et al., 2021). Moreover, even where technology is in use, the gap between usage and proficiency remains evident. A study at the University of Lagos found that while 64.4% of distance learning students reported using digital tools for their coursework, only 29.2% had received adequate formal training in digital technologies, and 10.5% had no training at all (Adewumi & Oladele, 2023). This disconnect between exposure and effective use of digital tools reflects a deeper issue that must be addressed through targeted interventions.

In Enugu State, which boasts one of the highest adult literacy rates in Nigeria at 86.9% (Kingmakers, 2018), the digital divide still persists among learners in distance learning programmes. Despite commendable policy-level efforts—such as the Enugu State Government's allocation of 33% of its 2025 budget (approximately ₦320 billion) to the education sector (BusinessDay NG, 2024)—many learners continue to struggle with access to technology and the skills needed to use them effectively. This raises critical concerns about the adequacy and inclusiveness of existing strategies aimed at integrating technology into education. The concept of the "technology access gap" refers to the socioeconomic and infrastructural barriers that hinder individuals' ability to acquire, use, and benefit from digital technologies (Repsol, 2023). These barriers are multidimensional, encompassing lack of affordable devices, limited broadband access, unreliable electricity, and digital skill deficits. As Investopedia (2023) explains, even when digital devices and internet connections are available, learners often face obstacles related to the quality of connectivity, digital content relevance, and confidence in using digital tools—all of which impede meaningful engagement with online learning. For distance learning students in Enugu State, these challenges take on a local character, shaped by economic hardship, uneven infrastructural development, and limited institutional support.

Distance learning relies heavily on digital platforms such as Learning Management Systems (e.g., Moodle, Blackboard), communication tools (e.g., WhatsApp, Zoom), and digital libraries (Adarkwah, 2021; Nkosi et al., 2019). Yet, access to these tools remains inconsistent, with many learners lacking the physical devices, stable connectivity, or user competencies to benefit from such platforms. Studies have shown that bridging this access gap is not only about providing infrastructure but also ensuring that learners are equipped with the skills and support needed to navigate digital environments confidently (Alabi & Abdulmalik, 2021; Oladipupo, 2021). Furthermore, existing ICT policies in Nigeria have been criticized for being outdated, fragmented, and poorly implemented (Adeniran, 2019). Without coordinated and inclusive digital strategies, learners in distance learning programmes are left behind, unable to keep pace with global trends in education and technology. This is particularly problematic given the increasing demand for digitally competent graduates in today's knowledge economy.

Despite growing literature on digital literacy and distance education in Nigeria, few studies have focused specifically on the intersection of technology access and digital literacy among distance learners in Enugu State. Even fewer have examined the instructional tools learners currently have access to, or proposed localized strategies for bridging access gaps to improve digital literacy outcomes. This lack of context-specific research creates a knowledge gap that must be addressed to inform more inclusive educational policies and interventions.

Therefore, this study seeks to fill that gap by exploring the current state of technology access among distance learning students in Enugu State, and identifying strategic ways of bridging the access divide to enhance digital literacy. Specifically, the study aims to assess the instructional tools available to learners and investigate how socioeconomic and infrastructural barriers can be addressed to foster digital competence and equitable participation in distance learning.

Statement of the Problem

In an era where digital literacy is fundamental to educational success, the persistent technology access gap poses a major threat to the effectiveness of distance learning in Nigeria, particularly in Enugu State. Despite the growing dependence on digital platforms for delivering instruction, significant differences remain in learners' access to essential tools such as internet-enabled devices, reliable broadband connectivity, and stable electricity. These disparities are more pronounced among students from rural and low-income backgrounds, many of whom are enrolled in distance learning programmes to overcome geographical and economic barriers to education. The challenge is not merely about access to technology, but also about the competence and confidence required to use it effectively. While national and state-level initiatives have aimed to expand digital inclusion, their impact has been uneven and insufficient. Many learners still lack the digital skills necessary to fully engage with e-learning platforms, retrieve information, communicate effectively online, or complete academic tasks independently. Furthermore, outdated ICT policies and inadequate institutional support continue to hinder the realization of equitable and inclusive digital learning environments.

In Enugu State, where literacy levels are relatively high and education receives a sizeable share of the state budget, it is concerning that many distance learning students still face barriers that compromise their digital learning experience. The absence of targeted, localized strategies to address the specific challenges faced by these learners further deepens the digital divide. Moreover, there is a dearth of empirical data on the actual state of technology access and digital literacy among distance learning students in the State, making it difficult for policymakers and institutions to design effective interventions. Consequently, the need to bridge the technology access gap and enhance digital literacy among distance learners in Enugu State is urgent. Without a clear understanding of the tools currently available to students and the specific barriers they face, efforts to improve digital education may remain superficial or ineffective. This study, therefore, seeks to investigate the extent of the technology access gap among distance learning students in Enugu State and to propose practical strategies for enhancing digital literacy and ensuring equitable participation in digital education.

Purpose of the study
The general purpose of the study focused on bridging access gap to technology for improving digital literacy among learners in distance learning programme Enugu State, Nigeria. Specifically, the study sought to:
1. Identify the instructional technologies distance learners have access to for improving digital literacy in Enugu State, Nigeria.
2. Examine the ways of bridging access gap to instructional technology among learners in distance learning programme for improving digital literacy in Enugu State.

Research Questions
    The study was guided by the following research questions
1. What are the instructional technologies distance learners have access to for improving digital literacy in Enugu State, Nigeria?
2. What are the ways of bridging access gap to instructional technology among learners in distance learning programme for improving digital literacy in Enugu State?

Methods
The study employed a descriptive survey design. The population of the study was 5,181 respondents, comprising 3563 learners and 64 facilitators in National Open University of Nigeria (NOUN), 646 learners and 43 facilitators in Center for Distance and e-Learning (CDeL) University of Nigeria, and 843 learners and 22 facilitators in National Teachers Institute (NTI) in Enugu State, Nigeria. The sample size for the study was 782. Simple random sampling technique by balloting without replacement was used to sample percentages of the population. From NOUN with a population of 3,563 learners and 64 facilitators, 356 (10%) learners, and 64 (100%) facilitators were sampled. From CDeL with a population of 646 learners and 43 facilitators, 129 (20%), and 43 (100%) facilitators were sampled. From NTI with 843 learners and 22 facilitators, 168 (20%) learners, and 22 (100%) were sampled. This is in agreement with Nwana (1990) that if the population for the study is a few hundred, from 40 per cent or more will do, if many hundreds, a 20 per cent sample will do, if a few thousand a 10 per cent sample will do and if several thousands, a five per cent or less sample will do. The instrument used for data collection was the researchers' self-developed instrument titled Bridging Access Gap to Technology for Improving Digital Literacy among Learners in Distance Learning Programme Questionnaire (BAGTDLLDLP). The instrument was face-validated by three experts, two from the department of Continuing Education and Development Studies, and one from Measurement and Evaluation unit of Science Education all from the university of Nigeria, Nsukka with overall reliability coefficient of 0.88 calculated through Cronbach Alpha method. The data collected from the field was analyzed using mean and standard deviation.

Results
Table 1: Instructional technologies distance learners have access to for improving digital literacy in Enugu State, Nigeria

S/N	Item Statement	Mean	SD	Decision
1	Regular access to a smartphone for distance learning activities.	2.87	.61	Agree

2	Laptop or desktop computer to access learning materials.	2.37	.53	Disagree
3	Access to reliable internet connectivity for online learning.	2.27	.66	Disagree
4	Access to Moodle for studies.	2.18	.59	Disagree
5	Access to Cinema8 for learning	2.23	.44	Disagree
6	Participating in online classes through video conferencing	3.89	.30	Agree
7	Using mobile applications (e.g., WhatsApp, Telegram) to interact with instructors and pears	3.54	.65	Agree
8	Access to e-libraries to support learning.	2.44	.65	Disagree
9	Access to multimedia learning tools, like videos in learning	3.16	.55	Agree
10	Access to online collaboration platforms that allow to work with other learners on assignments and projects.	3.23	.45	Agree
	Cluster Mean	**2.82**	**0.54**	**Agree**

Table 1 above showed the instructional technologies distance learners have access to for improving digital literacy in Enugu State, Nigeria. The table showed that majority of distance learners have access to smartphones, video conferencing tools, mobile applications, multimedia learning tools, and collaborative platforms with a mean of 2.87, 3.89, 3.54, 3.16, and 3.23 respectively. Whereas majority of the learners do not have access to desktop or laptop, internet connectivity, Moodle, Cinema8, and e-libraries with a mean score of 2.37, 2.27, 2.18, 2.23 and 2.44. Therefore, the grand mean score of 2.82 and SD of 0.54 showed that most of the distance learners have access to the instructional technologies.

Table 2: Ways of bridging access gap to instructional technology among learners in distance learning programmes for improving digital literacy in Enugu State

S/N	Item Statement	Mean	SD	Decision
11	Providing affordable internet services for distance learners	2.93	.45	Agree
12	Providing financial support to learners to acquire digital devices.	3.08	.55	Agree
13	Organizing training workshop regularly to improve learners' digital literacy skills.	3.07	.57	Agree

14	Improving electricity infrastructure to support digital learning.	3.18	.67	Agree
15	Establishing community ICT centre to give learners access to technology.	2.97	.62	Agree
16	Ensuring that all learners have equal opportunities to access digital tools.	3.14	.64	Agree
17	Providing affordable digital resources to all learners.	3.62	.49	Agree
18	Training instructors to integrate technology effectively into their instructional delivery.	3.76	.47	Agree
19	Improving internet connectivity in rural areas to support distance learning.	3.62	.63	Agree
	Cluster Mean	**3.26**	**0.57**	**Agree**

Table 2 revealed that all the items in this cluster were accepted as the ways of bridging access gap to instructional technology among learners in distance learning programmes for improving digital literacy in Enugu State with a mean score ranging from 2.93 – 3.76.

Discussion
The study's findings indicate that distance learners in Enugu State predominantly access instructional technologies such as smartphones, video conferencing tools, mobile applications, multimedia learning tools, and collaborative platforms. This trend aligns with broader patterns observed across Nigeria, where mobile devices have become integral to educational activities. A study by Etim and Olatokun (2023) highlights the widespread use of mobile applications among students in Nigerian universities to support their learning goals. Similarly, research by Imo (2023) emphasizes the transformative role of mobile devices in facilitating flexible and accessible learning experiences for distance learners. These technologies enable learners to engage with educational content, participate in virtual classes, and collaborate with peers, thereby enhancing their digital literacy skills.

Conversely, the study reveals that a significant number of learners lack access to essential resources such as desktop or laptop computers, reliable internet connectivity, Learning Management Systems (LMS) like Moodle, platforms like Cinema8, and e-libraries. This disparity underscores the persistent digital divide affecting distance education in Enugu State. According to a report by Kings Care School (2023), economic barriers, inadequate infrastructure, and limited funding contribute to the challenges in accessing advanced digital tools in Nigerian schools. Furthermore, the lack of reliable electricity and internet services, particularly in rural areas, hampers the effective utilization of these technologies. These limitations not only restrict learners' ability to access diverse educational resources but also

impede the development of comprehensive digital competencies necessary for academic success.

Finding from research question two revealed the ways of bridging access gap to technology in distance learning. These include providing affordable internet services, offering financial support for acquiring digital devices, and organizing regular training workshops to enhance digital literacy among distance learners. These are consistent with initiatives aimed at promoting digital inclusion in Nigeria. The Universal Service Provision Fund (USPF) (2025), an initiative of the Nigerian Communications Commission, has launched the USPF Impact Alliance, a coalition aimed at expanding inclusive education and digital access in Nigeria's rural communities. This initiative focuses on delivering high-speed fibre-optic internet directly to student hostels, enhancing access to digital learning and collaboration tools. Additionally, collaborative efforts between government agencies, private sector stakeholders, and educational institutions have been instrumental in bridging the digital divide. Programmes that distribute low-cost devices, subsidize internet access, and provide digital literacy training have shown promise in enhancing technology adoption among learners. A study by Funds for NGOs (2023) emphasizes the importance of such multi-faceted approaches, highlighting the effectiveness of combining technology distribution with capacity-building initiatives to support disadvantaged students. By implementing these strategies, Enugu State can create a more inclusive and equitable digital learning environment, empowering distance learners to acquire the necessary skills and resources for academic and professional advancement.

Conclusion
Based on the findings of the study, it was concluded that distance learners have access to smartphones, video conferencing tools, mobile applications, multimedia learning tools, and collaborative platforms Whereas majority of the learners do not have access to desktop or laptop, internet connectivity, Moodle, Cinema8, and e-libraries. While providing affordable internet services for distance learners, financial support to learners to acquire digital devices, and organizing training workshop regularly are among the ways of bridging access gap to instructional technology among learners in distance learning programmes for improving digital literacy in Enugu State.

Recommendations
Based on the findings of the study, it was recommended among others that:
1. Distance learning institutions in Enugu State should prioritize integrating affordable and accessible digital learning tools, such as smartphones, mobile applications, and video conferencing platforms, into their curricula. This can be achieved by establishing dedicated support centers where learners can receive guidance on maximizing the use of these technologies to enhance digital literacy.
2. Policymakers and educational administrators should collaborate with telecommunication providers and community stakeholders to establish affordable internet infrastructure and support programmes. These should include financial assistance for acquiring essential digital devices and the regular organization of training workshops to ensure distance learners can bridge the technology access gap and build critical digital competencies.

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