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Assessment of Digital Literacy Skills Among Library Users in Nigerian Tertiary Institutions: A Secondary Data Analysis

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A B S T R A C T

The pervasive integration of digital technologies within higher education has fundamentally reconfigured the landscape of academic library services and user expectations. This study conducts a systematic secondary data analysis to critically assess the level, nature, and structural gaps in digital literacy skills among university, polytechnic, and college of education library users in Nigeria. Interrogating data synthesized from published empirical studies, national ICT reports, and institutional surveys from 2015 to 2024, the analysis is framed within a critical sociotechnical perspective that situates skill deficits within broader systemic inequities. Findings reveal a fragmented and often superficial digital skillset among a significant proportion of users. The analysis identifies significant disparities across institutional types and geographical zones, with polytechnics and colleges of education, as well as institutions in northern regions, often reporting more acute challenges. These skill gaps are not merely individual shortcomings but are deeply entangled with systemic factors: unreliable bandwidth, inadequate access to functional hardware, a scarcity of targeted library-led instruction programs, and curricula that rarely integrate digital literacy meaningfully. It posits that a transformative approach is required, one that shifts from ad-hoc digital training to the embedding of digital literacies as a core academic practice. The study concludes with a framework for action, advocating for the development of context-sensitive, tiered digital literacy models, sustained advocacy for robust digital infrastructure, and the formal recognition of digital literacy as a key graduate attribute within Nigerian tertiary education policy. This research contributes to ongoing scholarly debates on digital equity in Global South higher education and provides evidence to inform strategic planning for library services and educational policy in Nigeria

INTRODUCTION

The transformation of academic libraries from repositories of physical collections to dynamic, digital-centric hubs of knowledge creation and dissemination represents a global paradigm shift. For Nigerian tertiary institutions — encompassing universities, polytechnics, and colleges of education — this shift presents both unparalleled opportunities and profound challenges. Digital literacy, defined here as the integrated suite of cognitive, technical, and sociocultural skills required to effectively find, evaluate, create, and communicate information using digital technologies, is no longer a supplementary competency but a foundational academic and professional imperative (Bawack & Bonhoure, 2023). However, the acquisition and application of these literacies occur within a national ecosystem marked by stark contradictions: ambitious ICT policies coexist with erratic power supply and bandwidth limitations; a booming youth population adept at social media navigation may lack critical digital research skills; and institutional aspirations for global relevance are often tempered by localized resource constraints (Ojedokun & Owolabi, 2023).

Existing scholarship on digital literacy in Nigeria has provided valuable insights, yet critical syntheses remain scarce. Numerous studies have documented skill gaps among specific student cohorts, often within single institutions (e.g., Akinwale & Ojo, 2020; Eze & Uzoigwe, 2021). Concurrently, national reports from bodies like the National Information Technology Development Agency (NITDA) and surveys by the Nigerian Universities Commission (NUC) sketch a macro-level picture of ICT access. What is less developed, however, is a comprehensive, critical analysis that triangulates these disparate data sources to construct a nuanced portrait of the digital literacy landscape across the diverse spectrum of Nigerian tertiary libraries. This gap inhibits the formulation of coherent, system-wide strategies. It also obscures how broader political economies of technology — such as the commercial strategies of telecom providers, national cybersecurity policies, and the geopolitics of educational software licensing — directly impinge upon local user capabilities (Folorunso & Ajayi, 2022).

This study therefore aims to bridge this analytical gap. Its primary objective is to critically analyse the level, nature, and structural determinants of digital literacy skills among library users in Nigerian tertiary institutions through a systematic review and synthesis of secondary data. It moves beyond a mere cataloguing of deficiencies to ask more penetrating questions: How do digital literacy competencies correlate with institutional mission (theoretical university vs. applied polytechnic)? In what ways do existing library instruction programs inadvertently reinforce or mitigate digital inequalities? How do users' own perceptions of their digital skills align with observed performance in academic tasks? By engaging with these questions, this research positions itself within ongoing scholarly conversations about postcolonial digital humanities, educational equity in the Global South, and the evolving role of the library as a critical pedagogical space.

The significance of this investigation is multifaceted. For library practitioners and university administrators, it provides an evidence-based audit to guide the design of training programs and resource allocation. For policymakers at the NUC and the National Board for Technical Education (NBTE), it highlights the urgent need to mainstream digital literacy standards into accreditation frameworks. For the scholarly community, it contributes a grounded, critical case study from Nigeria to international debates on digital citizenship and knowledge sovereignty. The analysis proceeds with an understanding that digital literacy is not a neutral, technical skill but a form of cultural capital that can either reproduce or challenge existing social and academic hierarchies.

LITERATURE REVIEW

The discourse on digital literacy has evolved from early, tool-centric conceptions towards more holistic, critical, and situated understandings. This review navigates this theoretical terrain and examines its application within the Nigerian tertiary education context, identifying key tensions and gaps that this study seeks to address.

Evolving Conceptions of Digital Literacy

The concept of digital literacy has progressively expanded beyond simple operational competence. Gilster (1997) initially framed it as the ability to understand and use information from digital sources. This has been substantially complicated by scholars who argue for a plural model of "digital literacies," encompassing everything from the functional (e.g., using software) to the critical (e.g., assessing online credibility) and the creative (e.g., producing digital media) (Lankshear & Knobel, 2015). A particularly influential framework is the "Digital Literacy Framework" proposed by Jisc (2015) in the UK, which delineates seven elements: ICT proficiency, information literacy, digital creation, communication, collaboration, learning, and identity management. However, the uncritical transplantation of such Global North frameworks to contexts like Nigeria can be problematic, as it may overlook localized practices, infrastructural realities, and different epistemic traditions (Maji & Hoskins, 2021).

In African higher education scholarship, digital literacy is increasingly linked to debates on epistemic justice and decolonization. Ocholla and Ocholla (2021) argue that true digital empowerment involves not just consuming Western knowledge databases but also creating and curating locally relevant digital content. This aligns with a sociotechnical perspective, which posits that technology and society are co-constitutive; thus, digital skills cannot be abstracted from the social, economic, and political structures that shape technology access and use (Orlikowski & Scott, 2016). This perspective is crucial for analysing Nigeria, where factors like electricity reliability, data costs, and linguistic diversity (the dominance of English in digital academic spaces) are integral to the digital literacy experience.

The Nigerian Context: Studies, Gaps, and Systemic Barriers

Empirical research on digital literacy within Nigerian academic libraries has grown but remains fragmented. Several studies converge on the point of significant skill gaps. For instance, research often finds that undergraduates are proficient with social media and basic web search but struggle with constructing complex database queries, evaluating journal quality, or managing digital citations (Akinwale & Ojo, 2020). A study by Nwachukwu and Eze (2022) at federal universities in the south-east highlighted that while 75% of students reported confidence in using online library catalogues, less than 30% could effectively use advanced search filters or subject-specific databases.

A more troubling finding across multiple studies is the persistence of a second-level digital divide — inequalities in the types and levels of skills possessed, beyond mere access. Eze and Uzoigwe (2021) identified a strong correlation between students' socioeconomic background and their competence in using software for data analysis and academic writing. This suggests that the library, as a potentially equalizing institution, faces the challenge of remediating pre-existing inequalities.

The literature also points to systemic, institutional barriers. A major theme is the inadequacy of infrastructure. Reports from the NUC (2023) and institutional audits consistently cite insufficient bandwidth, outdated computer labs, and a lack of reliable power backup in libraries as primary constraints. Furthermore, the integration of digital literacy into the curriculum is often peripheral. While many universities offer "Use of Library" courses, these are frequently one-off, generic orientations that lack sustained, credit-bearing digital literacy instruction embedded within disciplines (Olorunfemi & Okuonghae, 2023).

A critical gap in the existing literature, which this study aims to fill, is the comparative analysis across the tripartite structure of Nigerian tertiary education. Most studies focus on universities. The experiences of polytechnic students, whose education is theoretically more applied and technically oriented, and college of education students, the future teachers who will shape digital literacies at the secondary level, are underexplored. This study posits that the digital literacy needs and challenges in these institutions are distinct and require targeted investigation.

Theoretical Framework: A Critical Sociotechnical Lens

This study is underpinned by a critical sociotechnical framework. This framework rejects technological determinism — the view that technology autonomously drives social change — and instead emphasizes the mutual shaping of technology and social structures (Orlikowski & Scott, 2016). It asks not only "what skills do users lack?" but also "how do institutional policies, economic constraints, and cultural norms shape the development and valuation of these skills?"

This lens is applied through two interconnected concepts:

The Digital Divide: Understood here not as a simple binary (have/have-not) but as a spectrum encompassing access, usage, and outcomes (Van Dijk, 2020). We analyse how infrastructural divides (first-level) foster skill and outcome divides (second-level) among Nigerian library users.

Practice Theory: This focuses on how digital literacies are enacted in everyday academic practices — searching for sources, collaborating on projects, submitting assignments (Shove et al., 2012). It directs attention to the "how" of skill application within the specific routines and constraints of Nigerian academic life.

By employing this framework, the analysis seeks to connect micro-level skill observations with macro-level systemic critiques, offering explanations that are both empirically grounded and critically engaged.

METHODOLOGY

This study employs a qualitative-dominant secondary data analysis (SDA) design. SDA is the systematic investigation of existing datasets collected for prior research purposes, offering a methodologically rigorous approach to generating new insights without primary data collection (Heaton, 2023). This approach is particularly apt for synthesizing the fragmented body of evidence on digital literacy in Nigeria, allowing for cross-study comparison and trend identification.

Data Sources and Search Strategy

The analysis synthesizes data from three key secondary source types, covering the period 2015 - 2024 to capture recent trends:

Published Empirical Studies: Peer-reviewed journal articles, conference proceedings, and doctoral theses focusing on digital skills, information literacy, or ICT use among students or staff in Nigerian tertiary institutions. Searches were conducted on databases including Google Scholar, African Journals Online (AJOL), Library and Information Science Abstracts (LISA), and university repositories using keywords: "digital literacy Nigeria," "academic library users Nigeria," "information literacy skills," "polytechnic students ICT," "college of education digital."

National ICT and Education Reports: Official documents from Nigerian governmental and regulatory bodies, including the National Information Technology Development Agency (NITDA) annual reports, Nigerian Universities Commission (NUC) annual bulletins and ICT audit summaries, and the Federal Ministry of Education's strategic plans.

Institutional Surveys and Reports: Published library user surveys, ICT service reports, and academic development unit assessments from a purposively selected range of universities (federal, state, private), polytechnics, and colleges of education. These were sourced from institutional websites and open-access repositories.

Inclusion and Exclusion Criteria

Studies and reports were included if they:

(1)explicitly addressed digital or information literacy competencies;
(2)focused on tertiary institution library users (students, faculty, researchers);
(3)contained qualitative or quantitative data on skill levels, access challenges, or training interventions;
(4)were published between 2015 - 2024; and
(5)pertained to the Nigerian context. Sources were excluded if they were purely technical (e.g., network architecture papers without a user focus),

focused only on primary/secondary education, or were not accessible in full text.

Data Extraction and Analytical Procedure

A structured data extraction matrix was developed in Microsoft Excel. Key extracted variables included: author/year, institution type, study population, sample size, methodology, key findings on skill levels, identified gaps, cited barriers, and recommendations. Thematic analysis, as outlined by Braun and Clarke (2022), was the primary analytical method. This involved:

1. Familiarization: Repeated reading of all included sources.
2. Generating Initial Codes: Systematically coding features of the data relevant to the research questions.
3. Searching for Themes: Collating codes into potential themes (e.g., "Hierarchy of Skills," "Infrastructure as Barrier," "Curriculum Disconnect").
4. Reviewing Themes: Checking themes against the coded data and the entire dataset.
5. Defining and Naming Themes: Refining the essence of each theme.
6. Producing the Report: Weaving together the analytic narrative with illustrative data extracts.

To enhance analytical rigor and facilitate comparison, basic descriptive statistics (percentages, frequencies) were calculated from quantitative findings reported across the sourced studies where methodologies and measures were sufficiently comparable. This mixed-methods approach to SDA allowed for both the depth of qualitative insight and the identifying of broad patterns.

Ethical Considerations and Limitations

As an analysis of publicly available, anonymized data, direct human subject risks are minimized. However, ethical SDA practice was maintained by rigorously citing all sources and faithfully representing original authors' findings. Key limitations are acknowledged:

(1) the reliance on the methodologies and instruments of prior studies, which may vary in quality;
(2) potential publication bias, as studies reporting negative or null findings may be less likely to be published; and
(3) the inability to conduct follow-up or ask new questions of the original data. These limitations are mitigated by the systematic, transparent synthesis process and the triangulation across multiple source types.

RESULTS AND DISCUSSION

The synthesis of secondary data reveals a complex and stratified landscape of digital literacy among Nigerian tertiary library users. The findings are presented and discussed within three interconnected thematic areas.

A Fragmented Skillset: The Hierarchy of Digital Competencies

The data consistently depicts a hierarchy of competencies, where basic operational skills are more widespread than advanced, critical capacities. This fragmentation cuts across institutional types but varies in degree.

Basic Operational Skills: Majority of users across studies demonstrate competence in foundational tasks. For example, data pooled from five studies

(Akinwale & Ojo, 2020; Nwachukwu & Eze, 2022; et al.) indicated that over 80% of undergraduate respondents were confident in using web browsers, basic word processing (MS Word), and social media platforms for informal communication. Library-specific operational skills, such as using the Online Public Access Catalogue (OPAC), were also commonly reported, though proficiency levels dropped when tasks involved more complex search parameters.

Advanced and Critical Skills: A significant deficit emerges in higher-order digital literacies. Key gaps identified include:

Information Evaluation: Difficulty discerning credible academic sources from predatory journals or low-quality web content.

Specialized Software Use: Limited ability to use reference management tools (e.g., Mendeley, Zotero), data analysis software (e.g., SPSS, R), or subject-specific applications.

Digital Creation and Scholarship: Minimal engagement in creating digital research outputs like blogs, podcasts, or data visualizations. Academic writing often shows poor integration and ethical use of digital sources.

Digital Safety and Ethics: Low awareness of issues related to data privacy, copyright, and plagiarism in digital environments.

Disparities Across Institutional Types and Geographies

The analysis uncovered significant variations in digital literacy landscapes when comparing universities, polytechnics, and colleges of education, as well as across geographic zones.

Universities vs. Polytechnics/Colleges of Education: Universities, especially federal and private ones, generally reported better ICT infrastructure and more formal digital literacy initiatives. Polytechnic studies (e.g., from Kaduna Polytechnic, Yaba College of Technology) more frequently highlighted challenges related to access to up-to-date software and technical databases relevant to their applied fields. Colleges of education faced a dual challenge: poor infrastructure and a lack of digital pedagogy training for their students (future teachers), perpetuating a cycle of low digital literacy.

North-South Divide: A persistent theme in national reports (NUC, 2023) and regional studies is the infrastructural and skill gap between institutions in the southern and northern geopolitical zones. Insecurity, lower levels of private ICT investment, and other socioeconomic factors contribute to this divide. For instance, bandwidth allocation and stability in many northern institutions were reported as more constrained, directly impacting the feasibility of hands-on digital literacy training.

Discussion: These disparities underscore that digital literacy is not a uniform national challenge but is mediated by institutional identity, resource allocation, and regional political economy. The polytechnic and college of education sectors, crucial for national technical and educational development, appear to be systematically under-resourced in the digital realm. This risk creating a tiered graduate output, where university graduates are better positioned for a digital economy than their polytechnic counterparts — a contradiction to the stated missions of these institutions. The north-south divide reflects and reinforces broader national inequalities, positioning the academic

library as a potential site for either mitigating or inadvertently amplifying these regional disparities.

Systemic Barriers: Beyond Individual Skill Deficits

The data overwhelmingly points to systemic barriers that constitute the root causes of digital literacy gaps. Individual skill deficits are often a symptom of these larger structural issues.

Infrastructural Precariousness: Unreliable electricity and inadequate, expensive bandwidth were the most cited barriers across all source types. A NUC (2023) report noted that only about 30% of tertiary institutions have broadband internet considered adequate for research and teaching. This precarity makes consistent practice and access to cloud-based tools and online libraries a constant challenge.

Inadequate and Obsolete Hardware: Many institutional libraries and computer labs are equipped with outdated, insufficient, or malfunctioning computers. This limits hands-on practice and access to newer software versions.

Fragmented and Under-Resourced Training: Library-led digital literacy training is often optional, one-off, and reaches only a small fraction of the user population. It is rarely coordinated with departmental curricula or backed by sustained funding and staffing.

Policy-Practice Disconnect: While national policies like the National Digital Literacy Framework exist, their implementation at the institutional level is weak. There is no mandatory digital literacy credit requirement for graduation in most institutions.

Discussion: Viewing these barriers through the critical sociotechnical lens clarifies that solving the digital literacy challenge requires more than just training programs. It necessitates infrastructural advocacy. Librarians and educators must become advocates for improved bandwidth and power infrastructure. It calls for curricular integration, working with academic senates to embed digital literacy outcomes into program benchmarks. Finally, it requires critical professional development for librarians themselves, moving from traditional bibliographic instruction to roles as digital learning designers and collaborators. The systemic nature of these barriers explains why isolated, project-based interventions often fail to produce lasting change.

CONCLUSIONS AND RECOMMENDATIONS

This secondary data analysis has provided a consolidated, critical assessment of digital literacy among library users in Nigerian tertiary institutions. The findings paint a picture of a system at a crossroads. While there is widespread basic digital engagement, this has not translated into a deep, critical, and equitable digital scholarly culture. The identified skill gaps are profound, particularly in advanced information evaluation, digital creation, and ethical scholarship. More critically, these gaps are not randomly distributed but are patterned by institutional type, geography, and socioeconomic background, revealing a second-level digital divide that threatens to exacerbate existing educational inequalities.

The study's core argument is that prevailing, piecemeal approaches — focused on isolated training sessions in the face of crumbling infrastructure and

disconnected curricula — are demonstrably insufficient. A paradigm shift is required. Digital literacy must be reframed from a supplementary "skill" to a core academic practice and graduate attribute, as essential as discipline-specific knowledge. This reframing demands systemic, not just individual, solutions.

To this end, the study proposes the following interconnected recommendations:

1. Develop and Implement Context-Sensitive, Tiered Digital Literacy Frameworks: Each institution, through collaborative efforts between libraries, academic departments, and ICT units, should develop a bespoke digital literacy framework. This framework should be tiered (e.g., foundational for year one, intermediate for year two, advanced for final year/postgraduates) and explicitly integrated into program learning outcomes and accreditation standards set by the NUC and NBTE.
2. Embark on Sustained Infrastructure Advocacy and Innovative Resource Sharing: Library associations (e.g., the Nigerian Library Association) and university administrations must become relentless advocates for dedicated, sustainable funding for digital infrastructure — reliable electricity, high-speed bandwidth, and modern computing facilities. In the interim, institutions should explore innovative resource-sharing models, such as consortia-based licensing for software and databases, and mobile digital literacy labs.
3. Transform Library Roles and Foster Embedded Collaboration: Academic librarians must be supported through professional development to transition from service providers to embedded digital learning partners. This involves co-designing and co-teaching curriculum-integrated modules with faculty, moving instruction beyond the library walls and into the disciplines where digital literacies are applied
4. Prioritize Research and Data Collection on Digital Praxis: There is a need for more nuanced, practice-based research. Future studies should employ ethnographic and participatory methods to understand how students and faculty actually use (or avoid) digital tools in their daily academic work. This "digital praxis" research will yield more actionable insights for designing effective interventions than broad skills surveys.

In conclusion, enhancing digital literacy in Nigerian tertiary libraries is not merely a technical or pedagogical challenge; it is a systemic one that implicates educational policy, infrastructural investment, and professional identity. By addressing these foundational issues with a coordinated, critical, and context-aware strategy, Nigerian tertiary institutions can empower their libraries to become true engines of digital fluency, fostering a generation of graduates capable of critical and creative engagement in an increasingly digital world.

FURTHER STUDY

This research still has limitations, so it is necessary to conduct further research related to the topic of Assessment of Digital Literacy Skills Among Library Users in Nigerian Tertiary Institutions: A Secondary Data Analysis in order to perfect this research and increase insight for readers.

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