

THE ROLE OF DIGITAL EDUCATION IN PRESERVING AND REVITALIZING NIGERIA'S LINGUISTIC HERITAGE

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ABSTRACT

Nigeria remains one of the most linguistically diverse countries in Africa, with more than 500 indigenous languages representing distinct cultural identities, histories, and systems of knowledge. Despite this linguistic richness, many Nigerian languages face varying levels of endangerment due to urbanization, globalization, migration, intergenerational language shift, and the continued dominance of English in education and governance. This paper examines the role of digital education in preserving and revitalizing Nigeria's linguistic heritage through a conceptual and evidence-based review of recent literature and emerging digital initiatives between 2020 and 2026. Specifically, the paper investigates the digital tools currently being utilized for indigenous language preservation, the challenges limiting their effectiveness, and the opportunities digital technologies provide for sustainable language revitalization. Drawing on contemporary scholarship, policy documents, and examples of Nigerian digital language projects, the study argues that digital education has become a strategic mechanism for expanding access to indigenous language learning, improving language documentation, enhancing youth engagement, and promoting intergenerational language transmission. The paper further demonstrates that technologies such as mobile applications, social media platforms, digital archives, speech technologies, online learning systems, and artificial intelligence are increasingly shaping language teaching and revitalization efforts in Nigeria. However, infrastructural deficits, limited digital content, inadequate teacher preparedness, weak policy implementation, and insufficient funding continue to constrain large-scale impact. The paper concludes that sustainable preservation of Nigeria's linguistic heritage requires coordinated collaboration among government agencies, universities, technology companies, local communities, and language activists. It recommends stronger policy implementation, investment in digital language infrastructure, specialized teacher training, and increased support for indigenous language technology research.

Keywords: digital education, preserving, revitalizing, Nigerian linguistic heritage

Introduction

Language remains one of the most significant instruments for preserving culture, identity, history, and collective memory within human societies. Beyond its communicative function, language serves as a repository of indigenous knowledge systems, traditional practices, social values, and cultural worldviews. In his influential work on language maintenance, Fishman (1991) argues that language constitutes a central mechanism for sustaining cultural continuity and group identity across generations. Similarly, Bamgbose (2011) emphasizes that African indigenous languages preserve collective experiences, belief systems, and traditional epistemologies that define community existence. In multilingual societies such as Nigeria, indigenous languages therefore remain fundamental to cultural continuity and social cohesion.

Nigeria is one of the most linguistically diverse countries in the world, with over 500 indigenous languages spoken across its ethnic communities. These languages represent important cultural resources through which indigenous knowledge, identity, historical experiences, oral traditions, and social values are transmitted from one generation to another. However, many Nigerian indigenous languages are increasingly threatened by globalization, urbanization, migration, and the growing dominance of English in education, governance, and media communication (Eberhard et al., 2024).

The growing decline in indigenous language use has generated concerns among scholars and policymakers regarding the survival of Nigeria's linguistic heritage. In many urban homes, younger generations increasingly communicate in English or Nigerian Pidgin, thereby weakening intergenerational transmission of indigenous languages. As language transmission declines, communities risk losing valuable cultural knowledge embedded within native linguistic systems (Fishman, 1991).

The increasing influence of digital technology presents both challenges and opportunities for language preservation. On the one hand, digital communication often promotes dominant global languages, thereby contributing to the marginalization of minority languages. On the other hand, digital education offers innovative opportunities for documenting, teaching, and revitalizing endangered languages through online learning, multimedia platforms, mobile applications, and virtual communication systems (Anderson, 2017).

Digital education has transformed contemporary teaching and learning by expanding access to educational materials beyond conventional classroom settings. Through technological tools, learners can interact with educational content in flexible and participatory ways that enhance learning experiences. Within indigenous language education, digital technologies increasingly support language documentation, online language instruction, virtual interaction, and community participation among geographically dispersed language speakers (Adeyanju, 2022).

In Nigeria, several initiatives aimed at promoting indigenous language learning through digital means have gradually emerged. Social media platforms, mobile applications, digital archives, and online educational resources increasingly provide opportunities for indigenous language engagement among younger populations and diaspora communities. Despite these developments, major challenges such as inadequate infrastructure, weak policy implementation, shortage of digital learning materials, and negative societal attitudes continue to limit effective language preservation efforts (Federal Republic of Nigeria, 2022).

This study therefore examines the role of digital education in preserving Nigeria's linguistic heritage. Specifically, it investigates digital tools supporting indigenous language revitalization, the challenges affecting digital language preservation, and the opportunities for strengthening sustainable indigenous language education in Nigeria.

Conceptual and Theoretical Framework

1 Digital Education

Digital education refers to the integration of digital technologies into teaching and learning processes to improve accessibility, interaction, flexibility, and learner engagement. It encompasses the use of internet-based platforms, multimedia resources, mobile applications, virtual classrooms, and other technological tools that facilitate educational delivery beyond traditional face-to-face instruction. According to Anderson (2017), digital education enables learners to access instructional content irrespective of geographical and temporal limitations, thereby expanding educational opportunities and improving learning flexibility.

In language education, digital technologies increasingly support multimodal learning by combining audio, visual, textual, and interactive resources to enhance comprehension and learner participation. Digital education has become particularly significant in multilingual contexts where learners require flexible opportunities to engage with language content beyond formal classroom settings. Within the Nigerian context, digital education presents important possibilities for supporting indigenous language teaching through online resources, mobile learning applications, virtual communication, and digital content development.

2 Language Preservation and Revitalization

Language preservation refers to deliberate efforts aimed at maintaining and protecting languages from decline or extinction, particularly languages experiencing reduced transmission across generations. Language revitalization, on the other hand, involves organized attempts to restore endangered or marginalized languages to active use within communities. Fishman (1991) explains that successful language preservation depends significantly on intergenerational transmission, institutional support, and continuous opportunities for language use across different social domains.

In Nigeria, indigenous language preservation has become increasingly important due to growing concerns over language endangerment caused by globalization, urbanization, migration, and the dominance of English in formal education and administration. Digital technologies now provide additional opportunities for language documentation, online learning, digital archiving, and communication among dispersed language communities. These developments create possibilities for sustaining indigenous languages while adapting them to contemporary communication environments.

Theoretical Framework

This study is anchored on the Sociocultural Theory propounded by Vygotsky (1978). The theory emphasizes that learning occurs through social interaction, communication, and cultural participation. According to the theory, language learning develops through interaction with more knowledgeable individuals and through engagement with socially meaningful activities. Learning therefore becomes more effective when learners interact with instructional resources, communication tools, and collaborative environments that support knowledge development.

The theory is applicable to the present study because digital education creates interactive environments that support indigenous language learning through online communication, multimedia resources, virtual classrooms, and collaborative digital participation. Through digital technologies, learners can engage repeatedly with indigenous language materials, interact with speakers across geographical boundaries, and participate in language-learning activities capable of strengthening linguistic competence and cultural continuity.

Digital Tools for Preserving Nigerian Languages

1 Digital Documentation and Archiving

Digital documentation and archiving have become essential strategies for preserving endangered languages, particularly in multilingual societies where many indigenous languages face the risk of extinction. Language documentation involves the systematic recording, preservation, and storage of linguistic materials such as oral histories, folktales, dictionaries, songs, pronunciation patterns, grammatical descriptions, and audiovisual resources.

Within Nigeria, universities, linguists, and research institutions increasingly utilize digital recording technologies, transcription software, and online repositories to preserve minority languages and oral traditions. Adeyanju (2022) notes that indigenous language preservation efforts have increasingly incorporated community-based documentation projects in which native speakers contribute oral narratives, proverbs, and cultural expressions for digital storage. Such initiatives are particularly important because they preserve authentic linguistic patterns and cultural heritage for future educational and revitalization purposes.

The growing significance of digital archiving also extends to emerging technological applications. Aina (2025) argues that artificial intelligence systems and natural language processing technologies depend heavily on accessible language datasets for speech recognition, translation, and text processing. Consequently, the availability of digitized corpora becomes an important prerequisite for integrating Nigerian indigenous languages into contemporary technological systems. However, despite growing efforts, many minority languages in Nigeria still lack adequate digitized corpora, standardized orthographies, and sustainable funding for documentation projects, thereby limiting long-term effectiveness (UNESCO, 2023).

2 E-Learning Platforms

E-learning platforms have increasingly transformed educational delivery by creating structured digital environments for teaching and learning. Anderson (2017) explains that digital learning systems such as Moodle, Zoom, Google Classroom, and other online educational platforms enhance learning flexibility through recorded lessons, assignments, interactive activities, and virtual communication. Within language education, these platforms provide opportunities for extending instruction beyond conventional classroom settings.

The relevance of e-learning platforms in Nigeria became particularly evident during and after the COVID-19 pandemic, when schools and universities increasingly adopted virtual instructional methods. According to the Federal Republic of Nigeria (2022), educational institutions accelerated the use of digital platforms to sustain instructional continuity during periods of restricted physical interaction. This transition subsequently created opportunities for indigenous language instruction through online classes, recorded lessons, and virtual language engagement.

Several indigenous language initiatives have benefited from this transformation. Adeyanju (2022) observes that online Yoruba, Hausa, and Igbo language classes have become increasingly accessible to learners both within Nigeria and in diaspora communities. Through virtual classrooms, learners can interact with instructors, revisit recorded content, and participate in collaborative discussions regardless of geographical location. Traxler (2018) further argues that digital learning reduces geographical barriers and expands educational access for minority language communities.

Despite these opportunities, the effectiveness of e-learning for indigenous language preservation remains constrained by infrastructural limitations. Adegoke (2020) identifies poor internet connectivity, unstable electricity supply, and unequal digital access as persistent barriers to digital education in Nigeria. Consequently, rural communities where many indigenous

languages are predominantly spoken often remain excluded from meaningful participation in digital language learning initiatives.

3 Mobile Applications and Mobile Learning

Mobile learning has emerged as one of the most promising approaches to indigenous language revitalization because of increasing smartphone ownership and digital connectivity. Kukulska-Hulme (2012) emphasizes that mobile learning supports flexible and personalized educational experiences by allowing learners to engage with instructional materials regardless of location and time. Through mobile technologies, language learners can access vocabulary lessons, pronunciation exercises, storytelling content, quizzes, and conversational practice in highly interactive formats.

In Nigeria, the expansion of mobile technology has contributed significantly to opportunities for indigenous language learning among younger generations. Reports by the Nigerian Communications Commission (2025) indicate increasing smartphone penetration and internet access, particularly among youth populations. Adeyanju (2022) similarly notes that several language developers and cultural advocates have introduced mobile applications aimed at promoting Yoruba, Hausa, and Igbo language acquisition through culturally relevant content and audio-based instruction.

The educational significance of mobile learning lies largely in its ability to sustain continuous language exposure beyond formal educational environments. According to Traxler (2018), frequent interaction with language content increases learner motivation and retention, especially when digital tools incorporate interactive and gamified features. Vocabulary games, quizzes, achievement badges, and audio pronunciation systems can enhance learner participation and strengthen language acquisition processes.

Nevertheless, mobile learning initiatives remain unevenly distributed across Nigeria's linguistic landscape. While dominant indigenous languages increasingly benefit from technological innovation, many minority languages continue to experience exclusion because of limited financial investment, insufficient digital corpora, and lack of technological expertise (Adegoke, 2020; Adeyanju, 2022). Such disparities risk reproducing inequalities in language preservation efforts.

4 Social Media and Digital Communities

Social media platforms have become powerful spaces for indigenous language promotion and revitalization in contemporary society. Onadipe-Shalom (2024) observes that platforms such as TikTok, YouTube, Facebook, Instagram, and WhatsApp increasingly facilitate indigenous language visibility through entertainment, storytelling, education, and cultural discourse. Unlike traditional classroom instruction, social media environments encourage informal and spontaneous language engagement among users.

In Nigeria, indigenous language content creators increasingly use humor, music, proverbs, cultural commentary, and language tutorials to promote linguistic awareness among younger generations. Onadipe-Shalom (2024) argues that these digital communities make indigenous languages socially relevant and culturally appealing within youth-oriented digital environments. Consequently, social media has become an important mechanism for reducing perceptions that indigenous languages are outdated or irrelevant.

Another important contribution of social media lies in diaspora engagement. Traxler (2018) suggests that digital communication technologies strengthen linguistic connections between dispersed communities and their heritage languages. Nigerians living abroad can

therefore participate in online language communities, access virtual lessons, and engage in indigenous language communication despite geographical separation.

However, social media-based language learning also presents limitations. Adeyanju (2022) warns that much indigenous language content online lacks linguistic standardization and academic quality control, as creators often prioritize entertainment over educational accuracy. This raises concerns regarding language authenticity, orthographic consistency, and long-term pedagogical effectiveness.

5 Artificial Intelligence and Speech Technology

Artificial intelligence (AI) and speech technologies increasingly represent the future of indigenous language preservation and revitalization. Aina (2025) argues that AI systems such as speech recognition, machine translation, predictive text, automated transcription, and text-to-speech technologies possess enormous transformative potential for endangered languages globally. These technologies can increase language accessibility, educational inclusion, and digital participation.

In the Nigerian context, recent developments in natural language processing have expanded interest in indigenous language datasets and computational linguistics. Eberhard et al. (2024) explain that researchers are increasingly developing digital corpora, speech datasets, and translation systems for Hausa, Yoruba, Igbo, and selected minority languages. Such technologies can support automated translation, pronunciation assistance, voice-based learning systems, and linguistic accessibility for younger learners.

The significance of AI-driven language inclusion extends beyond education. Aina (2025) emphasizes that languages excluded from digital technologies risk deeper marginalization in contemporary societies increasingly shaped by digital communication systems. Consequently, integrating Nigerian indigenous languages into AI ecosystems represents an important step toward ensuring linguistic relevance in the digital age.

Despite these promising developments, significant challenges remain. Many Nigerian indigenous languages still lack sufficient digitized linguistic corpora, standardized orthographies, and financial support necessary for AI integration (Eberhard et al., 2024). Ethical concerns surrounding data ownership, community participation, and linguistic representation also require careful consideration to ensure that digital inclusion efforts remain culturally responsible and sustainable.

Digital Education and Nigerian Language Teaching

Digital education has significantly transformed contemporary language teaching by introducing interactive, learner-centered, and multimodal approaches to instruction. In contrast to traditional teacher-centered models, digital technologies provide opportunities for learners to engage actively with educational content through multimedia resources, virtual communication, and self-paced learning environments. Anderson (2017) argues that digital education expands instructional flexibility by enabling learners to access educational materials beyond the physical classroom. Within language education, this transformation has become increasingly important for addressing long-standing challenges associated with accessibility, instructional quality, and learner engagement.

In the Nigerian context, digital education offers important possibilities for strengthening indigenous language teaching, particularly in response to challenges such as shortage of trained language teachers, inadequate instructional materials, and declining learner motivation. Adeyanju (2022) observes that technology-mediated learning environments increasingly provide opportunities for indigenous language revitalization by creating more accessible and engaging

learning experiences. Through digital platforms, learners can interact with indigenous language content in ways that extend beyond formal classroom instruction.

One of the major contributions of digital education to language teaching lies in its ability to support multimodal learning experiences. Recent studies indicate that digital language instruction enhances learner engagement by integrating multimedia, interactive technologies, and flexible learning environments that improve participation and language retention (Zhang & Zou, 2022). Audio-visual resources such as videos, podcasts, pronunciation recordings, and interactive speech tools expose learners to authentic pronunciation patterns, vocabulary usage, and cultural expressions. This exposure is particularly beneficial for indigenous languages because digital storytelling, oral traditions, songs, and cultural expressions strengthen language learning, cultural continuity, and intergenerational knowledge transmission (Onadipe-Shalom, 2024).

Digital storytelling has also emerged as an effective pedagogical strategy for indigenous language teaching. Through multimedia storytelling, learners can engage with folktales, oral narratives, proverbs, and cultural histories in ways that strengthen both linguistic competence and cultural understanding. Kukulska-Hulme (2012) argues that mobile and digital learning environments encourage learner participation by allowing repeated access to educational resources, thereby improving retention and language familiarity.

Blended learning approaches that combine face-to-face instruction with digital resources have proven particularly useful in multilingual educational settings. Traxler (2018) suggests that blended learning enables students to continue practicing language skills beyond classroom hours through mobile applications, recorded lessons, interactive exercises, and online communication platforms. Within Nigerian indigenous language education, such flexibility can strengthen language exposure and increase opportunities for sustained language practice.

Virtual classrooms further expand access to indigenous language learning by connecting learners with native speakers and instructors across geographical boundaries. Anderson (2017) explains that virtual learning environments remove geographical constraints and facilitate collaborative participation among learners from diverse locations. This development is especially beneficial for diaspora communities seeking to maintain linguistic and cultural connections with their heritage languages. Adeyanju (2022) similarly notes that digital platforms increasingly support indigenous language instruction among Nigerians living abroad who seek opportunities for heritage language transmission.

Another important advantage of digital education lies in its collaborative potential. Digital platforms encourage participatory learning environments where learners contribute stories, recordings, translations, and cultural materials to online language communities. According to Onadipe-Shalom (2024), social media and digital communities increasingly support indigenous language visibility and participation by encouraging users to create and share culturally relevant content. Recent scholarship suggests that collaborative digital participation strengthens indigenous language preservation by encouraging communities to contribute recordings, narratives, translations, and culturally relevant learning materials through online platforms (Onadipe-Shalom, 2024).

Despite these advantages, the effectiveness of digital education in Nigerian language teaching remains unevenly distributed. Adegoke (2020) notes that urban learners often benefit more from digital educational opportunities because of better internet access, stable electricity, and greater availability of digital devices. In contrast, many rural communities where indigenous languages are predominantly spoken continue to experience infrastructural deficits that limit participation in digital learning environments. Reports from the National Information Technology

Development Agency (2024) similarly highlight persistent digital inequalities affecting educational access across Nigeria.

Consequently, while digital education provides important opportunities for revitalizing indigenous language teaching, it cannot function effectively in isolation from broader educational reforms and infrastructural development. Fishman (1991) emphasizes that successful language revitalization requires sustained intergenerational transmission and community participation alongside institutional support. Digital education should therefore complement, rather than replace, traditional community-based mechanisms of indigenous language learning and cultural transmission.

Challenges of Integrating Digital Education in Nigerian Language Preservation

The integration of digital education into indigenous language preservation in Nigeria continues to face several interconnected challenges that limit its effectiveness. One of the most significant obstacles is the persistent problem of infrastructural inequality, particularly inadequate electricity supply, unstable internet connectivity, and limited access to digital devices, especially in rural communities where many indigenous languages are predominantly spoken (Adegoke, 2020). This situation contributes to a widening digital divide between urban and rural populations, thereby limiting equal participation in digital learning environments. In addition, internet affordability remains a major challenge because the cost of data subscriptions and digital devices often restricts access for low-income households, reducing opportunities for participation in digital language learning initiatives (Nigerian Communications Commission, 2025). Another important limitation concerns the inadequate availability of quality indigenous language digital content. While major languages such as Hausa, Yoruba, and Igbo increasingly benefit from digital visibility, many minority languages remain underrepresented due to inadequate educational materials, online dictionaries, multimedia learning resources, and language-learning software (Adeyanju, 2022). Furthermore, the absence of standardized orthographies for several indigenous languages complicates content development and digital integration, making it difficult to produce educational materials and language technologies capable of supporting wider accessibility (UNESCO, 2021). Teacher preparedness equally remains a major challenge because many educators lack adequate professional training in digital pedagogy and technology-mediated language instruction, thereby limiting effective classroom implementation of digital tools (Federal Republic of Nigeria, 2022). Policy inconsistency and inadequate funding further undermine indigenous language preservation, despite official recognition of mother-tongue instruction in educational policy, as poor implementation, insufficient learning resources, and weak institutional commitment continue to hinder practical outcomes (Bamgbose, 2011). In addition, sociolinguistic attitudes toward indigenous languages significantly affect language preservation efforts because many parents and young people increasingly prioritize English due to its perceived socioeconomic advantages, thereby weakening intergenerational language transmission and reducing motivation for indigenous language use (Onadipe-Shalom, 2024). Consequently, although digital education offers significant opportunities for indigenous language revitalization, sustainable preservation requires coordinated interventions involving infrastructural development, policy implementation, educational reform, technological support, and stronger societal commitment toward indigenous languages.

Recommendations

Based on the findings of this study, several practical recommendations are proposed to strengthen the role of digital education in preserving and revitalizing Nigerian indigenous languages. These recommendations are intended to address identified challenges relating to

infrastructure, policy implementation, teacher preparedness, technological innovation, and community participation.

1 Strengthening National Digital Language Policy

The Nigerian government should strengthen the implementation of indigenous language policies by developing a comprehensive framework for language digitization and preservation. Greater institutional commitment is needed to support the development of digital content, indigenous language documentation, educational materials, and technological inclusion for both major and minority Nigerian languages. Government agencies, educational institutions, and language development bodies should collaborate to ensure effective implementation through proper funding, monitoring, and policy enforcement. Sustainable language preservation requires practical institutional commitment capable of integrating indigenous languages into contemporary digital environments.

2 Integrating Digital Pedagogy into Teacher Education

Teacher education institutions should integrate compulsory training in digital pedagogy, educational technology, and indigenous language teaching into their programs. Teachers require adequate preparation to effectively utilize digital tools capable of improving language teaching, learner participation, and educational accessibility.

Continuous professional development programs should also be organized for practicing teachers to strengthen their digital competencies and improve their ability to use multimedia resources in indigenous language instruction. Effective teacher preparedness remains essential for successful digital language preservation.

3 Expanding Indigenous Language Technology Research

Universities, research institutes, and technology developers should invest more resources into indigenous language technology research. Greater emphasis should be placed on developing digital corpora, speech datasets, translation systems, language-learning applications, and voice technologies capable of increasing indigenous language accessibility. Interdisciplinary collaboration among linguists, educators, software developers, and cultural organizations should be encouraged to ensure sustainable technological development. Such efforts will improve digital inclusion and strengthen the relevance of indigenous languages in evolving technological environments.

4 Promoting Community-Based Digital Participation

Indigenous language preservation efforts should encourage stronger community participation through digital storytelling, online language communities, local documentation projects, and cultural platforms. Native speakers, youth groups, and cultural institutions should actively participate in content creation and language transmission activities. Community involvement can improve intergenerational language learning while strengthening cultural identity and linguistic pride. Sustainable language revitalization becomes more achievable when indigenous speech communities actively participate in preservation efforts.

5 Expanding Digital Infrastructure in Rural Communities

Government and private sector organizations should prioritize expanding digital infrastructure in rural communities where many indigenous languages are predominantly spoken. Improved electricity supply, affordable internet access, and increased access to digital devices are necessary for expanding participation in digital learning environments. Reducing infrastructural inequality will ensure that learners in underserved communities can benefit from digital educational opportunities. Equitable access remains important for strengthening inclusive indigenous language preservation initiatives.

6 Encouraging Positive Sociolinguistic Attitudes toward Indigenous Languages

Educational campaigns and cultural initiatives should be developed to encourage more positive attitudes toward indigenous languages among younger generations. Indigenous languages should increasingly be promoted through music, films, podcasts, literature, schools, and digital media platforms to strengthen their social value and attractiveness. Families and communities should also encourage regular indigenous language use at home to strengthen intergenerational transmission. Positive societal attitudes remain essential for ensuring sustainable language maintenance and revitalization.

Conclusion

Nigeria's indigenous languages remain important cultural resources that preserve historical experiences, indigenous knowledge systems, identity, and social values across generations. However, increasing globalization, urbanization, migration, language shift, and the growing dominance of English continue to threaten the survival of many indigenous languages in Nigeria. This study examined the role of digital education in preserving Nigeria's linguistic heritage by exploring digital tools supporting indigenous language revitalization, the challenges limiting their effectiveness, and opportunities for strengthening sustainable preservation efforts. The study revealed that digital education provides significant opportunities for indigenous language preservation through online learning platforms, mobile applications, digital documentation systems, virtual interaction, and technology-mediated language learning. Nevertheless, challenges such as infrastructural deficits, limited digital resources, inadequate teacher preparedness, weak policy implementation, and negative societal attitudes continue to constrain effective preservation efforts. The study therefore concludes that digital education possesses strong potential for supporting indigenous language revitalization in Nigeria when combined with adequate policy implementation, technological development, institutional commitment, community participation, and positive language attitudes. Sustainable preservation will depend on deliberate efforts aimed at adapting indigenous languages to contemporary digital realities while maintaining their cultural relevance and intergenerational continuity.

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