THE EFFECT OF TECHNOLOGY-ENHANCED LANGUAGE LEARNING (TELL) TOOLS IN ADVANCING IGBO LANGUAGE EDUCATION IN NIGERIA

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Abstract
This paper examines the effect of Technology-Enhanced Language Learning (TELL) tools in a dvancing Igbo language education in Nigeria. As digital learning becomes increasingly central to contemporary education, the integration of modern technological tools into the teaching and learning of indigenous languages is not just beneficial but essential. TELL tools such as mobile applications, language learning software, multimedia resources, and interactive online platfor ms offer dynamic avenues for enhancing students' language proficiency, boosting engagement, and fostering deeper cultural appreciation. The paper posits that these tools, when effectively u tilized, can transform indigenous language instruction by providing personalized, learner-cent ered experiences that align with the digital lifestyles of today's students. Despite the clear adva ntages, the paper acknowledges existing barriers such as limited ICT infrastructure, insufficien t digital content in Igbo, and inadequate teacher training in digital pedagogy. It advocates for s trategic investments, policy support, and curriculum innovation to overcome these challenges. Ultimately, this paper emphasizes that the adoption of TELL tools is a necessary step towards p reserving Nigeria's rich linguistic heritage and ensuring that the Igbo language remains releva nt and vibrant in the 21st century and beyond.

Keywords: Technology-Enhanced Language Learning (TELL), Igbo Language, Education, Ni geria.

Introduction Langu age is central to identity, culture, and education. In Nigeria, one of the major challenges facing i ndigenous languages such as Igbo is the gradual decline in their usage, especially among the yo unger generation. However, with the advent and integration of Technology-Enhanced Languag e Learning (TELL) tools, a new opportunity has emerged to revitalize and promote the teaching and learning of the Igbo language across educational levels. TELL incorporates digital tools an d technologies such as mobile apps, online platforms, virtual classrooms, gamified learning, int eractive software, and artificial intelligence in the acquisition and teaching of languages. These technologies have had significant impacts in enhancing learner engagement, accessibility, and i nteractivity in language education (Chik, 2017). In the context of Igbo language educatio n, TELL tools have shown promise in reversing the negative trends of language neglect. Accord ing to Nweke (2023), the integration of digital platforms such as Duolingo, UTalk, and Rosetta Stone, now featuring Nigerian languages including Igbo, has attracted both local and diaspora l earners. These platforms provide structured lessons with phonetic support, audio recordings by native speakers, and real-time feedback, which enrich the learning experience. Indeed, Eze and

Ogbazi (2022) highlighted how social media platforms like YouTube and Facebook are being u sed by educators and enthusiasts to post language tutorials, cultural stories, proverbs, and traditi onal songs in Igbo that create informal but effective learning environments. These digital comm unities serve not only as platforms for language instruction but also as spaces for cultural transm ission. In schools, the use of interactive whiteboards, audio-visual aids, and learning ma nagement systems (LMS) has contributed to making the Igbo language more engaging. For inst ance, teachers in the Southeast region have developed custom-made software that blends storyt elling with interactive games to teach Igbo vocabulary and grammar (Okoye & Nnamani, 2021) The combination of visuals, sound, and interaction helps in reinforcing memory retention and i nterest among students. Also, TELL tools address the issue of resource scarcity, which has long hindered indigenous language education. With tools like Google Translate (with recent updates to support more Nigerian languages) and text-to-speech (TTS) applications, learners now have access to instant translations and pronunciation support. The University of Nigeria, Nsukka, an d Nnamdi Azikiwe University, Awka, have also developed mobile applications and online dicti onaries that support bilingual learning in Igbo and English (Agu & Chukwuma, 2022).

However, despit e these positive developments, challenges remain. Uchechukwu and Anyanwu (2024) note that there is still inadequate digital infrastructure in many rural schools, a lack of teacher training in digital pedagogy, and limited funding for content development. Also, the inconsistency in stand ardizing orthography and dialectal variations sometimes poses issues in content design for Igbo language apps. Nonetheless, the potential of TELL tools in advancing Igbo language education cannot be overstated. If adequately harnessed, these tools can not only aid in the preservation of the language but also reposition it in global discourse. On this basis, therefore, this paper aims a t examining the effect of Technology-Enhanced Language Learning (TELL) tools in advancing Igbo Language Education in Nigeria. Specifically, the purpose of this study is to explore how di gital technologies contribute to the revitalization, teaching, and learning of the Igbo language.

The objectives of the study are to:

i. Assess the types and usage of TELL tools currently applied in Igbo language instruction;
ii. Evaluate their effectiveness in enhancing learner engagement and language acquisition;
iii. Identify the challenges associated with the adoption of these technologies; and
iv. Propose strategies to improve the integration of TELL tools in promoting Igbo language ed ucation across different educational levels.

Conceptual Clarifications

Technology-Enhanced Language Learning (TELL): TELL can be defined as the use of technology in enhancing the learning and teaching of languages. It a llows for the integration of digital resources such as language software, online platforms, and m ultimedia tools to facilitate interactive and effective language learning experiences. These tools create immersive environments that foster both learning and communication (Hubbard, 2019). TELL, according to Chik (2017), is described as the employment of digital technologies to prov ide learners with opportunities for language interaction, exposure, and practice. Chik stresses th at the tools in TELL, such as mobile applications and social media platforms, offer learners auth entic communication settings, which are critical for improving language proficiency.

Godwin-Jones (2018) frames TELL as an educational tool that incorp orates multimedia tools such as videos, podcasts, and virtual classrooms, which provide learner s with diverse ways to interact with the target audience. He highlights that TELL is not only abo ut the use of these technologies but also how they are integrated into pedagogical frameworks to enhance education. Stockwell (2017) defines TELL as the integration of various technologies s uch as computers, smartphones, and internet-based resources to support and improve language l

earning. Stockwell focuses on how these technologies cater to diverse learning styles and provi de learners with customized, flexible, and accessible learning experiences.

The Current State of Igbo Language Education

The Igbo language is one of the three major indigenous languages in Nigeria that has continued to face serious challenges in the education system despite various policy frameworks and schola rly advocacy. The current state of Igbo language education is marked by a tension between cultu ral identity preservation and the increasing dominance of global languages like English. Several factors contribute to the decline of Igbo language education, including urbanization, lack of mot ivation among students, poor implementation of language policies, inadequate teacher training, and limited instructional resources (Okoye & Nnamani, 2021). To begin with, there is a notic eable decline in the number of students opting to study the Igbo language both at the basic and t ertiary levels. Parents and guardians often prefer their children to learn English or other foreign languages, viewing them as gateways to global opportunities and professional success. This atti tude undermines the National Policy on Education (NPE), which recommends the use of the mo ther tongue or the language of the immediate community in early childhood and primary educati on (Federal Republic of Nigeria, 2013). The policy is not effectively implemented, especially in urban centers where English is perceived as a status symbol.

Another major issue is the acute shortage of qualified Igbo language t eachers. Many of the available teachers are either untrained or underqualified, which affects the quality of instruction and students' interest in learning the language. According to Nwadike (20 02), the low enrollment of students into Igbo education departments in colleges and universities contributes to the dwindling number of trained professionals. This leads to a cycle of poor instru ction and declining interest among students. The teaching and learning materials for the Igbo la nguage are often outdated or insufficient. Many schools lack textbooks, storybooks, audio-visu al materials, and other resources necessary for effective language acquisition. Eze and Eze (201 9) noted that the integration of modern technology into the teaching of the Igbo language remai ns limited, further alienating digital-age learners who are more attuned to interactive and multi media learning methods. Despite t hese challenges, there are emerging efforts to revive and promote Igbo language education. No n-governmental organizations, cultural groups, and individual scholars have launched initiative s such as online platforms, language mobile apps, and holiday boot camps to teach Igbo to youn ger generations, especially in the diaspora (Uchechukwu & Chinedu, 2017). These innovations show the potential of technology-enhanced learning in revitalizing indigenous languages. Acco rdingly, there is a growing body of research advocating for the integration of indigenous knowle dge systems and language in the curriculum. Scholars such as Emenanjo (2016) argue for a cult urally relevant pedagogy that promotes language use as a means of preserving identity and trans mitting communal values. The importance of the Igbo language in cultural transmission, moral development, and national integration cannot be overemphasized.

Indigenous Languages and Digital Education

In recent years, the intersection of indigenous languages and digital education has gained increasin g attention in academic and policy circles. Indigenous languages, often marginalized in formal educational systems, are now finding new relevance through digital platforms, which offer inno vative ways to preserve, promote, and revitalize these languages in educational contexts. Digita l education, which encompasses online learning, educational apps, virtual classrooms, and digit al content, provides a unique opportunity to incorporate indigenous languages into teaching and learning processes in both formal and informal settings.

One of the most significant advantages of digital education is its capacity for inclusivity and ada ptability. Through localized digital content, learners can access materials in their mother tongue

s, which enhances comprehension and cultural identity. According to Warschauer (2013), langu age and technology can be used synergistically to foster inclusive educational experiences and c ultural sustainability. When learners engage with digital tools in their indigenous languages, it n ot only improves learning outcomes but also fosters a sense of pride and belonging, especially a mong younger generations who may be at risk of language loss. Moreover, digital platforms ser ve as repositories for indigenous knowledge and linguistic heritage. Audio recordings, video tut orials, and interactive e-learning modules can capture the nuances of pronunciation, idioms, and cultural expressions that are often lost in traditional textbooks. UNESCO (2022) emphasizes th at digital technology plays a crucial role in safeguarding linguistic diversity, especially in the fa ce of globalization and linguistic homogenization. With the right tools, communities can docum ent and share their languages online, making them accessible to a wider audience and future gen erations. However, challenges persist in integrating indigenous languages into digital e ducation. Issues such as digital illiteracy, lack of internet infrastructure, and limited funding oft en hinder the development and distribution of educational content in indigenous languages. Acc ording to Eke and Igwe (2018), the lack of governmental policy support and the dominance of c olonial languages in digital spaces remain major barriers. Furthermore, there is often a shortage of trained educators and content developers proficient in both indigenous languages and digital tools.

Language Endangerment and Revitalization Language is not only a tool for communication but also a repository of culture, identity, and worldview. W hen a language becomes endangered, it is not merely the vocabulary or grammar that is at risk, b ut the entire body of cultural heritage and knowledge embedded within it. Language endangerm ent occurs when a language is at risk of falling out of use, typically because its speakers shift to speaking another, often more dominant, language. UNESCO (2013) defines an endangered lan guage as one that is no longer spoken by children or transmitted to the next generation, indicatin g a break in the natural intergenerational transfer of language.

Several factors contribute to language endanger ment. These include globalization, urbanization, colonization, educational policies favoring do minant languages, and socio-economic pressures that encourage linguistic assimilation. In man y post-colonial societies, indigenous languages have been marginalized in favor of colonial lan guages such as English, French, or Portuguese, which are often viewed as gateways to social m obility, education, and economic opportunity (Crystal, 2010). As a result, younger generations i ncreasingly abandon their native tongues, leading to a rapid decline in fluent speakers. The impl ications of language loss are profound. It often signifies the erosion of indigenous knowledge sy stems, oral traditions, and community identity. As Nettle and Romaine (2010) observe, the exti nction of a language entails the disappearance of a unique way of interpreting and interacting wi th the world. This loss can lead to a diminished sense of self and belonging among speakers, esp ecially in communities that have experienced historical marginalization. In respons e to this crisis, language revitalization efforts have emerged worldwide. Language revitalization refers to the process of bringing an endangered or dormant language back into active use. These efforts can include formal education programs, community-based language classes, media broa dcasts, the development of dictionaries and textbooks, and digital tools such as mobile apps and websites. According to Hinton (2011), successful revitalization often depends on community in volvement, political support, and the integration of language into daily life and formal educatio n. One notable example is the revival of the Hebrew language in Israel, which transitioned from a liturgical language to a living, national language through deliberate planning and policy. In N ew Zealand, the Māori language has seen significant revitalization through initiatives such as *K ōhanga Reo* (language nests) and Māori-language broadcasting (Spolsky, 2013).

Similarly, in Nigeria, efforts to promote indigenous lan

guages like Yoruba, Igbo, and Hausa through radio programs, curriculum reforms, and mobile l anguage applications show promising outcomes, though challenges remain in sustaining these e fforts. Digital technology is increasingly playing a central role in revitalization. The internet off ers platforms for language documentation, virtual communities of speakers, and interactive lear ning tools that can engage younger generations. As Grenoble and Whaley (2016) point out, tech nology can facilitate the sharing of resources and foster cross-generational language transmissi on, which is vital for long-term language sustainability.

Technology-Enhanced Language Learning (TELL) Tools and Applications TELL t ools can offer learners immersive, interactive, and personalized learning experiences, helping t hem develop skills in reading, writing, listening, speaking, grammar, and vocabulary.

- **Learning Management Systems (LMSs):** LMSs like Google Classroom, Moodle, and Can vas support language learning by providing platforms for assignments, feedback, discussions and resource sharing. The use in language learning facilitates teacher-student interaction, int egrates multimedia resources, and allows assessment and monitoring (Al-Samarraie, Teng, Alzahrani, & Alalwan, 2020).
- **Mobile-Assisted Language Learning (MALL) Apps:** Applications like Duolingo, Babbel, Memrise, and Busuu use gamification and spaced repetition to teach vocabulary and gramma r. The tools is accessible, engaging, supportive of autonomous learning and adaptable to lear ner pace (Godwin-Jones, 2021) (Godwin-Jones, 2021).
- **Artificial Intelligence (AI) Tools:** AI-driven chatbots (e.g., Replika), translation tools (e.g., Google Translate), and intelligent tutoring systems provide real-time feedback and language modeling. This conversational AI enables practice of speaking and listening in real contexts (Zhang & Zou, 2022).
- **Virtual and Augmented Reality (VR/AR):** Platforms like Mondly VR and ImmerseMe si mulate immersive environments for language use. This tool engages learners in contextual, i mmersive scenarios for communicative practice (Lan, 2020).
- **Video Conferencing Tools:** Tools like Zoom, Microsoft Teams, and Skype are used for syn chronous communication and language exchange. This tool facilitates virtual classrooms, pe er interaction, and global collaboration (Choi & Yi, 2022).

Effect of TELL on Igbo Language Education

TELL offers a transformative approach to preserving and promoting the language amidst the gr owing challenges of globalization and declining use among younger generations.

- **Promotion of Igbo Literacy through Multimedia Tools:** TELL enables learners to access Igbo language content in audio, video, and interactive formats. Multimedia tools such as lan guage learning apps, podcasts, YouTube videos, and digital storytelling improve students' li stening, speaking, reading, and writing skills. These tools are especially helpful in providin g pronunciation models and cultural context (Umeodinka & Okoye, 2022).
- **Increased Learner Engagement and Motivation:** Gamified learning apps and interactive platforms (like Duolingo, NaijaLang, or custom Igbo learning software) enhance learners' motivation. These technologies make learning more enjoyable and reduce the anxiety that s ometimes accompanies traditional language learning (Eze & Nwachukwu, 2023).
- **Access to Authentic Learning Materials:** TELL allows learners to connect with native sp eakers and real-world materials. Through platforms like WhatsApp groups, Zoom classes, a nd online communities, learners can interact in Igbo and access folktales, proverbs, songs, a nd historical texts that provide immersion (Onuoha, 2021).
- **Teacher Empowerment and Innovation:** Technology empowers Igbo language teachers t o diversify their instructional methods. Teachers can use PowerPoint presentations, virtual

whiteboards, and language games to engage students, especially in schools where Igbo is taught as a second or third language (Nwankwo & Okeke, 2023).

- **Preservation and Revitalization of the Language:** TELL contributes to documentation and digital archiving of Igbo. Mobile apps, e-dictionaries, and online Igbo literature help in preserving the language for future generations. Some universities have also created digital repositories for Igbo texts and oral history (Okoro & Anozie, 2024).

Challenges of Integrating TELL in Igbo Language Education Despite the promising potential of Technology-Enhanced Language Learning (TELL) in revitalizing and improving the teaching and learning of the Igbo language, several challenges hinder its effective integration. These challenges stem from infrastructural, pedagogical, cultural, and policy-related factors.

- **Inadequate ICT Infrastructure:** Many schools, especially in rural and semi-urban areas, lack the basic technological infrastructure such as computers, projectors, reliable internet, and electricity. This inadequate digital infrastructure restricts access to TELL tools for both teachers and students (Eze & Ugwu, 2022).
- **Lack of Teacher Training and Digital Literacy:** Many Igbo language teachers are not adequately informed of the use of digital tools for instruction. According to Okonkwo and Eze (2021), a survey conducted among secondary school teachers in Anambra and Enugu States revealed that over 65% of Igbo language teachers lacked the necessary digital literacy skills to incorporate Technology-Enhanced Language Learning tools into their classroom practice. Similarly, Nwafor and Ogbu (2020) observed that most indigenous language instructors in public schools have limited access to professional development programs on educational technologies, which negatively affects their confidence and willingness to adopt TELL tools These findings point to a significant gap in digital pedagogical training that needs to be addressed if TELL is to be fully utilized in Igbo language education. A lack of professional development programs and digital literacy impedes the effective use of TELL in classrooms (Nwosu & Ibe, 2023).
- **Shortage of Digitized Igbo Content:** There is a limited availability of digitized and culturally relevant Igbo language learning resources. Unlike global languages like English or French, very few mobile applications, games, or multimedia resources are tailored for Igbo learners (Okafor & Nnaji, 2021).
- **Negative Attitudes and Low Prestige of the Language:** Some students and even educators perceive Igbo as less relevant in the digital age compared to foreign languages. This affects motivation to engage with the language, especially through technology, which is often associated with modernity and global connectivity (Uzochukwu & Ezeani, 2022).
- **High Cost of Devices and Internet Access:** The financial burden of acquiring smartphones and laptops and paying for data subscriptions makes it difficult for many families to support TELL-based learning at home or outside the school environment (Chukwuma & Okeke, 2023).
- **Policy and Curriculum Gaps:** The national curriculum for Igbo language education does not yet fully integrate digital literacy or encourage the use of TELL. In some cases, policies are outdated or not implemented effectively at the school level (Ihueze & Ndukwe, 2024).

Conclusion The integration of Technology-Enhanced Language Learning tools into Igbo language education has shown remarkable potential in improving student engagement, comprehension, and retention. This study has established that digital learning tools, when effectively utilized, create an interactive and learner-centered environment that supports the revitalization of the Igbo language, especially among younger generations who are more inclined towards technology. Despite existing

challenges such as insufficient ICT infrastructure and the scarcity of Igbo digital learning conte nt, the benefits of TELL in promoting interest, fluency, and cultural identity among learners are evident. Therefore, utilizing technology in indigenous language education is not only a pedagog ical advancement but also a strategic step toward preserving Nigeria's linguistic diversity.

Recommendations Th
e following recommendations were put forward based on the paper:

1. The Ministry of Education and curriculum developers should incorporate TELL tools into t he Igbo language syllabus at all levels to encourage structured and consistent use of technol ogy in language instruction.
2. Continuous professional development programs should be organized to equip Igbo languag e teachers with the necessary skills to effectively use digital tools and platforms in their teac hing.
3. There is a need for collaboration among linguists, software developers, and educators to cre ate culturally relevant and linguistically accurate Igbo digital learning resources, such as mo bile apps, e-books, and interactive games.
4. Government and private stakeholders should invest in ICT facilities, especially in rural and underserved schools, to bridge the digital divide and ensure equal access to TELL tools.
5. Policies that support the promotion and funding of indigenous language education through t echnology should be enacted and implemented across all states in Nigeria.

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