# REVOLUTIONISING TIV LANGUAGE PEDAGOGY: THE ROLE OF ARTIFICIAL INTELLIGENCE (AI) IN TIV LANGUAGE LEARNING

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**Abstract**
*This article explores the transformative potential of Artificial Intelligence (AI) in the revitalisation of Tiv language pedagogy. Traditional teaching methods have limitations in engaging contemporary language learners. Since digital transformation reshapes educational landscapes, the article proposes technology-infused approaches, methods and strategies leveraging adaptive learning platforms, speech-to-text technology for pronunciation enhancement, virtual reality field trips for immersive cultural experiences, as well as artificial intelligence-powered adaptive assessments. Effective integration of these innovative methods in Tiv language classrooms enhances learner engagement and motivation, facilitates interactive, student-centred learning, supports differentiated instruction, and fosters cultural competence and language proficiency. As a vital aspect of cultural identity, Tiv language faces challenges in preservation and transmission to younger generations. This article equally addresses issues, including infrastructural constraints, the digital divide, and teacher training needs. Furthermore, the article discusses the importance of cultural relevance in AI applications, ensuring that learners not only acquire language skills but also connect deeply with Tiv heritage. Revolutionising Tiv language pedagogy through technology not only promotes linguistic diversity but also facilitates the preservation of cultural heritage and empowers future generations.*

**Keywords:** Tiv language, language pedagogy, Artificial Intelligence, innovative technology, cultural preservation.

## Introduction

Tiv is a branch of the Benue-Congo language family spoken by the Tiv people residing primarily in Benue, Taraba, Plateau and Nasarawa states in Nigeria, as well as in Cameroon (Blench, 2019). According to the oral testimonial of the Tor Tiv; Orcivirigh

Prof. James Ortese Ayatse (2024), Tiv language has over 15 million speakers in the Middle Belt region, Central Nigeria of West Africa and beyond. Tiv language is a vital component of the rich cultural heritage of the Tiv people. However, the language faces significant challenges in its preservation and transmission to younger generations. Traditional teaching methods, often limited to textbook-based instruction and rote memorisation, struggle to engage contemporary learners accustomed to digital interaction. Additionally, challenges such as a lack of qualified teachers, inadequate resources, infrastructural constraints, and limited access to digital educational materials exacerbate the decline of Tiv language proficiency, especially among the younger generation.

In recent years, AI has evolved remarkably, transforming language learning globally, offering unprecedented opportunities for language preservation, cultural promotion, and educational enhancement. Unfortunately, educational institutions in the Tiv-speaking areas of Nigeria hardly use the Tiv language as a medium of instruction. There is also a lack of conducive learning environments, especially in rural areas, to foster learners' interest and proficiency in the language. This sad situation has led many teachers to relegate proficiency and acquisition issues of the Tiv language to the background and adopt practices that are not evidence-based in the teaching of the Tiv language.

This article investigates the pivotal role of artificial intelligence (AI) in enhancing Tiv language acquisition. Leveraging cutting-edge tools and methodologies, notably language learning applications and intelligent tutoring systems, will enable language educators to create immersive, interactive, adaptive, and personalised learning experiences that cater to diverse learning styles and needs. By offering immediate feedback and interactive content, these innovative technologies can significantly improve learner motivation and proficiency.

Furthermore, this study examines the challenges and opportunities of developing AI-based language learning resources for a minority language like Tiv. By examining the intersection of technology and language education, the article aims to identify effective technology-enhanced language learning strategies, address challenges, limitations, and propose future directions that can empower educators, policymakers, and community stakeholders to harness technology for Tiv

language pedagogy, preservation and cultural revitalisation. This ensures that the language remains a vibrant, living part of Tiv culture and identity. The findings of this study will contribute to the development of innovative, culturally responsive language education strategies, promoting linguistic diversity and cultural preservation in Nigeria and beyond.

**Brief overview of Tiv language and its cultural significance**

For years, Tiv language was only in oral form. There was no alphabetical system or sets of letters that could be used to write Tiv language. Eventually, the Dutch Reformed Church Mission (DRCM) introduced 24 out of the 26 English letters into Tiv language as follows:

ABCDEFGHIJKLMNOPRSTUVWYZ.

These letters were given Tiv names and made Tiv language a written language. As a result, the Holy Bible (Icighan Bibilo), hymns (atsam), catechism (katekisema), and other books were translated into Tiv and used in churches (ayou aduaa) and schools (imakeranta) (Dzurgba, 2012).

Additionally, the Missionaries introduced Arabic numbers: 123465678910 and roman numerals: i ii iii iv v vi vii viii ix x into Tiv language. These numbers were used in mathematics or arithmetic and pagination of published works, the Holy Bible, catechism, minutes and manuscripts. The introduction of letters and numbers contributed significantly to the development of both oral and written forms of Tiv language (Dzurgba, 2012).

However, it is important to note that recent studies have included the letter ‘’ as in ‘Aôndo’ making it 25 letters of the alphabet (abaacaa) in Tiv language now written: ABCDEFGHIJKLMNOÔPRSTUVWYZ.

The Tiv language holds significant cultural importance for the Tiv people serves as a means of communication, social bonding, and cultural transmission (Akiga, 2014). It is also known for its rich oral traditions, including proverbs, folktales, and songs. These traditions not only entertain but also convey valuable cultural knowledge and values. The language is closely tied to Tiv customs, such as the traditional marriage ceremony, initiation rites, and ancestral worship (Dougherty, 2017).

Deeply intertwined with the Tiv people's cultural identity, it serves as a medium for expressing their worldview, beliefs, and social interactions. The language's unique linguistic features, such as its tonal system and complex grammatical structure, reflect the Tiv people's distinct cultural heritage. Therefore, preserving the Tiv language is crucial for safeguarding the Tiv people's cultural identity and heritage. As globalisation and modernisation continue to influence the Tiv community, efforts to promote Tiv language education and usage are essential to ensure its survival and transmission to future generations.

**Challenges in Tiv language pedagogy**

Despite its rich cultural significance, the Tiv language faces several challenges in its education and preservation, notably:

**1. Lack of Interest and Negative Attitudes**

The Tiv language is confronted with a daunting challenge of apathy and negativity among learners. A significant challenge is the declining interest among younger generations in learning and speaking the Tiv language. This is often attributed to the perceived prestige and dominance associated with English and other global languages in education, media, and official circles, leading to a perception that Tiv language has limited utility and value (Terhide, 2019).

**2. Limited Resources and Materials:**

The unavailability of standard instructional materials and digital resources in the Tiv language further exacerbates this challenge (Akper, 2022). Consequently, this hinders effective teaching and learning processes making it difficult for learners to practice and improve their language proficiency.

**3. Insufficient Teacher Training and Capacity Building**

Teacher training and capacity building play a very crucial role in effective language instruction. However, a significant gap exists between teachers' perceived competence and actual teaching practices in Tiv language classrooms (Akper, 2022). Many Tiv language teachers lack adequate training and resources to effectively teach the language. This can impact the quality of instruction and student learning outcomes. Hence,

investing in teacher training programmes can help improve the quality of Tiv language education.

**4. Limited technology integration**

The value of technology in language acquisition, preservation and accessibility cannot be overemphasised. Lack of which limits language proficiency, learning and economic opportunities and also leads to cultural heritage erosion. According to Mnguh (2020), mobile apps and language learning software for the Tiv language are virtually non-existent.

**5. Assessment and evaluation challenges**

In the view of Terhide, (2019), the evaluation of Tiv language students' performance is compromised due to inadequate assessment criteria. Thus, lack of standardised tests and evaluation tools as well as limited research on assessment methodologies consequently lead to inaccurate measurement of student proficiency, ineffective identification of student learning gaps, reduced validity of grades and certifications, and limited feedback for educators to improve instruction.

**6. Insufficient government and Institutional Support**

Government policies and initiatives that promote indigenous languages, such as the Tiv language, can play a vital role in their revitalisation. However, its support for Tiv language is grossly inadequate (Iorbee, 2020). Similarly, institutional neglect of Tiv language development and insufficient government support and recognition of the Tiv language as a medium of instruction can hinder its development and preservation.

**The role of AI applications in language learning**

Artificial Intelligence (AI) has the potential to revolutionise language learning by offering innovative solutions that enhance the learning experience. Some potential applications of AI in language learning are as follows:

**1. Personalised Learning Experiences**

Personalised language learning facilitated by AI has gained significant attention in recent years, with AI-powered language learning platforms called Intelligent Tutoring Systems (ITS) such

as Duolingo, Babbel, Rosetta Stone, HelloTalk, Memrise, etc. These can analyse learners' strengths, weaknesses, and learning styles to create personalised learning paths, fostering personalised real-time feedback and improved language skills (Kumar, 2022). In the same vein, the existence of adaptive learning algorithms addresses the difficulty of the pace of lessons with tailored instruction to match individual needs, enhancing remote learning opportunities and flexible schedules, thereby ensuring optimal learning outcomes.

**2. Interactive Gamifications and Exercises**

AI-powered language learning games and exercises are essential as they can make language practice fun and engaging. Moreso, interactive tasks like gamification and simulation-based language learning improve vocabulary acquisition, grammar comprehension, pronunciation and fluency (Wouters, 2020).

**3. Immersive Language Learning**

Immersive language learning also known as Virtual Reality (VR) and Augmented Reality (AR) engages learners in authentic, interactive environments, simulating real-life experiences. They also enhance the creation of immersive language learning environments that provide learners with opportunities for real-time conversational interfaces with AI-powered chatbots where they can practice language skills in simulated real-world situations, such as ordering food in a restaurant or having a conversation with a native speaker. This enhances learner engagement, motivation and retention (Wouters, 2020).

**4. Intelligent Feedback Systems**

Intelligent feedback systems provide immediate, accurate, actionable and personalised guidance to language learners (Li, 2022). AI-powered speech recognition technology can provide real-time multimodal feedback and correction on pronunciation, accent, and intonation. Similarly, Natural language processing (NLP) algorithms can analyse written work and provide automated assessment of language proficiency, language improvement suggestions, and feedback on grammar, vocabulary, and style. This improves learner engagement, enhances language accuracy, better error correction, increases fluency and reduces teacher workload.

**5. Language Translation and Translation Assistance**
Neural Machine Translation (NMT), Deep Learning (DL), Natural Language Processing (NLP), speech recognition and text-to-speech conversion technology and other translation tools and assistants with their state-of-the-art performances have revolutionised cross-lingual communication outperforming traditional statistical models (Sutskever et al 2014). Machine translation can assist learners in understanding foreign language texts, documents, and speech in real-time. Other benefits include; enhanced efficiency, cost reduction, improved translation quality and accuracy etc. By leveraging AI, language learning becomes more efficient, effective, and enjoyable. Thus, AI-powered tools can help learners overcome language barriers, improve their language skills, and gain a deeper understanding of different cultures.

**6. Language preservation and documentation**
In an age where many languages are at risk of extinction, AI significantly contributes to the preservation and documentation efforts of endangered and minority languages, supporting linguistic diversity, cultural heritage and knowledge. AI-powered tools can help organize, structure and digitize linguistic data such as language text, audio and video recording, making it easier to access and analyze. Equally, speech recognition systems can transcribe and preserve spoken languages. AI's impact on language preservation and documentation underscores its potential as a tool for creating digital archives that foster cultural preservation and global understanding (Johnson 2020).

**Recommendations: Harnessing AI for Tiv Language Pedagogy**
The role of AI in language acquisition and pedagogy is becoming increasingly pivotal. Hence, integrating it in Tiv language pedagogy offers numerous exciting possibilities. Addressing challenges and collaborating with Tiv language communities will foster effective, culturally responsive AI-powered language education in the following ways:

**1. Data collection and resource development:** The very first phase is the collaboration among key stakeholders: community leaders, Tiv language experts, linguists, language institutions,

AI researchers and developers, educators and Tiv language enthusiasts to gather information ranging from Tiv language texts, audio, and video recordings to create a comprehensive digital corpus of Tiv language. Subsequently, apply Natural Language Processing (NLP) techniques to advance Tiv language capabilities, focusing on speech recognition, text analysis, sentiment analysis, and uncovering linguistic patterns, including grammatical rules, syntax, and vocabulary (Plank, 2020).

**2. Language documentation:** Develop a comprehensive online Tiv language dictionary, with definitions, phonological and grammatical guides and examples (Kamwangamalu & Mwaniki, 2020).

**3. AI-Powered Learning Tools:** The Development of interactive Tiv language learning platforms can be realised by investing in digital infrastructure, development and exploration of multimodal interaction, emotional intelligence, and cognitive architectures, as well as the creation of online forums on social media. Designing a web-based or mobile app for interactive lessons, quizzes, and games, virtual Tiv language assistant, developing a chatbot or voice assistant as conversational AI tools for language practice and machine translation systems where responses will be generated using Tiv language orthography integrated by speech recognition technology to evaluate learners' pronunciation and provide real-time feedback (Huang et al., 2020). In addition, the development of immersive language learning experiences using virtual and augmented reality and Intelligent Tutoring Systems (ITS) that can simulate human tutors and provide explanations, answer questions, and guide learners through the learning process. Implementing AI-driven adaptive learning systems to adjust lesson difficulty and content based on individual learners' progress (Dziuban et al., 2020) is equally crucial.

**4. Content creation and delivery:** Utilisation of social media platforms for language learning encompasses group discussions, community engagement, and digital storytelling, where interactive stories, videos, and animations are produced to teach Tiv language and culture. Podcasts and audio lessons will also

facilitate the creation of audio content for listening comprehension practice (Robin, 2020). Similarly, the development of Massive Open Online Courses (MOOCs) for structured learning can also be explored. (Liyanagunawardena et al., 2020).

**5. Teacher training programs:** Provide professional development workshops and online courses on AI-enhanced language teaching and investigate human-AI collaboration; hybrid approaches combining human and AI teaching. Training on how to develop tools to help teachers create customised lesson plans, track student progress, and identify areas of improvement will facilitate instruction (Koehler & Mishra, 2020). There should also be some form of community engagement by establishing online forums for teachers to share best practices and resources to improve Tiv language pedagogy.

**Pilot projects:** Implement AI-powered language learning tools in schools by equipping language laboratories and creating digital libraries in schools and communities.

**Assessment, evaluation and feedback:** Development of AI-driven assessment tools for Tiv language proficiency to identify knowledge gaps, and inform instruction, as well as collect feedback from learners, teachers, and community members to refine the AI-powered pedagogy (Linn & Roberts, 2020).

**Policy and standards/Cultural sensitivity:** Involvement of community leaders and key stakeholders, notably Tiv language experts, linguists, AI researchers and developers, educators and policymakers, government agencies (e.g., Ministry of Education) to establish a standard educational curriculum and guidelines for AI in Tiv language education. There could also be potential partnerships and collaborations with international organisation programs such as UNESCO's Language Preservation Program, Google's Endangered Languages Project, Microsoft's AI for Cultural Heritage, research institutions, and Language learning platforms (e.g., Duolingo) to enhance Tiv language pedagogy.

**Funding Opportunities:** Funding in form of government grants, private foundations and corporate sponsorships, crowdfunding campaigns, international organisations (e.g., UNDP), and other financial partnerships will go a long way to facilitating the preservation and documentation of the Tiv language and its cultural heritage. By following this road map,

AI can enhance Tiv language pedagogy, promote cultural preservation, revitalisation, and improve education outcomes.

**Conclusion**

The Tiv language has been passed down through oral tradition for centuries. However, Artificial Intelligence heralds a new era for Tiv language instruction, enabling educators to revolutionise learning experiences. Challenges exist, but not insurmountable. Addressing these challenges in promoting the Tiv language requires a collaborative effort from multiple stakeholders, including government agencies, educational institutions, language activists, and the entire Tiv community. There is, therefore, a call to action to ensure we get it right. Nevertheless, awareness is required for all stakeholders to understand how AI works, its limitations and how to critically engage with AI-driven language learning tools. By fostering a culture of ethical awareness and responsibility, the education community can harness the benefits of AI while mitigating its potential risks. Thus, we visualise an optimistic outlook on the future of Tiv language education with AI. Hence, by adopting this multi-faceted approach with the right collaboration, cultural sensitivity, and community involvement, we can harness AI's potential to enhance Tiv language pedagogy to help promote its rich linguistic tradition and cultural preservation at the same time, ensure accessibility and inspire future generations to embrace it.

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