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LANGUAGE DEATH IN VIRTUAL WORLDS: CAN AI-POWERED PLATFORMS PRESERVE ENDANGERED LANGUAGES THROUGH GAMIFICATION?

[1]Chijioke Edward (Ph. D) and [2]Tyokor Emmanuel Tor

[1]Department Of English and Literary Studies, Faculty of Arts, Godfrey Okoye University, Thinkers Corner, Emene, Enugu State.

[2]Department Of English and Literary Studies, Faculty of Arts, Godfrey Okoye University, Thinkers Corner, Emene, Enugu State.

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Abstract: *Language death remains one of the most urgent cultural crises of the 21st century, with thousands of languages at risk of extinction. This paper explores the role of artificial intelligence (AI) and gamification in addressing this challenge through the creation of virtual worlds that preserve and revitalize endangered languages. Drawing on insights from recent studies, the paper examines how AI-powered platforms enhance engagement, personalization, and adaptability in language learning while gamification sustains learner motivation through interactive challenges and rewards. It argues that such platforms hold potential not only for linguistic survival but also for cultural transmission when designed with authenticity and inclusivity in mind. The theoretical framework guiding the study emphasizes constructivist learning, where users co-create meaning through active participation in culturally relevant virtual environments. Key discussions center on the benefits and risks of gamified AI tools, the importance of cultural authenticity in digital platforms, and the necessity of sustainable preservation strategies. Findings highlight that while technology offers innovative opportunities, its long-term success depends on community involvement, intergenerational collaboration, and sustainable funding and design. The paper concludes that AI-powered gamification, when approached responsibly, can transform endangered languages from vulnerable relics into dynamic cultural assets, ensuring their continuity in both physical and virtual spaces.*

Introduction

Language is not only a medium of communication but also a repository of culture, history, and identity. When a language dies, the knowledge systems, oral traditions, and worldviews embedded in it are often lost forever. Globalization, urbanization, and the dominance of majority languages have accelerated the

extinction of many indigenous tongues. According to UNESCO, nearly half of the world's 7,000 languages are at risk of extinction within the next century. The question that arises in this digital age is whether advanced technologies such as artificial intelligence (AI) and gamification can intervene to halt this trajectory and preserve endangered languages for future generations.

This crisis can be solved through virtual worlds where the endangered languages can be learned, practiced, and revitalized, as it is an immersive environment where the languages can be used. These places are not bound by geographical barriers and so speakers and learners in different geographical locations can communicate. Gamification, i.e., the use of game-like components like rewards, levels, and challenges, has also proved to raise engagement and motivation in a language learning situation (Salmanova, 2025). Gamification when coupled with AI can personalize the learning process making endangered languages accessible not only but also enjoyable in virtual learning. In such a way, virtual worlds can make language revitalization a real active process.

The capability of technology-powered programs like Duolingo, Memrise, and more recent native-centered applications to augment technology and gamification into successful learning is already proven (Jesudas, 2025). These platforms also use adaptive algorithms, which customize information to the needs of individual learners and strengthen vocabulary, grammar, and praying. In the case of endangered languages, it can become revolutionary, since the small communities that may be widely separated can cooperate in structured revitalization efforts without necessarily having to locate anywhere near one another. More importantly, it opens endangered languages to the world that otherwise would rarely come in contact with such languages.

However, when it comes to AI-powered platforms, the task of integrating endangered languages is complicated by the problems. It is hard to train AI models with many of these languages since they have no adequate digital corpora, standardized orthographies, or documented learning materials (Ondiba, 2025). Moreover, cultural specifics that are encoded in the language cannot be reproduced in gamified activities in a way that allows for future concerns as to whether such languages can be kept in their integrity through digital technologies. These strains underscore the importance of using a balanced measure that combines a high degree of technological productivity with an acute cultural awareness. This balance can have the advantage of avoiding turning language preservation into a pathetic digital replica.

The rise of generative AI has provided new possibilities in language revitalization of the endangered population. In contrast to previous rule-based systems, generative AI can create conversations, stories, and cultural narratives in languages that are threatened, and this facilitates creative expression through digital worlds (Nanduri, 2024). By being integrated into gamified learning settings, those tools will create an immersion into real-life dialogs, cultural practices, and everyday rituals in which learners

may feel engaged not only on the linguistic but also on the sociocultural level. This ability to capture the cultural richness of a culture in digital spaces means that gamification is especially promising as a tool in holistic language protection.

Language maintenance as a result of AI-powered gamification also needs to be considered in the context of cultural resilience. Languages contain local and indigenous knowledge systems that are essential to the locals and the global communities that entail medicinal systems, certainties on the environment, and nature (Midigo, 2025). Technology is not only saving endangered languages but also the intellectual heritage of the human race by revitalizing endangered languages in virtual worlds. Video games, storytelling games, role-playing games, and group games are phenomena with potential to be used as mediators between the ancient and the modern. It is therefore not just a matter of pedagogy, but it is cultural survival being modernized in digital areas.

Although it has potential, gamification at the basis of Annual Information is not risk-free. Undue reliance on online sources can exclude the older native speakers who cannot read and write as well due to a lack of technological literacy, which can further increase intergenerational gaps (Ajani, Tella, & Dlamini, 2024). In addition, gamification prioritizes expediency, competition, and accomplishment, which is incompatible with the more deliberative, contemplative, characteristics of traditional language transfer. Endangered language data hosting by the big tech companies raises some ethical issues about data ownership and cultural appropriation. These dangers remind us of the importance of structures that can enable the community to maintain the ownership of its linguistic heritage.

However, there is a basis for promising results on case studies that have been conducted globally. Another example is the AI-based applications that help to revive M 2209to convert speech recognition, translations, with the help of gamified virtual events and digital storytelling (Ondiba, 2025; Hesborn, 2025). These projects not only attract the youngest generations but also serve as a means of remembrance between diaspore communities and their linguistic origin. Such cases suggest that under proper design, AI and gamification can be very useful tools in turning around language decay. They postulate that technological intervention must be suited to the exacting needs of the cultural and social context of any given language.

This research is worthwhile since it is interdisciplinary with elements of sociolinguistics, educational technology, and AI studies. In this paper, an analysis of the intersection of gamification and AI regarding the topic of language death will be performed to reveal the potential opportunities and limitations of digital interventions. It plays a part in the current discussions of whether technology should be used as a sustainable medium of maintaining cultures or whether it can turn the learning of languages into a form of entertainment. In the process, it is pushing for a wider picture of how digital innovations are integrating with endangered languages.

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This paper proceeds by grounding its analysis in a strong theoretical framework, followed by a discussion of three key dimensions: the role of AI-powered gamification in linguistic revitalization, the challenges of cultural authenticity in virtual language worlds, and the prospects for sustainable digital preservation. Ultimately, it argues that while AI and gamification cannot singlehandedly prevent language death, they can play a catalytic role in fostering engagement, intergenerational transmission, and cultural continuity in the digital age. This positioning underscores the urgent need to merge technological advancement with sociocultural responsibility.

Theoretical Framework

Technological Determinism

The theoretical framework for this study is Technological Determinism, a concept rooted in the work of Marshall McLuhan and later scholars who argue that technology shapes human communication, cultural practices, and social structures. According to this perspective, technologies are not neutral tools but active agents that restructure how people interact with their environment and with each other. Applied to language death, technological determinism suggests that AI and gamification have the power to reshape not only how endangered languages are learned but also how they are perceived and valued in society. This theory provides a powerful lens to examine whether digital interventions can shift the trajectory of language decline toward revitalization.

Technological determinism argues that when a technologically novel set is introduced to society, it begins to take culturally predetermined forms. With gamification and AI, the platforms built in the case of endangered languages can create new standards for the use and preservation of the language. As an example of gamification, visit learning apps that encourage establishing a connection between the app and the user and reinforce a pattern of the user returning to learn the languages being a daily routine (Salmanova, 2025). In this prism, gamification is not a motivational tool but a way of modifying the modernization of endangered languages into contemporary lifestyles. Therefore, technological determinism emphasizes the metamorphic power of innovation in cultural survival.

The most important strength of this theory lies in the fact that it allows explaining the macro-level changes in language use that arise when societies move to digital technologies. In contrast to the previous theories of linguistic change that put the determining power of human agency solely, technological determinism also stresses the role that the learned use of various tools, including AI chatbots, gamified stories, and virtual events, can play in transforming cultural participation (Ingram, 2025). Using this theoretical background, it is therefore easier to understand how a contentious language death can be caused or prevented by the structural dominance of the digital environments. This is why it is especially applicable to the research on virtual worlds and endangered languages.

Technological determinism has also been criticized because it describes technology as exerting more power and undermining human power. The way in which technologies are used,

customised, or resisted is the end decision of communities. In the case of endangered languages, this implies that although AI-powered gamification can open new opportunities, are people willing to see it as a part of their cultural experience? Critics suggest that technology will not work instead of the human connections and continuity through the ages that are important to language preservation (Ondiba, 2025). Therefore, this paper employs technological determinism with caution, because its findings have value though it suffers drawbacks.

The theory also gives a good approach to discussing the connection between entertainment and education. Gamification tends to merge the boundary between learning and play and makes the process of language acquisition more engaging. In technological determinist terms such innovations redefine what it means to learn endangered languages. Whereas learning a language could only be restricted to the classrooms or community meetings, the process will be digital and gamified, and can be used anywhere. This transition is both a pedagogical change and an act of cultural redefining the usage of language in the digital world.

Also, technological determinism enables one to explore how virtual worlds can be used as new ecologies by endangered languages. Digital environments define where digital languages are to flourish or die the same as physical spaces define the direction of linguistic practice. Gamified platforms with AI facilitate three functions, a digital habitat that can support interaction, discourse, and cultural expression (Midigo, 2025). In these virtual habitats, endangered languages can be sustained through accommodating the structures of play, competition, and collaboration through gamification. This ecological understanding adds muscle to the suggestion that technologies are not neutral but constructive of linguistic futures. Lastly, the application of technological determinism will guide this study towards ensuring that it takes into consideration the structural strength of AI and gamification in the production of culture. It insists that technological decisions do not merely represent isolated innovations but rather, that they are re-shaping systems of learning and socialization. The use of gamified AI, in this case, can be viewed as a tipping point in the case of endangered languages: such a solution may either help restore vigor to a language or lead to its further obscurity in case the technologies do not do justice to cultural layers. By placing the study of this theory, the analysis will bring out the potential and the danger of using digital platforms in the fight against language death.

AI-Powered Gamification and Linguistic Revitalization

AI-powered gamification has emerged as one of the most promising tools in revitalizing endangered languages. By integrating interactive features such as point systems, badges, leaderboards, and challenges, platforms transform language learning into an engaging experience. Unlike traditional classroom instruction, these digital interventions keep learners motivated through constant feedback

and achievement recognition (Salmanova, 2025). The interactive nature of gamified learning creates a sense of accomplishment that drives sustained participation, a crucial factor for endangered languages where speaker communities are often small and dispersed. Thus, gamification enhances not only the cognitive but also the emotional dimensions of language revitalization.

Personalization is one of the most important aspects where AI can help on gamified platforms. Algorithms study the development of the user and adjust the difficulty level, so as not to overstrain or ridicule the learner (Jesudas, 2025). In endangered languages, where learning resources become limited, personalization will guarantee the individualization of every learner to create the best path to retain information. This personalization also accommodates various learner backgrounds including those in the diaspora and may have had little exposure to their ethnic language. AI helps to make endangered languages more realistic and friendly to learn by individualizing the educational process.

The other major benefit of gamification driven by AI is centred on the possibility of incorporating cultural narratives into the learning process. Generative AI, e.g., can create folk stories, proverbs, and conversations with cultural implications and therefore makes language learning more context-diverse (Nanduri, 2024). In the case of endangered languages, such integration is unavoidable since a language cannot be divorced of the culture that it carries. Not only do the storytelling exercises teach vocabulary but they also become part of collective memory. Maintaining linguistic forms and their sociocultural meanings, AI-based platforms have proven to become the framework for involving cultural immersion with the game mechanics.

Experience in various regions presents evidence of the prospects of such method. In Kenya, platforms that use artificial intelligence have assisted language revitalization in the Suba language through the promotion of gamified cultural events and online storytelling festivals (Ondiba, 2025). In New Zealand, the language has been taught using AI applications at Māori communities where the language can also be learned through the interactive games that simulate traditional rituals and oral practices. The cases have demonstrated that AI-based gamification is not restricted to Western technologies but can be modified to different cultural settings. They demonstrate how one can innovate in line with local customs to reinforce linguistic legacy.

Importantly, gamified AI systems encourage the passing of language across the generations. Younger generations who are often more engrossed in dealing with online media, can find such platforms attractive, whereas, older speakers can be used as reservoirs of expertise and representatives of culture. This brings a working atmosphere of conventional wisdom and new technology. The process also dispels the impression that endangered languages are old-fashioned or irrelevant. By enveloping them in innovative platforms, AI revises dying languages into valuable assets in the digital age. Not only

does this reinvigorate languages, but it also rebrands them so that they will be relevant in the future.

Beyond education, gamification strengthens social cohesion among dispersed communities. Virtual competitions, collaborative tasks, and group storytelling allow community members across continents to interact in their shared language. Such digital gatherings reduce the isolation of smaller linguistic groups and reinforce identity (Midigo, 2025). In the context of globalization, these platforms provide a cultural anchor for diasporic populations who may otherwise lose touch with their linguistic roots. Thus, gamification transforms language learning into a communal, identity-affirming practice.

Moreover, gamification fosters consistency, which is critical in reversing language decline. Studies show that learners are more likely to sustain long-term engagement when activities are fun and rewarding (Jesudas, 2025). Daily streaks, progress tracking, and achievement rewards make learners accountable for their participation. For endangered languages, where consistent use is vital to survival, this element of gamification ensures ongoing practice. It creates a sense of responsibility and routine that contributes to language preservation.

Although these are the potentials that AI-powered gamification can yield there are challenges to overcome. Some of these endangered languages do not have enough digital information to train the AI models, which allots fewer levels of personalization (Ondiba, 2025). As well, oversimplification (in which intricate grammatical constructs and cultural connotations of a language are boiled down to gamified asides) is an ever-present threat. This may be detrimental to the authenticity of the learning process and may even distort cultural meanings. Because of this, it is important to consider a careful design, so that gamification would revitalize, and not trivialize.

Accessibility is the other limitation. The indigenous languages with few survivors are found in areas that are poorly connected to the internet and digital facilities. By failing to fix these systemic disparities, AI-enabled gamification may perpetuate these key disadvantages as large metropolitan and diasporic populations are prioritized and people in rural or disadvantaged regions are omitted. This would snowball, and create even more linguistic deterioration than it aims to halt. Itineraries created by policymakers and developers should thus be focused on inclusivity by design where lightweight, offline-compatible applications are made to access the most vulnerable populations.

Altogether, gamification powered by AI can be used to revive dying languages with the potential of increasing motivation, individualization, and cultural integration. These platforms will ultimately become linguistic habitats when they are thoughtfully created and implemented in unlimited ways. But their success lies in striking a balance between the technological innovation, the cultural authenticity and the equity of access. The question is not whether it will be possible to use gamification to facilitate revitalization but whether it can be achieved in a way that does not

compromise the integrity of the languages in revitalization.

Cultural Authenticity in Virtual Language Worlds

Among the most crucial issues in the process of making the endangered language sound more expressive with the help of digital means is preserving authenticity in culture. Instead of seeing language as a collection of words and rules of grammar, it is in fact a vital embodiment of beliefs, customs, and world-views. There are risks, however, that when migrated to the virtual worlds, cultural depth can be leveled to simplified content that better serves to gamify it. To give an example, game mechanics would tend to emphasize speed and efficiency, thus going against the more considered, contemplative practices in which oral traditions are upheld. Any AI-powered gamification runs the risk of relegating threatened languages to gimmicky learning experiences instead of as a means of cultural maintenance.

Cultural authenticity cannot be achieved simply by using correct words, because they have to reflect a social situation in which speakers use language. In many indigenous languages, meaning is bound up in ceremonies, kin structure, and ecological knowledge. In online gaming platforms where the distribution of language is divorced away within these environments, language may be misrepresented or watered down. An example is when a proverb that has been learned by using a digital flash card will not make sense when detached from the context in which it is contextually applied (Ajani, Tella, & Dlamini, 2024). This points out the necessity to make platforms no longer culturally situational but, in fact, correct in more ways than just technologically.

Gamification enables the creation of an utterly participatory environment that may help to address this issue through the use of immersive storytelling and cultural simulations powered by AI. Traditional myths, historical narratives, and oral performances can be modelled with the help of generative AI, which helps to place the language in the context of cultural experience (Nanduri, 2024). The combinations of virtual role-playing games can enable the learners to virtually enact ceremonies or even festivals and make them more than memorizing words only but also the cultural meanings associated with them. The approaches can indeed guarantee that the endangered languages will not be taught outside of their contexts becoming less authentic. In that sense, virtual worlds can serve as both a cultural and a language learning environment.

The issue of cultural authenticity also raises questions about ownership and representation. Who decides which cultural practices are incorporated into digital platforms? If corporations or external developers control the process, there is a risk of cultural appropriation or misrepresentation. Ingram (2025) emphasizes that AI-driven preservation efforts must involve indigenous communities as co-creators rather than passive recipients. This participatory approach ensures that the virtual representation of languages reflects authentic voices rather than external interpretations.

Empowering communities as partners in design is therefore key to cultural sustainability.

Another important dimension is the intergenerational transmission of cultural knowledge. Elders are the custodians of many endangered languages, but they may lack familiarity with digital tools. If their voices are excluded from gamified platforms, the authenticity of the content is compromised. Conversely, involving them in the creation of stories, dialogues, and cultural material ensures that younger users are exposed to traditional wisdom. Projects that bridge elder knowledge and youth digital literacy can create authentic, multi-generational platforms for language survival (Ondiba, 2025). This collaboration reinforces continuity across age groups.

Authenticity also depends on how digital platforms represent the worldview embedded in language. Many indigenous tongues include concepts that cannot be directly translated into dominant languages such as English or French. For example, ecological terms may carry spiritual or relational meanings tied to specific landscapes. If gamification simplifies these into literal translations, their deeper significance may be lost. Developers must therefore design exercises that highlight untranslatable concepts as unique cultural assets rather than obstacles. This approach affirms the distinctiveness of endangered languages within digital worlds.

Virtual worlds can also be sites of cultural negotiation. As younger generations engage with endangered languages through AI and gamification, they may adapt traditional forms to modern contexts. While some purists may view this as inauthentic, others argue that such adaptation is a sign of vitality. Living languages evolve, and virtual spaces may provide a platform for creative renewal. For example, digital slang, memes, or interactive games in endangered languages can coexist with traditional expressions. The challenge is to balance respect for tradition with openness to innovation (Midigo, 2025).

Moreover, authenticity is tied to the ethical use of cultural data. Digitizing endangered languages requires collecting stories, recordings, and rituals, which raises questions about intellectual property and cultural rights. If companies monetize this content without fair compensation, communities risk exploitation. Hesborn (2025) argues that policies must safeguard community ownership of linguistic data to prevent cultural commodification. In this sense, authenticity is not only about accurate representation but also about ethical stewardship of heritage. Protecting these rights is central to building trust in digital platforms.

The authenticity question is also extended to the aesthetics of the virtual worlds. The graphical schemes, avatars, and environments should exhibit the cultural identity of the group of languages. An example of a gamified learning platform on African languages, in this case, needs to include local symbols, dressing, and scenery instead of generic internet templates. The use of these design options determines the way the learners will see the language and its cultural richness. Aesthetics are very critical because they create an immersive experience that connects to cultural pride by embedding

authentic aesthetics in the platform. This relates the representation of existence on the computer to the real world of existence.

In summary, a successful digital language revitalization has to rest on cultural authenticity. Otherwise, AI-based gamification may end up transforming – and deforming -- the language on its way to extinction into a pale shadow of caricatured cultural fluff. Authenticity implies a community role, intergenerational and collaborative, ethical data, and culturally-based design. These may prove to be challenging areas, however, virtual worlds are avenues that provide rare chances to integrate tradition and technology. With responsible use, they have the potential to do more than words are claimed to preserve and that is to maintain a complete world of a culture intact, so much of the form and context remains and does not undergo distortion.

Conclusion

The employment of AI-saturated gamification in the context of language preservation is an illuminating example of what the future of endangered-language preservation in virtual worlds may hold and the obstacles they will face. These new platforms develop the level of engagement, personalization, and interactivity that make a language learning process more attractive to younger generations, and have the potential to connect multigenerational generations. Simultaneously, they are made or become effective with the help of cultural authenticity, community participation, and ethical protection. Without the above, threatened languages may degenerate into dead digital objects. Therefore, maintaining languages within virtual worlds has to be more than technical advancements, but rather based on cultural and social continuity.

One of the factors that is found to play a dominant role in long-term success is sustainability. Digital platforms should be created in such a way that they are flexible, inclusive, and fiscally sustainable so that after initial excitement or funding, it does not collapse. Synergies among communities and among communities, governments, academia, and technology companies are vital in creating sustainable preservation structures. By combining the power of innovation and responsibility, the process of gamification, powered by AI, may take the languages that are in danger of dying out to a new life. In the end, the sustainability of even developed tools as living cultural resources determines the future of linguistic diversity.

Recommendations

1. AI-powered gamified platforms for endangered languages should be designed with strong cultural input from native communities.
2. Governments, universities, and technology companies must collaborate to provide financial and technical sustainability.
3. Platforms should prioritize accessibility, including offline and low-bandwidth versions for marginalized users.
4. Intergenerational collaboration must be encouraged, integrating both elders' cultural wisdom and youth digital creativity.

5. Ethical safeguards should be established to protect community ownership and prevent exploitation of cultural data.

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