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Interplay of Digital Connectivity, Artificial Intelligence (AI), and Global Language Networks on the Preservation and Revitalization of Linguistic Diversity in Language and Literature Education

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Article Info

Abstract

The digital age, characterized by pervasive IoT connectivity and advanced Artificial Intelligence (AI) tools like ChatGPT, is fundamentally reshaping the landscape of language and literature education. This era witnesses the proliferation of cyber literature and the emergence of connectivity as a new paradigm for network-based learning, promising enhanced student engagement, motivation, and personalized experiences. However, the integration of AI also raises critical concerns about originality, creativity, and the essential need for verification of information. Concurrently, the world's linguistic interconnectedness is increasingly structured by Global Language Networks (GLNs), where English functions as a central global hub, significantly influencing information flow and the visibility of cultural content. This globalizing trend unfolds against a backdrop of an urgent crisis in linguistic diversity, with nearly half of the approximately 7,000 documented languages facing endangerment, and projections indicating a substantial increase in language loss without targeted interventions. Key predictors of this decline include greater road density and formal schooling policies that, if not bilingual-supportive, can contribute to the erosion of minority language vitality. This research topic investigates the intricate interplay of these digital forces and GLNs on the preservation and revitalization of linguistic diversity within language and literature education, seeking to identify strategies that leverage technological opportunities to safeguard and promote global linguistic heritage.

1. Introduction

The twenty-first century is defined by an unprecedented pace of technological advancement and global connectivity, fundamentally reshaping human interaction and cultural expression (Rahman, 2019) [7]. The advent of Artificial Intelligence (AI), epitomized by tools like ChatGPT, and the pervasive Internet of Things (IoT) connectivity, has ushered in a new era for literary studies and education, marked by the rise of cyber literature and network-based learning paradigms (Rahma, 2017) [8]. These digital innovations present both transformative opportunities and significant challenges for how languages and literatures are taught, learned, and sustained (Celce-Murcia *et al*., 2020) [3]. In education, connectivity is emerging as a new paradigm, integrating technology for network-based learning that enhances student engagement and transforms the teacher's role into a facilitator.

Amidst this digital revolution, the intricate web of global communication is increasingly structured by Global Language Networks (GLNs), which emerge from the interactions of multilingual speakers and translated texts across platforms like Wikipedia and Twitter. These networks reveal a hierarchical structure, with English acting as a central global hub, and a few

other languages serving as intermediate hubs, influencing the flow of information and visibility of cultural content worldwide. While digital platforms (like Twitter and Wikipedia) can be more inclusive of diverse languages from developing countries compared to traditional media such as printed books (Ronen, 2017). This globalizing force also casts a long shadow over the world's linguistic diversity.

Indeed, humanity faces an urgent crisis where nearly half of the approximately 7,000 documented languages are currently endangered, with dire predictions of significant loss within the coming century if no interventions are made. Factors such as increased road density (which may encourage population movement and contact with dominant languages) and the impact of formal schooling policies (which can contribute to the loss of language diversity, particularly when bilingual education is not supported) are identified as significant contributors to language endangerment (Bromham *et al*., 2022) [2].

This alarming trend underscores the critical need for urgent investment in language documentation, bilingual education programs, and community-based revitalization efforts to safeguard these languages. Therefore, this research topic aims to explore the complex "Interplay of Digital Connectivity, Artificial Intelligence (AI), and Global Language Networks on the Preservation and Revitalization of Linguistic Diversity in Language and Literature Education.''

It seeks to understand how these powerful digital forces, while offering new avenues for learning and dissemination, can also be strategically leveraged to counteract the accelerating loss of languages and foster a more linguistically rich and inclusive educational future.

2. Digital Connectivity and AI
The contemporary educational landscape is undergoing a profound transformation, driven by the pervasive forces of digital connectivity and Artificial Intelligence (AI) (Kress, 2020) [6]. This era, sometimes described as the Industrial Revolution 5.0, emphasizes the integration of advanced technology with human expertise to create more adaptive and responsive systems across all sectors, including education (Wahyudi, 2022) [11]. Within this rapidly evolving environment, language and literature education faces the dual challenge of harnessing these technological advancements while navigating the complexities of multilingualism, cultural diversity, and the pressing crisis of global linguistic endangerment (Eslit, 2023) [5].

The rise of IoT connectivity and AI tools like ChatGPT has ushered in a new paradigm for literary studies, leading to the emergence and increasing popularity of cyber literature. Literary works, as cultural products, are compelled to adapt to these technological advances. The widespread dissemination of electronic literary works is rapid, effective, easy, and often free, posing a perceived "threat" to traditional printed literature by shifting reading habits towards online platforms (Eslit, 2023) [5]. ChatGPT, an AI product, significantly eases text-related tasks such as paraphrasing, copywriting, and writing literary or scientific works, accelerating outcomes in literary discussions and studies. However, its use in education sparks debate: while proponents see it as a tool to enhance discussions, critics raise concerns about potential student laziness, lack of originality, and hindered creativity, emphasizing the crucial need for verification and validation of AI-generated information (Weda, 2022) [12].

Beyond literature, connectivity itself is viewed as a new paradigm in education, fundamentally altering traditional learning processes. Technology integration and AI are central to this network-based learning model, transforming the teacher's role into a facilitator rather than a sole information instructor. Studies demonstrate that connectivity significantly increases student engagement, motivation, and collaboration, particularly through advanced online platforms like Learning Management Systems (LMS) and collaborative tools. AI, as utilized by platforms like Coursera and Udemy, enables personalized and adaptive learning by tailoring content to individual student needs and learning patterns, thereby speeding up the learning process (Arwan, 2024) [1].

3. Global Language Networks
In this interconnected world, Global Language Networks (GLNs) are formed by multilingual speakers and translated texts across various platforms, including book translations, Wikipedia, and Twitter. These networks exhibit a hierarchical structure, with English serving as the central global hub and several other languages (e.g., Spanish, German, French, Russian, Portuguese, Chinese) acting as intermediate hubs. The position of a language within these GLNs significantly correlates with the global visibility of its speakers and the cultural content they produce. Languages with higher centrality in the GLN can facilitate direct and indirect communication and translation paths, making them disproportionately influential in information flow. Interestingly, digital platforms like Twitter and Wikipedia appear to be more inclusive of languages from developing countries, such as Malay, Filipino, and Swahili, compared to more formal media like printed books. This suggests that informal digital channels might offer different avenues for linguistic expression and connection (Ronen *et al*., 2014) [9].

4. The Crisis of Linguistic Diversity
Despite the expansive reach of digital communication, the world faces an urgent crisis of linguistic diversity, with nearly half of the approximately 7,000 documented languages categorized as endangered. Predictions suggest that language loss could triple within the next 40 years, with over 1,500 languages potentially ceasing to be spoken by the end of the century without intervention (Bromham *et al*., 2022) [2]. This rapid decline is largely attributed to colonization and globalization.

Research identifies several key predictors of language endangerment:
- Number of first-language (L1) speakers is the strongest predictor, as language loss often occurs when people shift from their heritage language to a different one.
- Road density in a language's surrounding area is consistently associated with increased endangerment, likely reflecting increased human movement that brings communities into contact with larger towns, commerce, and centralized government languages, rather than simply language contact itself. In fact, direct contact with neighboring languages does not, by itself, appear to be a threatening process; languages in greater contact with other indigenous languages sometimes exhibit lower endangerment levels.
- Higher average years of schooling is also associated with greater language endangerment, suggesting a negative impact of formal education on minority language vitality, especially where bilingual education is not

adequately supported or is actively discouraged. While policies affirming minority language education exist in some regions, their inconsistent implementation or focus on dominant language acquisition can undermine their effectiveness Law (1984).

- Other factors include bordering language richness and the number of endangered languages in the immediate neighborhood, indicating regional influences.

The prediction of future language loss underscores the critical need for urgent investment in language documentation, bilingual education programs, and community-based revitalization efforts. Alarmingly, a significant portion of languages predicted to be lost within 80 years currently have little to no documentation, even though many still have living L1 speakers, presenting a crucial window for intervention (Bromham *et al.*, 2022) [2].

5. Challenges and Opportunities of Language and Literature Education in the Era of Global Connectivity

Language and literature education in the digital age is a dynamic field focusing on language proficiency, literary analysis, cultural understanding, and technology integration (Seidenberg, 2017) [10]. Educators are challenged to adapt to global connectivity, multilingualism, and cultural diversity to equip learners with essential skills for an interconnected world. Key theoretical frameworks guiding this adaptation include sociocultural theory (emphasizing social interaction and cultural context), critical literacy theory (critical analysis of power dynamics in texts), and multiliteracies theory (importance of digital and multimodal literacies) (Kress, 2020; Eslit, 2023) [6, 5].

The integration of technology offers numerous opportunities:

- Enhanced Engagement and Learning Outcomes: Digital tools, online platforms, and multimedia resources provide authentic language use, interactive engagement, and access to diverse literary works. Technology can foster creativity and enthusiasm for learning, allowing students to connect with different cultures and perspectives.
- Multimodal and Personalized Learning: Innovations like digital storytelling and augmented reality applications can enhance vocabulary learning, cultural understanding, and multimodal language learning. Online language exchanges also foster multilingualism and intercultural communication.
- Inclusive Pedagogies: There is a strong emphasis on fostering inclusive learning environments that value students' linguistic and cultural backgrounds, promote critical thinking, and encourage intercultural understanding through diverse texts and authentic materials (Chen & Lin, 2020) [4].

However, the era of global connectivity also presents significant challenges for education:

- The Digital Divide: Unequal access to technology and the internet remains a major obstacle, especially in developing countries, hindering network-based learning opportunities for many students (Arwan, 2024) [1].
- Digital Literacy and Responsible Use: While technology enhances learning, educators must also teach students to be critical consumers of digital content, evaluate sources, and verify information responsibly, especially with the rise of AI tools that may lack originality (Rahman *et al*,

2019) [7].

- Cultural Compatibility: In some cultures, hierarchical structures can impede the open, egalitarian interactions necessary for network-based learning, requiring cultural adaptation in pedagogical approaches (Arwan, 2024) [1].

6. Conclusion

The interplay of digital connectivity, AI, and global language networks presents a complex, often paradoxical, scenario for the preservation and revitalization of linguistic diversity in language and literature education. While global language networks highlight the dominance of certain languages, potentially sidelining others, digital platforms also offer new avenues for exposing and connecting diverse languages. AI tools like ChatGPT, despite concerns about originality, can streamline documentation and information access for language studies. However, the same connectivity that facilitates global interaction can, through increased road density and educational policies prioritizing dominant languages, accelerate the loss of indigenous languages.

The research underscores the urgent need for a strategic, multi-faceted approach within language and literature education to leverage the opportunities of the digital age while mitigating its risks. This includes: prioritizing investment in documenting endangered languages before their L1 speakers are lost; implementing genuine, culturally responsive bilingual education programs; fostering digital literacy and critical thinking to navigate AI-generated content; and developing inclusive pedagogies that celebrate multilingualism and cultural diversity within technologically enhanced learning environments. Addressing the digital divide and adapting teaching methods to local cultural contexts are also crucial for ensuring equitable access and effective implementation of connectivity in education globally. Continued innovation, research into long-term impacts, and robust policy support are essential to shape an educational future where technology empowers the preservation and vitality of the world's linguistic heritage rather than contributing to its decline.

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