Artificial Intelligence in Language Education: Applications, Prospects, Challenges, and Risks: The Case of Georgia

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Abstract

The rapid expansion of digital technologies in the 21st century has transformed domains traditionally controlled by human activity, including education. In developing countries such as Georgia, this transformation is particularly visible in higher education, where artificial intelligence (AI) is increasingly integrated into language teaching and learning. Based on an extensive literature review and an exploratory survey of language students in several Georgian universities, this article examines current uses of AI in language education, their pedagogical benefits, and the ethical and institutional challenges they raise. The findings show that students largely perceive AI as a valuable complementary tool that enhances personalization, accessibility, and engagement in language learning. A majority reported that AI tools helped them better understand and retain information, supported autonomous learning, and adapted to their individual pace. At the same time, the study reveals significant concerns regarding technological dependency, the reduction of human interaction, and the protection of personal data. Many students emphasized that AI cannot replace the teacher's pedagogical and intercultural role. The article concludes that while AI has clear potential to improve language education in Georgia, its integration must be ethical, regulated, and teacher-mediated to avoid risks related to overreliance on technology and data misuse.

Keywords: Artificial intelligence, language education, educational technologies, personalization, ethics, Georgia

Introduction

Teaching and learning foreign languages occupy a central position in contemporary educational systems due to their decisive role in international communication, academic and professional mobility, and the development of intercultural competencies. Traditionally, language education is based on human interaction, linguistic immersion, and the co-construction of meaning through authentic exchanges.

Since the beginning of the 21st century, the rapid development of artificial intelligence (AI) has profoundly transformed these foundations. Advances in machine learning, natural language processing, and educational data analysis have enabled the development of tools capable of imitating certain human cognitive functions: language comprehension, written and oral production, automated assessment, and dynamic adaptation of pedagogical content. According to the OECD (2021), AI represents one of the most promising levers for improving the efficiency, equity, and accessibility of educational systems. However, teachers increasingly perceive it as a serious threat to their employment and, consequently, as a source of existential crisis. This technological transformation raises major questions among scholars and researchers worldwide. While AI is often presented as an innovative solution to the limitations of traditional teaching, many researchers warn against the risks of dehumanizing learning, linguistic standardization, and violations of learners' privacy (Kukulska-Hulme & Shield, 2008; 2018). In the linguistic field, these issues are particularly sensitive, as language is inseparable from culture, identity, and social relations.

In the field of language teaching, the growing integration of artificial intelligence (AI) has generated sustained academic interest. This section examines the main theoretical and empirical contributions related to the use of AI in language education, highlighting its pedagogical benefits, limitations, and ethical challenges, with particular attention to the Georgian context.

Artificial Intelligence in Education (AIED) has gradually emerged as a structured research field since the 1990s, in connection with the development of digital technologies and adaptive learning systems. According to Luckin et al. (2016), AI can assume several functions within the educational ecosystem, notably those of intelligent tutor, automated evaluator, pedagogical assistant, and learning partner. These functions rely on systems capable of continuously analyzing learning data in order to adjust content, activities, and feedback according to learners' profiles.

From a pedagogical perspective, AI cannot replace the role of the teacher but can serve as a tool for support and guidance, reinforcing existing

practices rather than substituting them. This approach aims to improve accessibility, equity, and learning quality while preserving the essential human dimension of the educational process (Selwyn, 2019).

In the field of language education, the integration of AI extends previous research in Computer-Assisted Language Learning (CALL) while introducing unprecedented adaptive and predictive capabilities. Intelligent Tutoring Systems (ITS) represent one of the earliest major applications of AI in this domain. Based on dynamic learner models, these systems make it possible to identify recurring errors, anticipate potential difficulties, and adjust pedagogical activities according to learners' proficiency levels and learning pace (Blin, 2016).

Language learning platforms such as Duolingo, Babbel, or Memrise use machine learning algorithms to offer personalized learning pathways and reinforce long-term memory mechanisms. These tools have contributed to expanding access to language learning, particularly in self-directed or informal learning contexts.

Conversational agents represent another significant application of AI in language education. They allow learners to engage in simulated linguistic interactions on a regular basis, promoting frequent practice of the target language outside the institutional setting. According to Kukulska-Hulme and Shield (2018), these tools contribute to the development of oral fluency, linguistic confidence, and pragmatic competence. However, several researchers emphasize that such interactions remain limited in terms of cultural authenticity and sociolinguistic complexity.

Moreover, automated correction and writing assistance tools are increasingly present in language learning. By providing immediate feedback on grammar, vocabulary, and style, they can improve learners' linguistic accuracy. Nevertheless, excessive and poorly supervised use of these tools may encourage a mechanical approach to writing, at the expense of creativity and the communicative dimension of language (Griffiths, 2015).

The integration of AI in language teaching offers numerous pedagogical advantages. Through continuous analysis of learning data, AI-based systems allow pedagogical activities to be adapted according to learners' pace, recurring errors, and progress levels. This adaptive capacity makes learning more targeted and relevant, particularly for learners with special needs, such as individuals with disabilities or students engaged in distance learning programs (Cui et al., 2019).

AI also contributes to improving access to educational resources. Learners can access multimodal content, practice the language at their own pace, and benefit from continuous support regardless of geographical or temporal constraints. This flexibility fosters the inclusion of diverse learner profiles and helps reduce certain educational inequalities.

Despite its pedagogical benefits, the use of AI in language teaching raises significant ethical challenges. Excessive reliance on automated systems may lead to a reduction in direct pedagogical exchanges, thereby limiting the relational, cultural, and intercultural dimensions of language learning. This evolution may affect the development of social and intercultural competencies, which are essential for mastering a foreign language (Tharp et al., 2021).

Algorithmic bias represents another major issue. AI systems, designed based on existing data, may reproduce or amplify cultural and linguistic biases. As a result, some speech recognition or machine translation tools show unequal performance depending on accents, dialects, or linguistic varieties, potentially generating forms of pedagogical injustice or exclusion (Binns, 2018).

Finally, the protection of personal data constitutes a central concern. The use of AI involves the collection and analysis of large volumes of data related to learners' behaviors and performance. These practices raise ethical and legal questions regarding confidentiality and data security. Regulatory frameworks such as the General Data Protection Regulation (GDPR) play an essential role in protecting learners' rights.

In Georgia, the educational system is undergoing a gradual digital transformation, supported by high connectivity rates among young people and the increasing digitalization of higher education institutions. These conditions provide a favorable environment for the integration of AI in language teaching. However, this integration remains limited due to the absence of clearly defined regulatory frameworks and a lack of specific training for teachers in AI technologies.

The results of recent studies indicate that AI is generally perceived positively by Georgian students. In this research, 98% of surveyed students believe that AI makes language learning more engaging. However, in the Georgian context, teachers express concerns about the impact of AI on their pedagogical autonomy, particularly regarding didactic decision-making and cultural mediation. According to Chikovani et al. (2022), these concerns highlight the need for a balanced integration of AI based on teacher training and appropriate educational governance.

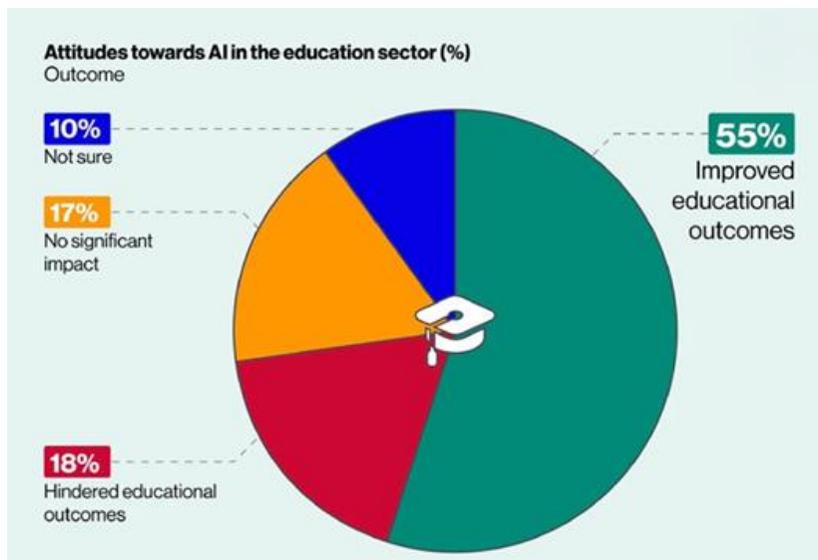Key Survey Results on AI in Language Learning (N=122)
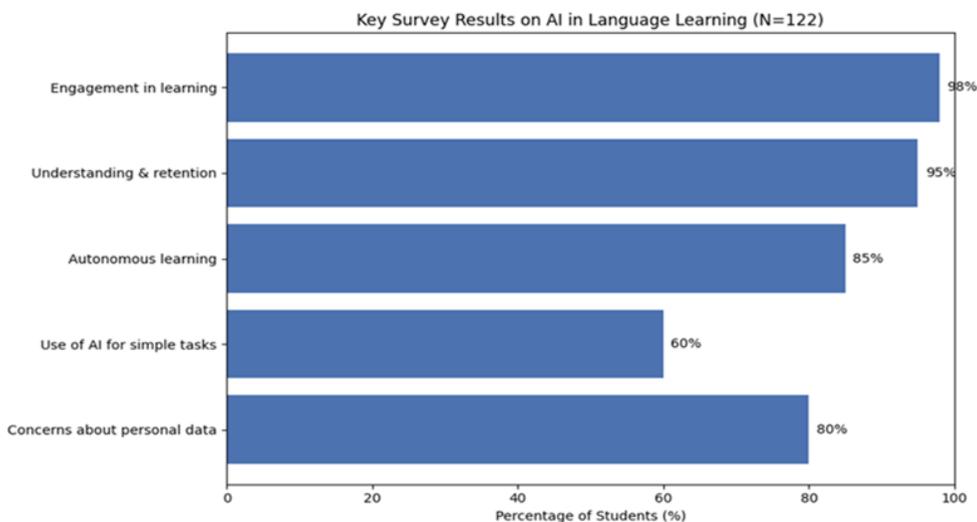
Our study adopts a mixed qualitative and quantitative methodological approach. First, an in-depth review of international scientific literature published between 2010 and 2024 was conducted using recognized academic databases. This review aimed to identify dominant trends, recurring empirical findings, and major theoretical debates.

In a second phase, an exploratory survey was conducted among 122 foreign language students enrolled in several Georgian universities, including Tbilisi State University and Grigol Robakidze University. The questionnaire included closed and open-ended questions addressing:

- The frequency of AI tool usage;
- Perceptions of their pedagogical effectiveness;
- The role of the teacher in a digital environment;
- Ethical concerns related to AI.

Quantitative data were analyzed descriptively, while open-ended responses were analyzed thematically.

The central research question is that artificial intelligence improves language learning in terms of personalization, engagement, and accessibility when integrated as a complementary tool to the teacher's pedagogical work, but becomes counterproductive when it tends to replace human interaction, didactic support, and the intercultural dimension of learning.

Attitudes towards AI in the education sector (%)
Outcome

10%
Not sure

17%
No significant
impact

18%
Hindered educational
outcomes

55%
Improved
educational
outcomes

This hypothesis therefore assumes that the impact of AI on language learning depends less on the technology itself than on the pedagogical, institutional, and ethical modalities of its integration.

To better highlight all significant aspects, two essential topics are proposed when addressing AI in Foreign language teaching:

- Artificial intelligence in education (AIED) refers to all technologies aimed at supporting, improving, or transforming teaching and learning processes through intelligent algorithms. Research in this field shows that AI can play several roles: tutor, evaluator, pedagogical assistant, or learning partner (Luckin et al., 2016).
- In language didactics, AI is part of the continuity of research on computer-assisted language learning (CALL). Intelligent tutoring systems constitute one of the earliest major applications. They rely on learner models capable of diagnosing errors, anticipating difficulties, and adapting activities accordingly (Blin, 2016).

It should also be noted that in Georgia, several language teachers advise students to watch television programs, listen to podcasts, or simply communicate with native speakers of the target language through various online platforms.

Intelligent tutoring systems adapt pedagogical content according to learners' level, pace, and recurring errors. Platforms such as Duolingo or Babbel use machine learning algorithms to offer personalized pathways, promoting long-term memory consolidation.

Georgia is experiencing rapid digitalization of its educational system, supported by high connectivity rates among young people. Universities are gradually integrating AI tools into their language curricula.

However, the absence of clear regulatory frameworks and specific teacher training remains a major challenge.

The research presented in this article explores new avenues such as augmented and virtual reality to create immersive environments, advanced speech recognition for pronunciation improvement, and AI-assisted collaborative learning systems. These innovations offer promising perspectives, provided they are guided by solid pedagogical and ethical principles.

Conclusion

The main objective of this research was to explore the impact of artificial intelligence (AI) on language teaching in Georgia by assessing its current applications, pedagogical benefits, and associated ethical risks and challenges. Through an in-depth literature review and an exploratory survey conducted among 122 foreign language students in several Georgian universities, this study highlighted the perceptions, expectations, and concerns of stakeholders involved in the integration of AI into the Georgian educational system.

The results largely confirm the central hypothesis of the research, according to which artificial intelligence, when used as a complementary tool to human pedagogical work, can significantly improve efficiency and engagement in language learning. However, the study also revealed that under certain conditions, AI may have counterproductive effects if it tends to replace human interaction and the didactic and intercultural dimensions of teaching. This conclusion is based on the analysis of quantitative and qualitative data collected from Georgian students and on comparisons with international research findings.

One major conclusion of this research is that AI contributes positively to the personalization of language learning pathways. The majority of surveyed students expressed satisfaction with the ability of AI tools (such as Duolingo, Babbel, and educational chatbots) to adapt to their individual needs and learning pace. Nearly 95% of respondents stated that the use of AI in their language courses helped them better understand and retain information. Intelligent tutoring systems, capable of adjusting exercises based on recurring errors, were particularly appreciated for providing a more dynamic and tailored learning experience.

Moreover, AI enables increased accessibility to language education, especially for students living in remote areas or those with busy schedules. Through online platforms and automated learning tools, Georgian students can

access educational resources at any time, facilitating autonomous learning and regular practice. Another notable advantage is enhanced student engagement. The interactivity and gamification of AI tools stimulate motivation and encourage active participation in learning, which is particularly relevant in the Georgian context where enthusiasm for new technologies is strong among young people.

However, the findings also highlight several risks and limitations associated with integrating AI into language teaching. One of the main challenges identified is technological dependency, which may result from excessive use of AI tools. Although these technologies offer flexibility and autonomy, some students demonstrated dependence that could hinder their ability to develop linguistic skills independently and without constant technological support. Indeed, 60% of students admitted using automatic correction tools and online translators even for simple tasks, to the detriment of deeper linguistic skills such as critical thinking and self-correction.

Another major risk identified is the marginalization of human interaction. While 90% of students believed that AI improved their learning, many expressed concerns about the lack of human interaction in AI tools. Most respondents emphasized the importance of the teacher's role in language learning, noting that AI, despite its adaptive and corrective capabilities, cannot replace personalized pedagogical guidance and human interaction, which are essential for developing authentic and intercultural linguistic competencies.

At the same time, ethical concerns regarding the use of AI in education were widely raised by students. The protection of personal data emerged as a major issue, with 80% of students expressing concern about the collection and use of their personal data by learning platforms. Some feared that their information could be used for commercial purposes without informed consent. This finding raises important questions about data regulation and the implementation of appropriate protective measures.

The specific case of Georgia revealed an interesting paradox. On the one hand, the country is experiencing rapid digitalization of its educational system, supported by high connectivity rates among young people and a clear willingness of universities to integrate technological tools into their curricula.

On the other hand, the lack of clear regulatory frameworks and specific teacher training constitutes a significant obstacle to the harmonious integration of AI into pedagogical practices. A considerable number of teachers in Georgia have not received in-depth training on AI tools and their pedagogical integration, limiting their ability to fully benefit from these technologies.

The results also show that despite teachers' concerns about losing their pedagogical role, students perceive AI tools as valuable complements to traditional teaching. Indeed, 85% of students stated that AI makes language

learning more autonomous, interactive, and engaging without replacing the importance of the teacher.

This research opens several avenues for future studies and improvements in the integration of AI into language teaching in Georgia. First, it is crucial to invest in continuous teacher training on the use of AI tools, particularly in digital pedagogy, to strengthen teachers' role in learner support and ensure ethical and responsible integration of technology. Second, it would be relevant to develop AI tools better adapted to learners' cultural and linguistic specificities to ensure more authentic interactions and respect linguistic and cultural diversity.

Finally, stricter regulatory measures regarding the management of learners' personal data must be implemented to protect user privacy and ensure ethical and transparent use of AI technologies in education.

In sum, artificial intelligence has undeniable potential to transform language teaching in Georgia by improving personalization, engagement, and accessibility. However, its integration into educational systems must be thoughtful and balanced, taking into account risks related to technological dependency, loss of human interaction, and ethical issues, particularly data protection. The research has shown that, in the Georgian context, a complementary approach between AI and traditional teaching appears to be the most beneficial for learners, enabling the advantages of technology to be harnessed while preserving the essence of human interaction in language education.

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