ANALYSIS OF AI-BASED TOOLS FOR ENHANCING SECOND LANGUAGE SPEAKING SKILLS

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Abstract: *This literature review examines the impact of Artificial Intelligence (AI)-based tools on enhancing second language (L2) speaking skills at a private higher educational institution in Uzbekistan. Focusing on recent studies from the last decade, this research explores how AI technologies, such as speech recognition, natural language processing (NLP), and conversational AI, facilitate speaking proficiency in a group of second language learners of B2 level. The review identifies key advantages, such as personalized feedback, real-time error correction, and adaptive learning, while highlighting limitations, including dependency on technology, high costs, and accessibility barriers. By synthesizing findings, the study aims to inform educators, researchers, and policymakers about the potential and challenges of integrating AI-based tools in L2 speaking instruction in Uzbekistan.*

Keywords: *Artificial Intelligence, second language acquisition, speaking skills, AI-based tools, speech recognition, natural language processing, conversational AI, personalized feedback, language education.*

Annotatsiya: *Ushbu adabiyot sharhida O'zbekistondagi xususiy oliy ta'lim muassasasida sun'iy intellekt (AI) ga asoslangan vositalarning ikkinchi tilda (L2) so'zlashuv ko'nikmalarini oshirish jarayoniga ta'siri o'rganiladi. So'nggi o'n yillikdagi eng yangi tadqiqotlarga e'tibor qaratgan holda, ushbu tadqiqot ishi nutqni aniqlash, tabiiy tilni qayta ishlash (NLP) va AI bilan so'zlashuv kabi sun'iy intellekt texnologiyalaridan foydalangan holda B2 darajasidagi ikkinchi til o'rganuvchilar guruhida so'zlashuv malakasini qay darajada yaxshilanishini o'rganadi. MAzkur tadqiqot ishida shaxsiylashtirilgan fikr-mulohazalar, real vaqt rejimida xatolarni tuzatish va moslashuvchan o'rganish kabi asosiy afzalliklarga alohida e'tibor qaratiladi, shu bilan birga sun'iy intellektdan foydalanish jarayonidagi cheklovlar, jumladan texnologiyaga bog'liqlik, yuqori xarajatlar va foydalanishga bo'lgan to'siqlarini ta'kidlaydi. Aniqlangan ma'lumotlarni sintez qilish orqali tadqiqot o'qituvchilar, tadqiqotchilar va siyosatchilarni O'zbekistonda ikkinchi tilda so'zlashuv ko'nikmasini oshirishda sun'iy intellektga asoslangan vositalarni integratsiyalash imkoniyatlari va muammolari haqida xabardor qilishni o'z oldiga maqsad qilib oladi.*

Kalit so'zlar: *Sun'iy intellekt, ikkinchi tilni o'zlashtirish, sun'iy intellektga asoslangan vositalar, nutqni aniqlash, tabiiy tilni qayta ishlash, sun'iy intellect bilan so'zlashuv, shaxsiy fikr-mulohazalar, til ta'limi.*

Аннотация: *В этом обзоре литературы рассматривается влияние инструментов на основе искусственного интеллекта (ИИ) на улучшение навыков говорения на втором языке (L2) в частных высших учебных заведениях Узбекистана. Сосредоточив внимание на последних исследованиях, проведенных за последнее десятилетие, исследование изучает, как технологии ИИ, такие как распознавание речи, обработка естественного языка (NLP) и разговорный ИИ, способствуют развитию навыков говорения у студентов уровня B2, изучающих второй язык. В обзоре выделяются ключевые преимущества, такие как персонализированная обратная связь, исправление ошибок в реальном времени и адаптивное обучение, а также подчеркиваются ограничения, включая зависимость от технологий, высокие затраты и барьеры доступности. Обобщая результаты, исследование направлено на информирование педагогов, исследователей и политиков о потенциале и проблемах интеграции инструментов на основе ИИ в процесс обучения говорению на втором языке в Узбекистане.*

Ключевые слова: *Искусственный интеллект, овладение вторым языком, навыки говорения, инструменты на основе ИИ, распознавание речи, обработка естественного языка, разговорный ИИ, персонализированная обратная связь, языковое образование.*

INTRODUCTION

The acquisition of speaking skills is a critical component of second language (L2) learning, yet it remains one of the most challenging aspects for learners. Traditional classroom-based instruction, which is in practice in most of higher educational institutions in Uzbekistan, often lacks sufficient opportunities for individualized practice and feedback, which are essential for developing fluency and accuracy (Goh & Burns, 2012). In recent years, the advent of Artificial Intelligence (AI) has revolutionized language education, offering tools that address these gaps through innovative and personalized approaches[35]. AI-based tools, including speech recognition systems, virtual tutors, and conversation simulators, have emerged as powerful resources to support L2 speaking development. This review explores the effectiveness of these tools, focusing on their pedagogical implications, practical applications, and challenges.

METHODOLOGY

This literature review was conducted using a systematic approach to identify, analyze, and synthesize relevant studies on AI-based tools for enhancing L2 speaking skills. First, academic databases such as PubMed, Scopus, Web of Science, and Google Scholar were searched using keywords including "AI-based tools," "second language speaking," "speech recognition," and "conversational AI." Also, to attain empirical

[35] Derwing, T. M., & Munro, M. J. (2015). Pronunciation Fundamentals: Evidence-based perspectives for L2 teaching and research. John Benjamins.

data, inclusion criteria was used which included studies published between 2013 and 2023 were included if they (a) examined AI-based tools specifically designed to enhance L2 speaking skills, (b) provided empirical data, and (c) were published in peer-reviewed journals. Studies focusing solely on other language skills (e.g., reading or writing) or general AI applications in education without a focus on speaking were excluded. The selected studies were analyzed based on their objectives, methodologies, findings, and implications for language learning.

DATA COLLECTION

A total of 42 studies were initially identified, of which 27 met the inclusion criteria. These studies encompassed diverse AI technologies and methodologies, including Speech Recognition and Feedback Tools such as Google Speech-to-Text and Duolingo's speaking modules were frequently studied. One of the highlighted aspects of AI based tools was their ability to provide immediate feedback on pronunciation, fluency, and grammar[36].

Data was collected from sources related to Conversational AI such as virtual assistants such as Siri, Alexa, and specialized language-learning bots were explored for their role in simulating real-life conversations. Studies found that these tools fostered learner confidence and improved speaking fluency[37].

Last part of data came from Adaptive Learning Systems, particularly, AI-powered platforms like Rosetta Stone and ELSA Speak utilized NLP to tailor speaking exercises to individual learner needs, resulting in significant gains in speaking proficiency (Wang & Young, 2014). Also, tools providing Game-Based Learning like Kahoot and Quizlet incorporated speaking tasks into interactive games, enhancing learner engagement and motivation[38].

DISCUSSION OF RESULTS

The data collected from the reviewed studies highlights several key trends in the integration of AI technologies into language learning, particularly in improving speaking proficiency. The findings suggest that AI-driven tools, ranging from speech recognition systems to conversational agents and adaptive learning platforms, offer significant benefits in enhancing various aspects of language learning.

Speech recognition tools, such as Google Speech-to-Text and Duolingo's speaking modules, were frequently highlighted for their ability to provide immediate and specific feedback on pronunciation, fluency, and grammar. This real-time feedback is crucial for learners, as it allows them to make timely corrections and track their progress.

[36] Liakin, D., Cardoso, W., & Liakina, N. (2017). The effect of text-to-speech tools on L2 pronunciation. Computer Assisted Language Learning, 30(1), 1-20. https://doi.org/10.1080/09588221.2017.1284895
[37] Ehsan, N., Mirzaei, A., & Gilakjani, A. P. (2021). The impact of conversational AI on L2 speaking proficiency. Journal of Language and Education, 7(2), 89-105. https://doi.org/10.17323/jle.2021.223
[38] Chen, X., Zou, D., & Xie, H. (2020). Gamified AI applications for second language learning: Opportunities and challenges. Educational Technology Research and Development, 68(5), 2459-2476.

The studies reviewed emphasize the importance of instant error correction in fostering better speaking skills, as learners can adjust their pronunciation and grammar in real time.

This aligns with previous research suggesting that timely corrective feedback accelerates language acquisition.

Conversational AI systems, including virtual assistants like Siri and Alexa, and language-learning bots, play a vital role in simulating natural conversations. These tools create a safe environment where learners can practice speaking without the fear of judgment. The ability to interact with AI without the pressure of a real human conversation encourages learners to take risks and experiment with language, fostering greater confidence.

The reviewed studies consistently found that conversational AI positively impacted speaking fluency, with many learners reporting improved self-assurance in using the language in real-world scenarios. This highlights the importance of AI tools in replicating authentic conversational practice, a key element in language acquisition that is often challenging in traditional learning settings.

AI-powered adaptive learning systems like Rosetta Stone and ELSA Speak offer tailored learning experiences by adjusting exercises to the individual needs of the learner. This personalized approach ensures that learners are not overwhelmed by tasks that are too difficult or underchallenged by tasks that are too easy. By adapting the difficulty of speaking exercises based on real-time performance, these systems create a more efficient and effective learning environment. The studies reviewed underscore the effectiveness of such personalized learning in enhancing speaking proficiency.

This trend supports the growing evidence that adaptive learning technologies, powered by natural language processing (NLP), provide learners with targeted practice that optimally challenges them.

Game-based learning platforms, such as Kahoot and Quizlet, introduced speaking tasks within interactive, game-like contexts. These platforms not only motivated learners but also provided a dynamic way to practice speaking through enjoyable, competitive activities. Research showed that the incorporation of games into language learning increased learner engagement, which is critical for maintaining sustained practice. The interactive nature of these tools encouraged frequent and repeated exposure to speaking tasks, leading to improved fluency over time. This finding aligns with research in the field of gamification, which demonstrates that learners are more likely to remain motivated and actively participate when learning is fun and engaging.

Conclusion

AI-based tools hold immense potential for enhancing L2 speaking skills by addressing the limitations of traditional instructional methods. The integration of AI technologies in language learning, specifically in the areas of speech recognition, conversational AI, adaptive learning, and game-based learning, has proven to be

highly effective in improving speaking proficiency. These tools not only offer personalized and engaging learning experiences but also foster the development of key speaking skills such as pronunciation, fluency, and grammar. Given the positive outcomes observed in the studies reviewed, it is clear that AI-driven language learning tools will continue to play an essential role in the evolution of language education, providing learners with opportunities to practice and improve their speaking skills in increasingly interactive and personalized environments.

Future research should further explore how these tools can be combined or optimized to create more holistic language learning experiences, focusing on long-term effectiveness and learner retention. Additionally, examining the potential for AI to address learners' emotional and psychological barriers to language learning could yield valuable insights for enhancing the efficacy of these technologies.

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