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ARTIFICIAL INTELLIGENCE TOOLS IN FOREIGN LANGUAGE TEACHING IN HIGHER EDUCATION INSTITUTIONS

Olha Yunina

ORCID ID 0000-0002-0244-3724

PhD in Education, Associate Professor

the Romance and Germanic Philology Department

State Institution “Luhansk Taras Shevchenko National University”

3 Koval Str, Poltava, Ukraine, 36003

o_iunina@ukr.net

ABSTRACT

The article is devoted to the problem of using artificial intelligence (AI) tools in the system of teaching foreign languages in higher education institutions. The study includes an overview of modern approaches to language teaching, the advantages, and possibilities of using AI in the educational process, as well as an analysis of the impact of these tools on the academic achievements of students. The objectives of the research are as follows: to determine the effectiveness and impact of artificial intelligence tools on the process of teaching foreign languages in higher education institutions, and to identify the most productive pedagogical strategies for integrating AI tools into foreign language instruction.

The integration of AI into the process of teaching foreign languages is substantiated, and the potential benefits for students and teachers are highlighted. Besides, interactive language programs and learning platforms that allow students to practice a foreign language in virtual situations, and receive feedback are analysed. The use of artificial intelligence makes it possible to create adaptive learning platforms that individually adjust to the needs and abilities of each learner.

Particular attention is paid to the possibility of individualizing the learning process through artificial intelligence, which allows students to learn a foreign language according to their needs and pace. The use of AI makes it possible to identify the optimal teaching methods for each student based on their individual abilities, learning styles, and interests. This teaching approach helps learners master the material more effectively, ensures maximum adaptation to their needs, and provides more successful results in learning foreign languages.

The risks of using AI in the educational process are identified, including the risk of turning language learning into a mechanical process without taking into account the context and cultural characteristics. The need to ensure system resilience and data security is emphasized, as a large amount of information that may relate to the personal data of students can be stored in AI systems.

Based on the studied data and analysis, conclusions are drawn about the prospects for integrating artificial intelligence into foreign language teaching. It is noted that the use of artificial intelligence tools in foreign language teaching may prove to be a promising tool for improving the educational process, which will ensure more effective learning in the future.

Keywords: *artificial intelligence tools; foreign language teaching; higher education institution; technology; quality of learning.*

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INTRODUCTION

Teaching foreign languages in higher education institutions is indeed a critical component in the modern world. Today, we live in a global society where knowledge of foreign languages allows us to communicate and interact effectively with people from different countries, as well as engage in international business, scientific, and cultural projects. Therefore, providing quality language instruction at universities is becoming an important mission to prepare students for the challenges of the global community.

The rapidly developing field of artificial intelligence (AI) has an incredible potential to transform the approach to foreign language learning. Its application can upend traditional teaching methods by providing innovative and effective tools and resources for students and teachers. One of the most important aspects of using artificial intelligence in language teaching is its ability to analyse data and adapt to the needs of each student individually.

Adaptive AI systems can create personalized learning programs, providing students with materials and tasks that match their abilities, knowledge levels, and learning styles. This will allow each student to progress in their language learning at their own pace and with greater enthusiasm.

Given the rapid development of technology and the interest in the use of artificial intelligence in education, there is a significant number of new research and publications that address this topic and offer new innovative approaches to improve the process of foreign language learning in higher education. Incorporating digital technologies and advanced interactive learning tools into the educational process stands as a crucial avenue for fostering specialized skills among higher education students during their professional training (Artal-Sevil et al., 2020; Mospan, 2023; Shaik et al., 2023; Shekhavtsova et al., 2023; Țălu, 2020). Artificial intelligence has the potential to impact teaching and learning in higher education by providing various applications and tools. These applications can be used to improve academic support services, institutional and administrative services, and the overall learning experience (Fu et al., 2020; Kasneci et al., 2023; Rui & Badarch, 2022; Zawacki-Richter et al., 2019). The use of AI tools in foreign language teaching in higher education has the potential to improve language teaching and provide a personalized learning experience. AI applications such as intelligent tutoring systems and

adaptive systems can improve students' motivation and conversational abilities, student-computer interaction, and the quality of language learning (Gong et al., 2020; Kademina et al., 2022; Liu & Huang, 2022; Pokrivčáková, 2019; Viktorova et al., 2021; Zang et al., 2022). Researchers and educators should promote high-quality empirical research and take ethical considerations into account when applying AI in language education (Ali, & Abdel-Haq, 2021; Bozkurt et al., 2021; Gong et al., 2020; Holmes et al., 2021).

The objectives of the research are as follows: to determine the effectiveness and impact of artificial intelligence tools on the process of teaching foreign languages in higher education institutions, and to identify the most productive pedagogical strategies for integrating AI tools into foreign language instruction.

The relevance of the study is determined by the fact that insufficient attention has been paid to the use of artificial intelligence tools in the process of learning foreign languages in higher education institutions. Considering the rapid development of technologies and the growing interest in artificial intelligence in education, this study is important for identifying new ways and innovative approaches to improving the quality and efficiency of the learning process in the field of foreign languages.

METHODOLOGY

To achieve the goals of the study, different approaches, such as systemic, activity-based, and personality-oriented, and generally scientific methods, such as analysis of scientific literature, synthesis, generalization, and systematization were used. A thorough examination of the existing literature has been conducted to gain insights into the current landscape of artificial intelligence (AI) in higher education and language teaching. This literature review has unveiled key themes, established theories, and illuminated gaps that the present research endeavours to address. Additionally, an analysis has been carried out on diverse online platforms and applications that incorporate AI tools for language learning. This examination includes an assessment of the integration of these tools into educational curricula and an evaluation of their discernible impact on learning outcomes. Furthermore, an exploration into the alignment between the educational materials and the pedagogical strategies employed in tandem with AI tools has been undertaken. This multifaceted approach seeks to deepen understanding of the relationship between AI integration, instructional materials, and the educational strategies employed in the context of foreign language learning in higher education.

RESULTS

The Concept for the Development of Artificial Intelligence in Ukraine defines the concept of “artificial intelligence” as “an organized set of information technologies, which can be used to perform complex tasks by using a system

of scientific research methods and algorithms for processing information received or independently created during work, as well as to create and use its knowledge bases, decision-making models, information processing algorithms and determine ways to achieve the tasks set” (Concept, 2020, p.2).

In determining the content of the basics of artificial intelligence, it is worth considering the provisions that reflect the logical and psychological aspects of the choice of educational material. These provisions emphasize that knowledge is better absorbed when analysing the conditions of its origin that make it necessary. In addition, the learning material should enable the identification of sources of knowledge and the identification of genetically original, essential, and general relationships that determine the content and structure of the object of this knowledge. These aspects help ensure effective and deep learning of the material and contribute to a deeper understanding of the topic by students (Kademia et al., 2022).

In many universities, foreign language teaching is often based on traditional methods, such as lectures, seminars, practical classes, and textbooks. While these methods may be effective for some students, they do not always meet the needs of all learners and may be limited in their effectiveness. Additionally, it is often difficult for teachers to provide an individualized approach to learning for each student due to the large number of students in groups.

The application of AI in foreign language teaching can bring significant benefits. The use of artificial intelligence tools in foreign language teaching in higher education is a topic that has been gaining attention in recent years. Linguists and language teachers apply AI in their practice. The use of artificial intelligence helps create more detailed descriptions of natural languages and leads to a better understanding of the mental processes that occur in the human brain during verbal communication. Artificial intelligence tools are also used in computer linguistics, the creation of computer languages, machine translation, and the improvement of human-machine communication through speech recognition, and speech synthesis. Artificial intelligence-based technologies such as natural language processing and deep learning algorithms have the potential to improve student-computer interaction and the quality of language learning (Pokrivčáková, 2019).

According to a systematic review of research on the use of artificial intelligence in higher education, four main areas of application of artificial intelligence have been identified: prediction, assessment, adaptive systems, and personalized learning (Zawacki-Richter et al., 2019).

AI can be used to analyse large amounts of data and identify complex relationships. In the context of foreign language learning, prediction allows us to predict students’ performance, abilities, and progress in learning. The use of predictive models helps identify key aspects of learning and improve curriculum planning.

Artificial intelligence can automate the process of assessing students’ knowledge, making it faster and more objective. AI systems analyse students’

responses to tests, essays, and other assignments to provide a more accurate assessment of their learning outcomes. For example, AI-powered automatic scoring applications use natural language processing and deep learning algorithms to provide immediate feedback to students (Fu et al., 2020). The introduction of artificial intelligence into the assessment process helps to reduce possible errors and increase the objectivity of student assessment. At the same time, intelligent recognition systems can help students self-assess their achievements in language learning, contributing to their personal development and improving their academic results. This approach allows for the creation of a scientific assessment system that helps ensure the objectivity and accuracy of students' language skills (Rui & Badarch, 2022).

The use of artificial intelligence makes it possible to create adaptive learning platforms that individually adjust to the needs and abilities of each student. Thanks to the use of artificial intelligence, systems can automatically adapt learning material and tasks according to the level of knowledge and performance of students. This provides an individual and personalized approach to the learning process. This approach allows students to optimize their time and efforts, focusing on self-directed learning and achieving better results in learning foreign languages.

Artificial intelligence helps create personalized curricula and flexible learning paths for students. AI allows teachers to identify the best learning methods for each student based on their abilities, learning styles, and interests. This individualized approach to learning helps students learn more effectively, ensures maximum adaptation to their needs, and provides more successful results in learning foreign languages.

These areas of AI application demonstrate the potential to revolutionize the foreign language learning process. The introduction of artificial intelligence tools in education can significantly improve the accessibility, efficiency, and quality of learning, providing students with a personalized and balanced approach to learning foreign languages. The use of artificial intelligence helps create an innovative learning environment that promotes effective knowledge acquisition, the development of individual abilities, and increased student motivation. This ensures a more successful and satisfying learning experience, contributing to the growth of students' academic achievements and personal development.

In addition, AI tools can be used to facilitate language learning in online and distance education. The use of AI-based networked English language learning systems (AI-ENTs) can improve student performance in distance education by providing personalized learning experiences and relevant data from multiple sources (Liu & Huang, 2022).

Models such as ChatGPT can be successfully used to create learning content, improve the interaction between students and teachers, and provide a personalized learning experience (Kasneci et al., 2023). Such language models open up new opportunities for implementing innovative teaching methods

and improving the quality of education due to their ability to understand and process language content.

One of the key opportunities for using AI is to adapt learning to the individual needs of each student. AI-powered learning programs can analyse students' progress, identify their strengths and weaknesses, and provide recommendations on the most effective teaching methods. AI applications, such as intelligent tutoring systems and adaptive systems, can improve student interaction with the computer and the quality of language learning (Pokrivčáková, 2019). AI can also create interactive virtual environments for communicating with native speakers, allowing students to practice speaking in real-life situations without having to travel abroad. Interactive dialogue systems can teach students conversational skills and how to respond to different life situations they encounter in the countries where they learn the language.

Furthermore, AI can be used to create personalized learning plans for students. By analysing student progress and individual abilities, the system can provide the optimal sequence of topics and learning material to maximize the effectiveness of the learning process. Another promising area of AI use is the introduction of virtual assistants that can help students outside of class. These assistants can answer questions, help solve problems, provide additional study materials, and guide students on the way to achieving their goals. Despite its many benefits, the use of AI in foreign language learning also brings some challenges and risks. One of these challenges is the need to ensure system resilience and data security, as a large amount of information that may relate to students' data can be stored in AI systems.

Moreover, there is a risk that language learning will become a mechanical process without taking into account context and cultural sensitivities. AI systems must provide students with the opportunity to interact with native speakers and real-world language environments. However, there are limitations and challenges to using AI in language learning. These include potential misinformation, lack of accountability, and ethical considerations (Bozkurt et al., 2021; Das, 2023). It is crucial for educators to think critically about the challenges and risks of AI in education and to ensure a close connection with theoretical pedagogical perspectives (Zawacki-Richter et al., 2019). In addition, the use of AI in education raises concerns about access to user data and privacy issues (Viktorova & Mamchur, 2021). These issues need to be addressed to ensure the responsible and ethical use of AI in language learning. It is also important to note that the impact of AI research on language education remains limited and peripheral (Gong et al., 2020). Besides, there is a need to address issues such as potential bias in the results and the need for constant human supervision (Kasneji et al., 2023).

Today, there are many AI tools for learning foreign languages that offer a variety of approaches. Virtual tutors and conversation trainers, such as *Duolingo* (<https://www.duolingo.com>), *Rosetta Stone* (<https://www.rosettastone.com>), *Babbel* (<https://www.babbel.com>), *ELSA Speak* (<https://>

elsaspeak.com/) offer interactive lessons, pronunciation, grammar, vocabulary, and speaking exercises and provide students with the opportunity to practice speaking in real-life situations. Some virtual tutors and conversation trainers may be integrated into mobile apps or online language learning platforms, where students can complete exercises and receive feedback based on their answers. Others may be available in the form of virtual assistants or programs that can be run on a computer or smartphone.

The use of virtual tutors and conversation coaches in foreign language learning can help students improve their oral language skills and provide effective practice without the need for real teachers or interlocutors. Systems such as *Amazon Alexa*, *Google Assistant* or *Apple Siri*, *Microsoft Cortana*, and others can help students practice oral communication and get answers to questions in the languages they are learning. Interactive assistants use *Natural Language Processing (NLP)* technologies to understand user queries and generate answers. Thanks to this, they can understand not only specific commands but also the context of the conversation.

Online platforms, such as *iTalki* (<https://www.italki.com>) or *Tandem* (<https://www.tandem.net>), allow students to communicate with native speakers via video chat, where artificial intelligence can help with pronunciation and correct grammatical errors. The apps can use AI to check the spelling, grammar, and stylistic aspects of texts in the languages students are learning. *Grammarly* (<https://www.grammarly.com>) is one of the most popular tools for checking grammar, spelling, and style. It is built into browsers, text editors, and mobile apps, and offers different levels of correction, including a basic mode for basic errors and a premium version with more advanced features. *Ginger Grammar Checker* (<https://www.gingersoftware.com/grammarcheck#.XRzycJMzbRb>) is another popular text correction tool that offers grammar, spelling, and style correction. It also has translation capabilities and integration with browsers and text editors. *Pro WritingAid* (<https://prowritingaid.com>) offers a comprehensive text checker that includes grammar, style, spelling, word usage, repetition, and other aspects of writing. It provides useful statistics and tips on how to improve the text. *WhiteSmoke* (<https://www.whitesmoke.com>) is another text correction and improvement software that offers automatic checks for grammar, style, spelling, word usage, context, and translation. The *Hemingway Editor* tool (<https://hemingwayapp.com>) focuses on the style and readability of the text. It analyses sentence complexity, the use of compound words, passive voice, and other aspects to make the text simpler and more understandable. These tools can be useful both for students of foreign languages and for anyone who needs to automatically check and correct their writing. They help to ensure more accurate and professional text, improving the quality of writing and readability.

Adaptive learning platforms such as *Coursera* (<https://www.coursera.org>), *Khan Academy* (<https://www.khanacademy.org>), and *Campster* (<https://www.thecampster.com/ua/course/index>) use artificial intelligence algorithms to create personalized learning plans and recommendations for students based

on their individual needs and progress. Many adaptive learning platforms are available online and can be used from any device with an internet connection. They allow students to study at a time that is convenient for them. The *Smart Sparrow* platform (<https://www.smartsparrow.com>) allows teachers to create personalized learning materials and diagnostic tools for students.

These adaptive learning programs and platforms are designed to deliver effective learning, increase student engagement, and improve academic performance. They are becoming increasingly popular with students and teachers alike as they allow for personalized learning and help ensure more effective learning. The apps or devices use artificial intelligence to recognize speech from audio or text and provide a translation into another language. Speech recognition software is software that uses *Natural Language Processing* (NLP) and machine learning technologies to understand and interpret human speech. These programs can convert spoken or written words into text format or perform other actions based on the recognized speech.

Here are some examples of speech recognition apps:

Google Speech-to-Text allows users to recognize speech recorded as an audio file or live stream and convert it to text format. It can recognize speech in different languages and can be used in a variety of applications.

Apple Siri is a personal voice assistant developed by Apple. It is used in Apple devices such as iPhone, iPad, and Mac and allows users to perform various actions using voice commands.

Amazon Alexa is an intelligent voice assistant that allows users to control various devices and perform various tasks using their voice.

IBM Watson Speech to Text offers a speech recognition service that allows you to recognize speech from audio files and streams. This service can be used for a variety of tasks, including transcription and speech analysis.

Microsoft Azure Speech Services is Microsoft's speech recognition platform that offers solutions for speech recognition from audio files, real-time speech recognition, and other features.

These speech recognition applications are used in a variety of areas, such as voice assistants, audio transcription, text dictation, control technology, speech recognition, automation systems, and more. They are constantly improving due to the development of artificial intelligence and NLP technologies, which allow them to become even more accurate and efficient in speech recognition.

There are learning games and simulations that use artificial intelligence to create interactive environments where students can practice language skills in the form of a game. Virtual language learning games and simulations are popular and effective ways of learning that help students develop language skills and get practice in communicating in a foreign language. These interactive learning tools create an immersive learning experience that allows students to feel themselves in the context of the language environment and improve their speaking skills. Here are some examples of virtual games and simulations for learning foreign languages:

DuoLingo is one of the most popular mobile games for learning foreign languages. It offers different levels and interactive exercises to help students learn vocabulary, grammar, and speaking skills.

Rosetta Stone is a well-known language learning platform that uses a simulated language environment for learning. It uses visuals, sound, and text to provide an immersive learning experience.

Mondly is an interactive language learning app that offers games, quizzes, and a variety of exercises to develop language skills. It also uses virtual characters and simulations of real-life situations to practice speaking.

FluentU is a video-based language learning platform that allows students to learn a language by watching videos with subtitles and interactive exercises.

Lingvist is a game-based platform for learning words and phrases in foreign languages. It offers effective exercises and repetition to help memorize and use new words quickly.

These virtual games and simulations help students learn a language interactively and engagingly. They create a learning environment where students can improve their language skills and get more practice in real-life communication situations. This approach becomes a means for more engaging and effective language learning.

The growing popularity and availability of AI tools for language learning are making the learning process more interactive, effective, and engaging. AI tools provide other benefits for education, e.g. personalized learning, learning in real life, more opportunities for learning feedback, learning at home, assessment efficiency, and independent learning. Besides, AI tools can analyse student progress, weaknesses, and strengths, as well as individual knowledge levels. This allows teachers to provide students with personalized materials and tasks that meet their needs. Interactive assistants and voice assistants can help students practice speaking in real-life situations by interacting with artificial intelligence as if they were real people. AI tools can also provide students with immediate feedback and hints on mistakes or incorrect answers, helping them to correct deficiencies faster. Many of these tools are available online and can be used at the student's convenience and from any location, making it possible to study at home or while travelling. AI tools can provide a more objective and accurate assessment of student assignments, which helps teachers understand where students need more support. Many of these tools are geared towards independent learning, allowing students to study at their own pace and personalized schedule.

It should also be noted that while AI tools have many advantages, their successful use depends on a smart combination with traditional teaching methods. Students need to have a balanced approach to language learning, where AI complements the role of the teacher and helps to achieve more effective results. In the future, with the further development of artificial intelligence technologies, foreign language learning tools will become even more intelligent and adaptive, allowing students to maximize their language learning potential and communicate effectively in a multilingual world.

CONCLUSIONS AND PROSPECTS

The use of artificial intelligence tools in foreign language teaching in higher education has the potential to improve the teaching and learning experience. AI applications, such as prediction, assessment, adaptive systems, and personalization, as well as intelligent learning systems, can be used to improve academic support services and institutional and administrative services. By integrating AI technology and 5G networks, new models of language learning can be developed to increase learners' motivation and conversational abilities. However, it is important to consider the limitations and challenges of using AI in education, such as potential misinformation and ethical considerations. Educators need to think critically about these issues and ensure a close connection with theoretical pedagogical perspectives. Furthermore, to guarantee the responsible and ethical use of AI in language learning, it is imperative to tackle concerns regarding privacy and user data access. The integration of AI tools into foreign language teaching in higher education opens up many opportunities to improve the quality of learning and develop students' language skills. AI helps to provide personalised approaches, promotes student motivation and interest, and helps to solve problems with assessment and interaction with native speakers.

However, the successful integration of AI into language teaching requires careful planning and a balanced approach to addressing the challenges and risks associated with using this technology. It is important to remember that AI should serve as a tool, not a substitute for the role of the teacher, and help students develop not only language skills but also the ability to interact with the cultural context of the language.

Thus, the effective use of artificial intelligence tools in foreign language teaching may prove to be a promising tool for improving the educational process, which will ensure more effective learning and more competent students in the future.

The prospects for further research are seen in studying the effectiveness of using artificial intelligence tools in the process of learning foreign languages in higher education institutions and developing content for foreign language learning that adapts to the individual needs and learning style of the student, which will ensure more effective learning.

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ІНСТРУМЕНТИ ШТУЧНОГО ІНТЕЛЕКТУ У ВИВЧЕННІ ІНОЗЕМНИХ МОВ У ЗАКЛАДАХ ВИЩОЇ ОСВІТИ

Ольга Юніна, кандидат педагогічних наук, доцент кафедри романо-германської філології, факультет іноземних мов, ДЗ «Луганський національний університет імені Тараса Шевченка», вул. Коваля, 3, Полтава, Україна, 36003, o_iunina@ukr.net

Статтю присвячено проблемі використання інструментів штучного інтелекту (ШІ) у системі навчання іноземних мов у закладах вищої освіти. Дослідження охоплює огляд сучасних підходів до навчання мов, переваги та можливості використання ШІ в освітньому процесі, а також аналіз впливу цих інструментів на академічні досягнення здобувачів.

Мета статті полягає в дослідженні та презентації ролі та впливу інструментів штучного інтелекту на процес навчання іноземних мов у вищих навчальних закладах.

Обґрунтовано важливість інтеграції штучного інтелекту в процес навчання іноземних мов, підкреслено потенційні переваги для здобувачів та викладачів.

Проаналізовано деякі інтерактивні мовні програми та навчальні платформи, які дозволяють здобувачам практикувати іноземну мову у віртуальних ситуаціях, отримувати зворотній зв'язок. Використання штучного інтелекту дозволяє створювати адаптивні навчальні платформи, які індивідуально підлаштовуються під потреби та здібності кожного здобувача.

Особливу увагу акцентовано на можливості індивідуалізації навчального процесу завдяки штучному інтелекту, що дозволяє здобувачам вивчати іноземну мову відповідно до їхніх потреб та темпу. Використання ШІ дозволяє ідентифікувати оптимальні методи навчання для кожного здобувача на основі їхніх індивідуальних здібностей, стилю вивчення та інтересів. Такий індивідуальний підхід до навчання допомагає ефективніше засвоювати матеріал, забезпечує максимальну адаптацію до їх потреб і більш успішні результати у вивченні іноземних мов.

Визначено деякі ризики використання ШІ у навчальному процесі, серед яких ризик перетворення навчання мови в механічний процес без врахування контексту та культурних особливостей. Підкреслено необхідність забезпечення стійкості систем та безпеки даних, оскільки велика кількість інформації, яка може стосуватися особистих даних здобувачів та може бути збережена в системах ШІ.

На основі вивчених даних та аналізу зроблені висновки щодо перспектив інтеграції штучного інтелекту в навчання іноземних мов. Зазначено, що використання інструментів штучного інтелекту у вивченні іноземних мов може виявитися перспективним інструментом для по-

кращення освітнього процесу, що забезпечить більш ефективне навчання в майбутньому.

Ключові слова: *інструменти штучного інтелекту; викладання іноземних мов; вищий навчальний заклад; технологія, якість навчання.*

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