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The Role of Artificial Intelligence in Learning Foreign Languages

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Introduction

Abstract: The article explores the role of artificial intelligence (AI) in the process of learning foreign languages, analyzing both positive and negative aspects of this phenomenon. Based on current research and practical examples, the article discusses the impact of various I-technologies, such as machine learning and natural language algorithms, on the effectiveness and efficiency of language learning. The analysis examines the advantages of AI, such as accessibility, individualization of learning and the possibility of real-time feedback, as well as disadvantages, including limitations in understanding the context, lack of flexibility and dependence on technical means.

Keywords: Artificial Intelligence, Learning Foreign Languages, Machine Learning, Learning Efficiency, Individualization Of Learning, Technical Means, Modern Technologies.

Artificial intelligence (AI) is "an interdisciplinary field that creates objects that solve various problems in the same way that humans do. AI uses mathematics, logic, psychology, biology, philosophy, language science, electronics, etc." (Raymond Perrault et all., 2021).

According to the definition of I. I. Glushkov, AI is "an artificial system that imitates the solution of complex problems by a person in the process of activity" (Pavlyuk, 2020).

Artificial intelligence is a software tool that performs intellectual activities close to human activities. "AI is a world, a world of thoughts embodied in a technical device." It would not be an exaggeration to say(He et al., 2019): in the middle of the 20th century, an extremely important event for the history of civilization took place - the "world of thoughts" and the world of technical devices united; for the first time, thought, having become detached from the human body, began to act independently" (Ryazanov S. 2020).

Considering AI as an educational technology, its characteristic features should be noted(Possati, 2023):

- 1. ability to self-learn;
- 2. the ability to make decisions and perform a certain set of actions inherent in human nature;
- 3. functioning as an auxiliary information, cognitive and educational resource that stimulates the development of knowledge, skills, and abilities, and also contributes to the formation of language experience for the purpose of its further use in language practice.

In the context of rapid technological progress, education requires modernization. This is especially true in the field of studying foreign languages, since their importance and demand have increased enormously in recent years. It can be noted that the use of artificial intelligence (hereinafter referred to as AI) in this area is becoming increasingly relevant. For example, Google released the game Semantris, which helps in learning English, in which the user is asked to compete with AI in selecting and/or inventing associations for words 9.

This article defines the role of AI in learning foreign languages: how significant it is and whether AI can replace humans in teaching languages(Mondal, 2020).

Artificial intelligence has become a key tool in the field of language translation and interpretation. Machine translation systems based on AI are capable of automatically translating texts from one language to another with high accuracy and speed. Such systems use deep learning algorithms that allow them to adapt to different language contexts and improve the quality of translation with each use. The use of AI in this area significantly speeds up the translation process and improves its quality, making it an indispensable tool for international communications and business(der Maas et al., 2021).

Artificial intelligence is used to develop interactive language programs and applications that help users improve their language skills. These programs may offer various exercises, games, tests and other educational materials, as well as provide feedback and error correction. The use of AI allows such applications to adapt to the individual needs of each user, taking into account his level of knowledge and preferences, which makes the learning process more effective and fun(Reddy, 2022).

Artificial intelligence is also being used to create adaptive learning systems that analyze each student's individual abilities, learning style and progress and offer personalized educational materials and teaching methods. Such systems use machine learning algorithms to analyze learning data and student progress, allowing them to dynamically tailor learning to suit the needs of each individual student. This personalized approach significantly improves learning efficiency and helps each student achieve their goals faster and more effectively (Esionova, 2019). AI itself is currently undergoing intensive development. AI systems can now compose text, audio and images with reasonably high quality. In the context of the topic of this article, it is important for us to know how well the system understands natural languages(Goralski & Tan, 2020).

There is no clear answer to this question yet. The aforementioned Semantris uses a fully trainable end-to-end algorithm that is commonly used to work with various natural languages. That is, the neural network independently builds models for working with lexemes. Initially, the neural network was trained on examples from natural languages, where for each sentence, phrase or word a translation, meaning or other semantic connection was given in advance, for example, an implication or a question-answer pair(Finlay, 2020).

The largest and most advanced language model at the moment is GPT-4. It was presented by the American research company OpenAI in July 2023. GPT-4 has 500 billion parameters and was trained on 570 gigabytes of text. By comparison, its predecessor, GPT-3, was more than 100 times smaller, with 1.5 billion parameters. This increase in scale leads to unexpected behavior: GPT-4 can perform tasks for which it has not been explicitly trained (Pospelov, et all., 2023).

However, despite such significant advances, AI's skills in constructing meaningful dialogue are still extremely far from human ones. Although AI can grasp the meaning of simple language formations and even answer them, it is limited by the literalness of its own interpretation of questions. A computer may know the definition of words, but it does not understand their meaning in a larger context.

Result and Discussion

Positive aspects of using AI in learning foreign languages

Improving accessibility and flexibility of learning. Artificial intelligence makes learning foreign languages more accessible. With the help of AI, students can learn anytime, anywhere using various platforms and applications. This is especially useful for people who are unable to attend traditional courses due to geographic or time constraints(Suleimenov et al., 2020).

Improving learning efficiency and information retention. Artificial intelligence can help improve learning efficiency. Using machine learning algorithms, AI can analyze a student's learning process and offer personalized exercises and materials that help improve learning and retention of information(Adams, 2021).

The ability of AI to adapt to the student's level of knowledge and learning speed. One of the most important benefits of using AI in teaching is its ability to adapt to the individual needs of each student. AI can analyze a student's knowledge level, learning speed, and learning style to suggest the most appropriate exercises and materials. This helps create a more personalized and effective learning experience (Valkova Yu.E, 2023).

Overall, artificial intelligence is a powerful tool that can greatly improve the language learning process. However, like any tool, its effectiveness largely depends on how it is used. Therefore, it is important to continue research in this area to maximize the potential of AI in education(Briganti & Moine, 2020).

Negative aspects of using AI in learning foreign languages

Possible problems with the accuracy and reliability of AI translation: Despite significant advances in the field of machine translation, AI systems still face a number of challenges that can affect the accuracy and reliability of translation. One of the main problems is the ambiguity of words and phrases, which can lead to misunderstanding of the context and, as a result, to erroneous translation. Additionally, machine translation systems may have limitations in understanding slang, idioms, and cultural sensitivities, which may also result in inaccurate translations.

Lack of human interaction and cultural context: using AI for translation and interpretation may result in the loss of important human aspects, such as human involvement in the communication process. Human interaction is important to properly understand the context, nuance and emotion of statements that may be lost in automatic translation. Additionally, AI systems may not always be culturally sensitive and normative, which can lead to misinterpretation of messages and misunderstandings between different cultures(Shi, 2019).

Privacy and Data Security Issues:Because AI systems for translation and interpretation work with large amounts of data, including sensitive information, serious questions arise about the privacy and security of this data. The collection, storage and processing of personal and business information can pose privacy risks, especially if AI systems are subject to cyberattacks or unauthorized access. This highlights the need for strict security and data protection measures when developing and using AI systems for translation and interpretation (Osipov, 2023).

The following forms of artificial intelligence can be distinguished, which are most often used in the process of teaching a foreign language(Shi, 2019):

- 1. automatic evaluation systems;
- 2. neural machine translation;
- 3. intelligent tutoring systems;
- 4. smart bots/chat bots (AI chatting robots);
- 5. smart virtual environment (intelligent virtual reality);
- 6. emotional AI (affective computing) (Shashkina, 2023).

The work of automatic assessment systems is based on the use of large amounts of information in combination with neurolinguistic programming technology. The corresponding software analyzes incoming information in oral or written form and generates a conclusion. Modern software that uses automatic systems for assessing written work (Criterion, Pigai) helps improve student performance and strengthen learning motivation. A number of online services (for example, Grammarly) correct errors and provide recommendations regarding the tone of a written message. In the same way, automatic assessment systems are used in software for developing speaking skills (English 60 Junior, Eye Speak). They help improve pronunciation, fluency and accuracy of speech (Michael, 2017). Examples of using AI in learning foreign languages:

- 1. *Translators and dictionaries*:AI is used in translation applications such as Google Translate, which can translate words, phrases and even entire sentences from one language to another in real time.
- 2. *App-based learning*:Language learning apps like Duolingo and Rosetta Stone use AI to tailor lessons to the user's skill level, providing a personalized learning experience.
- 3. *Chatbots for practice:*Chatbots like Mondly and Language Learning with Netflix use AI to create interactive scenarios that help users practice a foreign language in a real-life context.
- 4. *Speech recognition*:AI is also used in speech recognition technologies that help users improve their pronunciation and understanding of a foreign language.
- 5. *Text analysis*:AI can analyze foreign language texts and provide feedback on grammar, syntax and style.

These examples demonstrate how AI can be a powerful tool in language learning. However, it is important to remember that AI is just a tool, and successful language learning also requires effort and practice on the part of the learner(Szolovits, 2019).

It should be noted that motivation for learning foreign languages and students' emotions are closely related to each other. Emotional AI is artificial intelligence that responds to affective aspects, literally arising from or influencing human emotions. Emotional AI is capable of recognizing emotions using physiological data, "reading" facial expressions, intonations, or analyzing text information (McCarthy, 2023).

Thus, educational technologies based on artificial intelligence definitely have practical value in teaching foreign languages. Having analyzed the most popular forms of artificial intelligence used in the process of teaching a foreign language, we can come to the conclusion that AI-based technologies make it possible to form and develop students' skills such as independent acquisition of new knowledge, application of acquired knowledge and skills in practical activities to solve life problems, self-learning and self-development, autonomy in learning.

Artificial intelligence makes learning a foreign language more accessible and convenient, allows you to simulate learning situations as close as possible to real ones, increases motivation to learn and reduces language uncertainty.

The teacher's new challenge is to effectively use software as a teaching tool. The teacher must teach how to use certain technologies based on artificial intelligence.

AI technologies can facilitate some of the work of teachers by taking on a number of tasks, such as checking written work, practicing pronunciation, and practicing speaking, but teachers will remain the main element in the educational process, a determining factor in the success of students (Schroer, 2023).

Conclusion

During the article, we examined the role of artificial intelligence in learning foreign languages, and also analyzed the positive and negative aspects of this process. Artificial intelligence has played a significant role in making foreign language learning easier by providing tools for translation, interpretation and the creation of interactive language programs. However, despite all the advantages, there are also some disadvantages, such as translation accuracy issues and lack of human interaction.

Given the current pace of technology development, the prospects for using artificial intelligence in the field of foreign language learning look promising. We can expect improvements in the area of personalized learning, where AI will be able to adapt to the individual needs of each student. There may also be new tools and applications that will use AI to create more effective and interactive teaching methods.

Despite some shortcomings, artificial intelligence is a powerful tool that can significantly improve the process of learning foreign languages. However, it is important to remember that AI should not completely replace traditional teaching methods, but should complement them, creating a more effective and personalized learning experience. In conclusion, we recommend continued research in this area to maximize the potential of artificial intelligence in education.

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