

**Олеся Міненко,**

*кандидат філологічних наук, доцент,  
доцент кафедри мовної підготовки,*

*Національний університет цивільного захисту України*

*<https://orcid.org/0000-0002-6674-4075>*

*м. Черкаси, Україна*

**Ольга Крічкер,**

*кандидат історичних наук,*

*старший викладач кафедри мовної підготовки,*

*Національний університет цивільного захисту України*

*<https://orcid.org/0000-0002-8810-1062>*

*м. Черкаси, Україна*

**Наталія Єремєєва,**

*кандидат філологічних наук, доцент,*

*доцент кафедри мовної підготовки*

*Національний університет цивільного захисту України*

*<https://orcid.org/0000-0002-3691-0298>*

*м. Черкаси, Україна*

## **Artificial intelligence as a tool for learning foreign languages**

### **Штучний інтелект як інструмент вивчення іноземних мов**

**Summary.** *The authors of the paper aimed to determine the role of artificial intelligence for learning a foreign language (English) in the educational environment. It should be noted that language learning finds its implementation in three main aspects: practical, cultural and social. Any language learning involves not only the formation of skills and abilities to communicate in a foreign language, but also develops the cognitive abilities of learners associated with their thinking and creative activities: the ability to critically comprehend the phenomena of objective reality, perceive, accumulate, store, analyze and synthesize information, which contributes to the development of memory and concentration, helps to extract and use the most important information. The authors focused their attention on the processes of using artificial intelligence as a powerful online tool in foreign language classes. It is it that helps to improve the methods of teaching various aspects of the language: reading and translation, grammar and writing, speaking and listening, correcting errors and offering personalized recommendations to improve the quality of teaching and learning. Various approaches and points of view on the formation, development and application of artificial intelligence and its use to improve the language*

and speech skills of applicants are explored. The following methods were used during the research: generalization and systematization of scientific sources with elements of theoretical analysis and synthesis, as well as structural and systemic analysis. According to the authors of the article, a significant advantage of artificial intelligence is the compilation of a Personal Learning Plan. The program based on artificial intelligence takes into account your personal preferences and allows you to study even more effectively, and at a pace that is comfortable for you. A personal learning plan helps to gradually learn a language from simpler to more complex, while mastering new educational material requires less effort, and the effectiveness of learning is constantly increasing. Thus, learning in the era of digital technologies has become much easier and more accessible than ever before. The AI-powered educational programs and services help students significantly, providing them with personalized content and feedback to meet their educational needs.

**Key words:** interactive digital platforms, cognitive competence, educational platforms, communication skills, critical thinking, personalized learning.

**Анотація.** Автори статті намагалися визначити роль штучного інтелекту для вивчення іноземної мови (англійської) в навчальному середовищі. Слід зазначити, що вивчення мови знаходить свою реалізацію в трьох основних аспектах: практичному, культурному та соціальному. Будь-яке вивчення мови передбачає не лише формування вмінь та навичок спілкування іноземною мовою, а й розвиває когнітивні здібності здобувачів, пов'язані з їхньою мисленнєвою та творчою діяльністю: здатністю критично осмислювати явища об'єктивної дійсності, сприймати, накопичувати, зберігати, аналізувати та синтезувати інформацію, що сприяє розвитку пам'яті та концентрації уваги, допомагає вилучати та використовувати найсуттєвішу інформацію. Автори статті сконцентрували свою увагу на процесах застосування штучного інтелекту як потужного онлайн інструменту на заняттях з іноземної мови. Саме він допомагає вдосконалити методи навчання різних аспектів мови: читання та перекладу, граматики та письма, говоріння та аудіювання, виправляючи помилки та пропонуючи персоналізовані рекомендації для поліпшення якості викладання та навчання. Автори статті дослідили різноманітні підходи і точки зору щодо формування, розвитку і застосування штучного інтелекту та його використання для покращення мовних та мовленнєвих навичок здобувачів. Під час роботи над дослідженням були використані такі методи: узагальнення та систематизація наукових джерел з елементами теоретичного аналізу та синтезу, а також структурно-системний аналіз. На думку авторів статті, значною перевагою штучного інтелекту є складання «Персонального плану навчання». Програма на основі штучного інтелекту враховує ваші особисті вподобання і дає змогу займатися ще ефективніше, до того ж у комфортному для вас темпі. Персональний план навчання допомагає поетапному вивченню мови в напрямку від більш простого до складнішого, при цьому на засвоєння нового навчального матеріалу потрібно менше зусиль, а ефективність навчання постійно зростає. Таким чином, навчання в епоху цифрових технологій стало значно легшим та доступнішим, ніж будь-коли раніше. Штучний інтелект дедалі активніше застосовують у різних

*освітніх концепціях. Створені на його основі навчальні програми та сервіси справді суттєво допомагають здобувачам, пропонуючи персоналізований контент, який відповідає їхньому рівню знань, забезпечує можливість зворотного зв'язку і надає матеріали, які дають змогу успішно вирішити поставлені навчальні завдання. Використання штучного інтелекту покращує освітній процес і сприяє розкриттю мовного та мовленнєвого потенціалів здобувачів.*

**Ключові слова:** *інтерактивні цифрові платформи, когнітивна компетентність, освітні платформи, комунікативні навички, критичне мислення, персоналізоване навчання.*

**Introduction.** Learning a language is about diving into its practical, cultural and social aspects, hence language skills that we acquire while learning a foreign language involve not only our ability to communicate but also the ability to think critically, analyze and synthesize information, as well as to develop memory and concentration. These skills prove to be useful both for language learning and the development of general cognitive competence.

Supportive relationships and rapport that teachers and mentors can provide allow for a more natural, personalized approach to learning and helps solve problems that may arise during language learning.

Regarding the abovementioned factors, most teachers were quite skeptical about using artificial intelligence for teaching purposes because it did not excel too much in conveying contextual and cultural nuances which are considered main aspects of language learning. Interpreting humor and other subtleties of language is a challenging task for an individual, to say nothing of machines, as it requires an insight into psychology and sociocultural context while its abilities is limited compared to human capabilities. Additionally, despite the significant progress that has been made in the field of machine translation and speech recognition, it cannot completely replace the human factor in the process of language learning.

**Methodology/Methods.** The aim of the paper is to determine the role of artificial intelligence for learning English in the educational environment. The subject of our research work is the peculiarities of mastering English with the help of artificial intelligence. The object of our paper is the process of applying artificial intelligence in the English language classroom in higher education institutions. The research methods chosen, such as generalization and systematization of scientific sources with elements of theoretical analysis and synthesis, structural and systemic analysis, allowed to analyze and summarize the material.

The era of digital technologies has opened the doors wide for those who are ready to learn more by making information easier to comprehend

and access. In its turn, it resulted in the noticeable increase in the role of artificial intelligence that has paved its way into all areas and industries. Moreover, it has proven to be quite useful even during learning process and nowadays it is used on the regular bases for various educational purposes.

**Results and Discussion.** D. McCarthy first used the term “artificial intelligence” at the conference at Dartmouth College in 1956, in Hanover (New Hampshire). The next step in the development of the theory of artificial intelligence was developing the GPS (general problem solver) program. Judging from the name of the program, its main function is solving any logical problems. The program used a methodology known as goal-means analysis, which is based on determining what needs to be met and the subsequent decision taken on how it can be achieved. This approach excelled in solving simple problems, but proved less competent and ineffective while performing more complex tasks. The program itself did not justify its name, coping only with a limited number of problems but could not handle the whole issue. These misfortunes led to a temporary disappointment and partly disbelief in the development of computer systems that would be capable of thinking, processing and delivering information as well as humans.

The 21<sup>st</sup> century has witnessed a new glimpse on the problem of the application of artificial intelligence in different spheres of life. In 2017, Elon Musk claimed that artificial intelligence was capable of taking control of the defense industry, using hacking and disinformation to wage war, therefore, the state must strictly regulate and restrain its development. In 2024 he added that «we’ll have AI that is smarter than any one human probably around the end of next year» [1].

The famous British scientist and professor Stephen Hawking warned that the emergence of full-fledged artificial intelligence could be the end of the human race. He argued that the speed of restructuring artificial intelligence is much faster than the similar speed of humans, limited by slow biological evolution, and over time it will be increasingly difficult for humans to compete with artificial intelligence [8].

In July 2017, the management of the social network Facebook turned off its artificial intelligence system after the machines began to communicate in their own, non-existent language that people did not understand: the system used chatbots, which were initially created to communicate with living people, but gradually began to communicate with each other. At first, they communicated in English, but later on they managed to begin to correspond in a language that they themselves created during the development of the program [2]. However, Mark Zuckerberg does not support Elon Musk’s position and believes that «technology can generally

always be used for good and bad and you need to be careful about how you build it and you need to be careful about what you build and how it's going to be used». He added that “people who are arguing for slowing down the process of building AI, I just find that really questionable. ... If you're arguing against AI then you're arguing against safer cars that aren't going to have accidents and you're arguing against being able to better diagnose people when they're sick” [3].

Today, artificial intelligence is defined as the ability of a system to autonomously select the best solution to a problem from a set of pre-defined options; the ability of an automated system or computer program to perform human functions, making the optimal decision based on the analysis of external factors and taking into account the life experience of humanity [4]; the ability to solve complex problems; the ability to learn, generalize and make analogies; the ability to interact with the outside world through communication, perception and awareness of the perceived; science and technology capable of reproducing the thinking processes of the human brain and directing them to create and process various computer programs, as well as intelligent machines capable of completely replacing and simplifying human work.

Among the researchers of artificial intelligence, it is customary to distinguish between its two types, weak (narrow) and strong. The first provides the ability to perform only a narrow list of tasks. The examples of such these systems are mobile applications for voice control, such as Google Assistant, Alice and Siri, which serve to give voice commands to the operating system and receive a comprehensible response, that is, these applications perform a certain number of functions. In contrast, strong artificial intelligence system is capable of performing any human task. Even though such an artificial intelligence system has not yet been developed, world scientists are already on it [5].

According to experts, artificial intelligence is also effective in learning foreign languages, in particular, in online methods. Both applications and full-fledged language platforms are developed on AI basis, which creates more opportunities for both students and teachers.

We would like to focus initially on the ChatGPT artificial intelligence system developed by OpenAI which can help to master new skills or gain knowledge in the chosen field. Moreover, the ChatGPT is able to talk to users using natural languages. The service works on the basis of deep learning, which means that it learns to understand a natural language and generate answers to users' questions and commands generally called prompts.

Due to its capabilities, this tool has become a useful assistant in learning a foreign language. It helps to learn new words, study grammar and develop English communication skills.

However, is it possible to learn English with the help of artificial intelligence, and what advantages does it provide? In terms of our research work we focused on studying a number of problematic issues in learning foreign languages which can become easier thanks to AI and figure out how to use modern opportunities for more effective learning.

It's doubtless that to learn a foreign language, it is necessary to master, consolidate and constantly develop four basic skills, namely reading, writing, listening and speaking. However, during classes, whether self-study or together with a teacher – students often face difficulties that hinder progress and may sometimes even lead to a loss of motivation and, consequently, lack of results.

We offer an insight into a number of disadvantages and obstacles a learner may face while studying a foreign language exclusively with the help of AI resources.

**Unified approach.** One of the most common disadvantages of online learning is the same methods and instructions for all participants of the educational process. At the same time, everyone has their own pace and ways of perceiving information. Without taking into account personal interests of students, their initial level of preparation, and their preferences, the process of acquiring information may significantly slow down, showing bad progress and reducing the effectiveness of classes.

**Insufficient verbal communication.** The lack of opportunities for oral communication often becomes another problem for improving language skills. Students who do not engage in active speech practice have difficulties with pronunciation, speech tempo, and the ability to keep the conversation going. At the same time, live communication is crucial for the learning process. Without full-fledged dialogues and discussions on various topics, only the illusion of mastering the language is created.

**Repeated exercises.** Many platforms for learning foreign languages offer almost the same lessons and exercises to consolidate the material. Most often, repeating frameworks get boring, and students gradually lose their interest in learning. In order to enhance the level of involvement and boost it to the maximum, diverse and interactive classes are important. Only various and non-repeating tasks are the right way to maintain a steady interest in mastering new material.

**Difficultis with tracking progress.** Without the ability to assess their current level of language proficiency, students cannot identify areas that need improvement and do not notice gaps that require closer attention. That is why timely feedback and constant progress tracking are especially important for developing a learning plan, setting goals, and confidently achieving the desired language level.

Taking into consideration the mentioned flaws, artificial intelligence is yet changing the approach to learning process and it's unfair not to acknowledge its achievements and opportunities it opened up for a radical change in the methodology of teaching and learning foreign languages.

Individual selection of materials. Thanks to a personal teacher, the opportunities for acquiring new knowledge and skills are not limited by the textbook. The tutor creates a unique personalised curriculum uploading materials to the AI system which adapts the received data to build curricula and develop exercises.

Chat bots. Although language bots are not able to communicate with you as naturally as an individual, they can be really useful. As far as finding an interlocutor who is fluent in the language you need is not that easy, an interactive chat bot can be rather useful. It gives a chance to practice language skills additionally correcting mistakes and providing feedback. Moreover, it helps avoid the feeling of discomfort, anxiety and uncertainty that worries many people experience during live communication in a foreign language.

Gamification. Application of game-like elements despite the age group the learners belong to is can be a breakthrough in a routine of the learning process. A variety of exercises, interesting reward systems and unusual competitions get students more involved and excited about learning and allows them to enjoy every moment of the lesson which will boost their overall motivation.

Advanced algorithms. The use of machine learning for all artificial intelligence systems ensures their constant improvement. This constantly evolving forms the basis of artificial intelligence that allow to develop optimal solutions to learn a foreign language even more effectively: for example, the Natural Language Processing (NLP) algorithm helps to understand human speech, while Collocation Extraction simplifies the search for information and solving problems with the generation of language structures. An educator or a student don't need to excel in programming to use AI technologies in learning foreign languages. In addition to tools that are 100% AI-powered, many well-known educational sites include some AI features, such as Canva or Google Classroom. Tome is a productive tool that allows to create flashcards, slides, GIFs, and presentations more efficiently with the help of AI.

Projector Creative & Tech Institute and the Minor Academy of Sciences of Ukraine with the support of the research company Factum Group and the Ministry of Education and Science of Ukraine conducted an All-Ukrainian study of the use of AI in school education in September-October 2023 in order to analyze how actively artificial intelligence and its capabilities are used and to explore its further involvement in the educa-

tional process at different levels. More than 3,000 Ukrainians participated in the survey. 1,747 teachers and 1,443 students in grades 8-11. According to this study, 87% of the teachers know about certain AI services, and 69% use at least one of them [6]. The most popular AI service among all teachers was ChatGPT, while the Grammarly service was much more popular among English teachers. This proves that the use of machine-based artificial intelligence is already accepted in education [7, p. 51].

The use of AI in the process of learning a foreign language has proven to be absolutely effective in practice. The thoughtful and appropriate implementation of AI in language curricula ensures significant progress. In addition, the participation of experts, including linguists, teachers and native speakers, is crucial for the development and implementation of AI-based language courses.

More and more language platforms and applications are using artificial intelligence to improve the learning process and help users achieve results faster. However, there are also their own difficulties: some programs use only AI and do not involve live teachers, while a number of other developers, as before, refuse to implement relevant technologies. But balance is important: implementing AI requires a carefully thought-out strategy and a clear sequence of actions.

Just as online education once became a real breakthrough in language learning, the evolution of AI technology is a new round of development. Therefore, the LiveXP language platform could not ignore the possibilities of AI. That is how the Personal Learning Plan appeared. The program based on artificial intelligence takes into account your personal preferences and allows you to study even more effectively, and at a pace that is comfortable for you.

The motive for developing the Personal Plan was the desire to help students learn new material with the least effort and with maximum efficiency. A Personal Plan is an individual strategy based on the current level of foreign language proficiency and designed specifically for the transition to the next level in accordance with the Common European Framework of Reference for Languages (CEFR). First, the student registers and fills in data that allows determining his current level, as well as indicating goals, interests and desired pace of learning. Based on this information, the LiveXP system creates a Personal Plan, which consists of two main parts:

- individual lessons with a teacher to study new material and practice vocabulary and grammar on a specific topic;
- exercises for self-study – appear after lessons to consolidate and improve skills.

After all planned lessons are completed and the tasks are completed, the system will offer to take a test to assess progress and acquired skills.

Personal Plan is a comprehensive solution for those who want to learn English with artificial intelligence and master a foreign language faster, easier and more effectively.

**Conclusions.** There's all too many evidences that prove the ability of artificial intelligence to self-develop and study. Thus, its skills for learning foreign languages cannot be diminished. Artificial intelligence is truly an immense and valuable achievement of scientific and technological progress, but to achieve noticeable results in acquiring a foreign language, it is not enough to use AI alone. Anyway, online educational programs and services that work on its basis can be rather useful offering personalized content, feedback and materials adapted to the tasks. In addition, AI allows educators to optimize the educational process and focus on the most valuable and important thing – teaching and helping students to reveal their language potential.

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