

Vadym Tynnyi, Ph.D. (Pedagogy),
Associate Professor of the Foreign Languages Department,
Kyiv National Economic University named after Vadym Hetman
Emma Schukina, Ph.D. (Pedagogy),
Associate Professor of the Foreign Languages Department,
Kyiv National Economic University named after Vadym Hetman
Olga Belyakova, Senior Lecturer of the Foreign Languages Department,
Kyiv National Economic University named after Vadym Hetman

FOREIGN LANGUAGE ACQUISITION THROUGH ARTIFICIAL INTELLIGENCE TECHNOLOGY

In the article, the authors analyze the various definitions, essence and features of artificial intelligence (AI), its significance for enhancing English learning efficiency, improving learner's communicative and professional competence. Peculiar feature of AI is that it's a computer-based human intelligence simulation developed to function as human beings. The purpose of AI is to facilitate education in teaching and learning a foreign language. This research reveals the role of AI in foreign language teaching and investigates AI-supported technologies in this education process. Artificial intelligence offers an efficient learning atmosphere for foreign language learning, in particular, English course. Another distinguishing advantage of AI is its capacity of creating a personality oriented atmosphere in which learners use their knowledge and experience to simultaneously enhance foreign language skills taking into account learners' current level of foreign language, desires and needs. AI provides a real basis for practicing all aspects of foreign language advancement, i.e. reading, listening, speaking and writing. It improves the resulting effect of learning and teaching impact of foreign language course. The technology of AI creates technical environment for developing English language skills. The capacity of modern AI-supported software allows to arrange applying these technologies in accordance with English class circumstances. The variability of learning technology tools facilitates mastering English for students. A great variety of AI-supported foreign language applications including mobile ones and software offer many options for students. This peculiar technology is characterized by human-like behaviour and thinking through modelling intelligence and making substantiated decisions identical to people's ones. The examples of AI-based technological developments include online platforms English Able, Text to speech, Google Translate, Orai, and others.

Keywords: interactive learning; information and communication technologies; digital technologies; digital environment; artificial intelligence; foreign language competence; online platforms.

Ref. 12.

Вадим Тинний, кандидат педагогічних наук,
доцент кафедри іноземних мов,
Київського національного економічного університету імені Вадима Гетьмана
Емма Щукіна, кандидат педагогічних наук,
доцент кафедри іноземних мов,
Київського національного економічного університету імені Вадима Гетьмана
Ольга Белякова, старший викладач кафедри іноземних мов,
Київського національного економічного університету імені Вадима Гетьмана

НАВЧАННЯ ІНОЗЕМНОЇ МОВИ ЗАСОБАМИ ТЕХНОЛОГІЙ ШТУЧНОГО ІНТЕЛЕКТУ

У статті автори аналізують різні визначення, сутність та особливості штучного інтелекту (ШІ), його значення для підвищення ефективності вивчення англійської мови, удосконалення комунікативної та професійної компетентності студентів. Особливістю штучного інтелекту є те, що це комп'ютерне моделювання людського інтелекту розроблене для функціонування подібного людині. Мета створення штучного інтелекту полягає у тому, щоб полегшити освіту у викладанні іноземних мов і досліджує технології, що підтримуються штучним інтелектом у цьому навчальному процесі. Штучний інтелект пропонує ефективну навчальну атмосферу для вивчення іноземної мови, зокрема курсу англійської. Іншою відмінною перевагою ШІ є його здатність створювати особистісно орієнтовану атмосферу, в якій студенти використовують свої знання та досвід для одночасного вдосконалення іноземних навичок, враховуючи власний поточний рівень володіння іноземною мовою, бажання та потреби. Технології ШІ створюють технічне середовище для розвитку іноземних навичок. Можливості сучасного програмного забезпечення на основі ШІ дають змогу організувати застосування цих технологій відповідно до умов вивчення англійської мови. Широкий спектр засобів навчання полегшує оволодіння студентами англійською мовою. Велика

різноманітність іншомовних додатків із підтримкою штучного інтелекту, включаючи мобільне та програмне забезпечення, пропонує студентам багато опцій. Зазначені своєрідні технології характеризуються людською поведінкою та мисленням завдяки моделюванню інтелекту та прийняттю обґрунтованих рішень, ідентичних людським. Прикладами технологічних розробок на основі ШІ є онлайн-платформи English Able, Text to speech, Google Translate, Orai, та інші.

Ключові слова: інтерактивне навчання; інформаційно-комунікаційні технології; цифрові технології; цифрове середовище; штучний інтелект; іншомовна компетентність; онлайн-платформи.

Statement of the problem. Today's world-wide digital network, globalization of industrial activity fostered developing personal new way of thinking, creativity, opportunities, and challenges for each member of society. Modern technological innovations have a great impact on conveying information in the form of text, images, and sound. The profound goal of contemporary technological advances was to enhance efficiency and facilitate all directions of social activities. One of the modern technological sectors being intensively innovated is artificial intelligence (AI).

This history demonstrates paradigm shifts of the AI framework in its philosophical context. Due to the advancements in Natural Language Processing, the technological ability to handle massive data, capabilities for networked learning, today's AI has crucial potential for language studies in general, and for second language studies in particular.

Human's computational creativity resulted in developing artificial intelligence technologies. The software created as a product of artificial intelligence separates content from autonomous functions, i.e. student search or computation. While applying AI we can create "intelligent" devices that function similarly to the human brain, for instance, digital online platforms or computer systems as well as robots [4].

Artificial intelligence automates the current process of learning and searching for information, intellectualizing the product, adapting, analyzing deeper data, achieving extreme accuracy, processing countless data [12]. The field of artificial intelligence includes sections of computer science (natural language recognition, visual image recognition, automatic translation, mathematical proof generation, computer games, robot management, and expert systems) as well as technical systems for solving intellectual problems. The construction of a natural language processor is one of the urgent problems of modern computational linguistics and the creation of artificial intelligence. The information explosion that humanity is currently experiencing gives rise to this problem. Today, there is no such system that would provide a complete morphological analysis or a complete dictionary for an arbitrary text in a given language. However, the problem of morphological recognition is a necessary condition for solving many other informational problems [5].

Analysis of recent research and publications. The following studies are devoted to the issue of

implementing information and communication technology in the educational process: V. Bykov, R. Gurevich, V. Osadchyo, M. Kademia, K. Osadchoi, V. Khomenko, L. Shevchenko, and others. Some researchers, considering the issues of teaching informatics, mathematical logic and logical programming in pedagogical educational institutions, teaching methods and the use of artificial intelligence systems in secondary schools (A. Verlan, M. Zhaldak, I. Zabara, K. Lyubchenko, Y. Trius) carried out the appropriate selection of the content of the educational material, in particular, from the basics of artificial intelligence.

The basic directions of the development of various aspects of this problem are reflected in studies devoted to the issues of student education in a higher education institution (H. Akinar, O. Anishchenko, N. Balovsiak, V. Bykov, C. Brus, T. Gurina, R. Gurevich, M. Kademiya, Y. Karlinska, V. Zibrova, V. Klochko, L. Konoshevskiy, O. Konoshevskiy, O. Padalka, L. Panchenko, T. Lupinis, L. Petukhova, L. Peycheva, N. Soroko, O. Spirin, T. Hapke, A. Chmil, etc.), a future foreign language specialists (Y. Askerko, T. Gudkova, T. Lukina). However, the solution to the problem of purposeful selection of the content of educational material on the basis of artificial intelligence remained outside their attention.

Application of AI-supported systems in the process of studying foreign languages ten years ago was mainly limited to using them for translation purposes, listening or visualization. Currently, in the works of scholars A. Banartsev, O. Eliseeva, L. Malygin, E. Potapov and others, artificial intelligence is considered as a multimodal (that is, capable of simultaneous affecting several channels of learner's perception) linguistic didactic system. Linguistic simulators based on AI technology are analyzed in the research of D. Kolesnikov, A. Rudnichenko, E. Vereshchagina, E. Fominov.

The purpose of the article is to determine the main goals, principles and tasks of using artificial intelligence in higher educational institutions, to analyze and generalize the use of AI to prepare students for professional and communicative activities in English. The task of the article is the theoretical substantiation and systematization of theoretical knowledge about the use of AI in education and the conditions for the effective use of artificial intelligence as one of the components of person-oriented foreign language learning.

Presentation of the main material. A number of scholars define artificial intelligence as machine intel-

ligence. This intelligence is conveyed by the machine through the intelligence displayed by human brain. Therefore, AI means combining human mental abilities with machine aimed at executing particular tasks. AI is “a science and a set of computational technologies that are inspired by—but typically operate quite differently from—the ways people use their nervous systems and bodies to sense, learn, reason, and take action” [9]. Another definition of AI is “a study of intelligent human behaviors and, also, the ones of animals, machines” [11]. At times AI is interpreted as a computer science technology applying research and development of smart machines as well as applications [7]. This is a technological thought about machine thinking and behaving like an intelligent human being.

The meaning of word “artificial” isn’t equivalent to false but something that is not real, simulated. As “intelligence” has better qualities at a certain extent it can substitute genuine items. The complexity of this term includes various forms: self-knowledge understanding, emotional awareness, reasoning, preparation, creativity, consciousness.

AI is rather building a machine capable of human-like cognitive thinking and actions but not just designing smart machine. The artificial intelligence is aimed at designing computer software or hardware systems demonstrating human-like thoughts or display features commonly associated with human thought [1]. The components of human intelligence include decision-making, speech understanding, visual perception, and language awareness, and can be perceived by artificial intelligence. A demand for AI is caused by the necessity to design a complicated system and find solutions to multidimensional problems like recognition or natural language processing [2].

As for language learners AI offers amusing, personal training, providing prompt feedback and various activities needed to achieve fluency. The obvious advantage of AI’s is that it will foster developing complex abilities. Through applying different computations of machine artificial intelligence is trying to achieve human-level intelligence. Moreover, AI is based on complex technologies enabling humans to function, feel, comprehend, and learn from machines. So, AI is a branch of computer science focusing on the human-like cognitive ability. The machines foster finding solutions to complex problems in a more human manner. The technology copies human cognitive attributes with their subsequent incorporation in a computer. As a result, AI models high level cognitive actions like learning, making decisions, planning, and learning language.

By means of technology and digital platforms teaching and learning foreign language has become much easier. These technological advancements offer a wide range of possibilities to improve English lan-

guage skills. Therefore, the enhancing of an English class model applying artificial intelligence should be combined with the English teaching and learning process. Digital literacy and language literacy are crucial interdependent components needed to improve global competence.

English language teachers can efficiently use artificial intelligence in English teaching. English, being one of the widely used world languages, is precisely structured in grammar. So, learning English has always been substantially difficult for students. Therefore, the system of English teaching and learning can be effectively transformed by means of intelligent search, artificial intelligence machine learning, and natural language processing [10]. Thus, one of the directions for future research is the role of AI and technologies in English language teaching.

A sub-division of computer-assisted language learning include AI-assisted devices. Foreign language education has been enriched with a wide variety of advancements in AI and instruments of natural language processing and technologies to cope with big data [6]. English language teaching is supposed to be a complex educational goal aimed at developing the students’ potential to interact internationally. Artificial intelligence is an effective tool in foreign language education to cope with the substantial development of language processing and technologies dealing with big data.

In English language course AI is a creative and challenging factor. Contemporary artificial intelligence technologies will transform world classrooms and open them for everyone speaking various languages or may have a listening or vision impairments. AI, being an supplemental support system, will be crucial for both students and teachers of English. In AI, both language literacy and digital literacy are required to improve global competence when learning English. Adaptive systems providing personalized content based on big data and artificial intelligence are now at hand for developing digital learning technology.

For a number of purposes AI is characterized as applying of AI-supported systems for teaching/learning English to advance in selecting and arranging content [8]. It is capable of diversifying instruction resources and online classes according to the learners’ skills and abilities. Moreover, AI can determine teaching techniques and assessment methods through personalized self-education, and modelling expert and smart systems. There is the correlation between AI and English teaching in the following ways [10]:

- AI transforms the surrounding and circumstances of English language class. An immersive English learning is cultivated through efficient learning atmosphere due to AI. It provides possibilities for making English learning more stereoscopic and visual (sound, pictures, and text in an intelligent device). A direct

interaction between students and AI through computer interface enhances the effectiveness of language environments. As some scholars view, AI has a significant potential of providing individualized learning atmosphere where adult learners apply all their knowledge to simultaneously practice English skills combined with their current level of English or occupational wishes or needs.

– AI enhances students' practical skills in English. Applying science and technology while teaching English requires teachers' and students' awareness of their ability to manage the system and find effective solutions to various problems in time. Therefore, practical expertise of students dramatically increases due to AI.

– AI provides effective teaching effect of English course by means of a real simulation dialog platform for teaching and learning. That will allow students to perfectly advance their English vocabulary knowledge, spoken English, English writing as well as develop their comprehension skills. Global network enables students to advance their customs and cultural awareness of various countries by means of AI. Besides, it can provide communication with other students across the world and, therefore, significantly encourages students to enhance their English skills.

The advantages of AI-supported English language teaching and learning instructional programs include the following ones [3]:

– High quality learning material: AI makes it possible to advance learning material suitable for all stages of mastering language (reading, listening, speaking, and writing).

– Instructional programs are oriented to the needs of consumers. So, teaching software developed by means of AI takes into account preferences of learners and their personal features. The basis for creating software is the expectations of a student and defined criteria. English language teaching and learning will be inefficient without clarifying exact needs of a student.

– Digitally supported up to the level of AI software English learning course can easily be accustomed to the needs and peculiarities of students. So, the course is personalized and student-centered.

– AI is created as an additional system aimed at supporting teacher's and student's activities. Being an external support mechanism, AI is crucially important for students and teachers of foreign language, in particular, English language. AI, which is based on the system of human knowledge, will provide effective support for teachers-students. The successful combination of digital AI-based services and educators preferences is a key factor.

– Due to the capabilities of AI, time and spatial restrictions are easy to overcome. AI enables learners to exchange information and receive high-quality data from any organization across the world. The AI-

supported instructional software is actually easy to access. Hi-tech functions of software (voice recognition, facial recognition etc.) allow to remotely reach information resources via digital network. So, AI-supported applications can monitor students' activity.

– The role of teacher is transformed due to AI-supported systems while learning foreign language. Students are provided with teacher's support. The AI-based programs can be slightly modified and operated by teacher. As for instructions relating to AI-supported software, they are available for easing teaching-learning activities.

– Digital AI-supported systems provide high-quality English learning with a multilevel feedback capabilities. The technical peculiarities of AI instructional programs allow to assess and interpret the information considering the students' needs (in-depth presentation, review etc.) and, as a result, ensure learners' success in learning foreign language.

– All technical capabilities of modern AI-supported learning platforms can adjust the course to the personalized needs of learners, manage speed, topics, various items to meet the learners' interests, etc. Therefore, teaching and learning English is fostered due to AI-supported instructional programs especially tailored to create students' needs centered material for English course.

– AI is quite multilayered field of study. A wide range of methods, theories, technologies, categories etc. in AI is diversified and includes machine learning, computer vision, cognitive computing, scientific language processing, and neural networks. While communicating with others by using a language, people may employ, almost easily or highly complicated and still little comprehended process. Therefore, it's quite tiresome to design a computer system producing and interpreting English language components.

Improving English language skills can be efficiently fulfilled through AI-supported technology. Global digital network provide a wide range of possibilities for developing both language and digital literacy resulting in global competence. Technological basis of AI is text processing of a language. The level of AI's sophistication determines the quality of processing the language. Consequently, the application of AI technologies strengthens foreign language teaching and learning.

One of the key functions of AI is transmitting diversified information and it facilitates learning foreign language. All material conveyed by the teacher is easily comprehended if it is supported by AI technologies. Besides, distance learning forms are significantly fostered by means of these technologies. A wide range of language learning AI-supported applications can be effectively used by both teachers and students/learners. Several examples of AI technology advances used for foreign language (i.e. English) include:

– A supplementary feature of Google Translate is the text to speech function. It works with a wide scope of languages. This attribute provides software capability of reading text with better intonation and is more fluent than the one with other applications. The system of text-to-speech transition converts text into speech automatically through the arrangement of phonemes to form speech. The vocabulary is limitless and the system can pronounce any word.

– As for English course, the system is capable of converting computer-generated text into pronunciation, where intonation, speed, and the output audio format to be saved can easily be monitored. This technology can broadcast the teaching and learning process online and add the learning media to English subjects.

– In terms of learning and teaching English, Google Translate is widely used as an online translator across global digital community. It can easily be used for translating words, phrases, sentences etc. Also, spelling checking provided by the application is very useful when it comes to that. Besides, learning foreign languages is efficiently supported by practicing word pronunciation.

– English ABLE is an Assessment-Based Learning Environment for English grammar. The application use direct instruction from a variety of sources by assessing knowledge. As for teaching and learning English, the app creates learning environment based on tests to help English language learners improve grammar. Also, this adaptive complex application offers packages fostering students to master English grammar.

– Another application Learning Speech Assistant (ELSA) is aimed at enhancing English pronunciation by means of AI and speech recognition. This technology is capable of analyzing and correcting speaker's words and sentences. So, it arranges two-way English learning process. This tool is especially helpful for people speaking English with multiple accents. The application can manage speech patterns of non-native speakers and, thus, it substantially differs from most other speech recognition tools. One peculiar advantage of the application is preliminary assessing the users to define their proficiency level. The capabilities of the system allow to adjust the user's learning strategy. This artificial intelligence system produces and proposes its own way of learning considering the user's abilities.

– Another useful tool for improving public speaking skills is Orai. The app is capable of supporting teacher's activity as well as functioning as a teacher. Orai is user-friendly. Learner's oratory skills can be quickly and independently enhanced by students. In terms of English course, Orai's advantage is its capability of defining the quantity of words a student uses while speaking. Some attributes of the application enable students to improve their speaking skills.

– Concerning mobile application we would like to mention Neo as an integrated learning solution intended for improving proficiency in English capable of adjusting to the user's learning strategy by means of voice recognition and artificial intelligence systems. The distinguishing attribute of the app is advanced speech recognition which enables students to correct the pronunciation word by word for gaining proficiency in spoken English. Thus, the advantages of applying artificial intelligence in English learning are the following: a psychological comfort for students who lack self-confidence while enhancing their speaking abilities; easy access regardless of location and time; AI tools for learning spoken English are a more accessible and successful alternative; AI's capabilities exceed the ones of humans, i.e. almost immediate evaluating one's own English skills and progress; the enhanced level of instruction allows to facilitate learning and accustom it to the needs and abilities of students; the capacity of AI is more powerful and can manage much more students than teachers do.

– One peculiar feature of another application known as Chatbot is its design for developing learner's communication skills. This latest technology provides tools for automatic interaction with both humans and computers automatically. As for English learning course, the Chatbot assumes the role of conversation partner. The users develop communication skills in both speaking and writing. The Chatbot application being an English conversation training tool is also aimed at correcting grammar errors. Other special features of the app include description of errors, ability to measure the progress in conversational English and sentence structure. Therefore, students advance in conversational English as well as receive assessment of their learning.

Conclusions. Learning and teaching English by means of artificial intelligence is supposed to become more efficient through natural language processing, concerning reasoning, perception, transforming objects, knowledge. The sophisticated technology optimizes and facilitates human's activity including learning. Modern digital platforms encourage students and teachers to take a full advantage of such digital tools and make learning and teaching English more engaging and productive. Modern digital learning technology is based on personalized learning content capable of adjusting to the everybody's needs and abilities.

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**МЕТОДИЧНІ АСПЕКТИ ВДОСКОНАЛЕННЯ ВИКЛАДАННЯ АНАТОМІЇ ТА ФІЗІОЛОГІЇ ЛЮДИНИ
ЗДОБУВАЧАМ ОСВІТИ ЗА СПЕЦІАЛЬНІСТЮ 223 “МЕДСЕСТРИНСТВО”**

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Ігор Козинець, викладач кафедри хірургії та екстреної медицини,
завідувач медсестринського відділення фахового медичного коледжу
Черкаської медичної академії

Ольга Козинець, кандидат педагогічних наук, викладач
кафедри фізичної терапії та ерготерапії
Черкаської медичної академії

**МЕТОДИЧНІ АСПЕКТИ ВДОСКОНАЛЕННЯ ВИКЛАДАННЯ АНАТОМІЇ ТА ФІЗІОЛОГІЇ
ЛЮДИНИ ЗДОБУВАЧАМ ОСВІТИ ЗА СПЕЦІАЛЬНІСТЮ
223 “МЕДСЕСТРИНСТВО”**

У статті актуалізовано проблему викладання анатомії та фізіології людини здобувачам медичної освіти зі спеціальності 223 “Медсестринство”. Виходячи зі ступеня усвідомленості сприйняття навчального матеріалу, методи навчання умовно поділено на пасивні, активні й інтерактивні. Доведено безперечну перевагу інтерактивних методів навчання, проаналізовано їх переваги порівняно з традиційними. Авторами презентовано власний досвід викладання анатомії та фізіології людини, розкрито сильні і слабкі сторони в методиці викладання, надано слушні рекомендації.

Ключові слова: анатомія; фізіологія; людина; заклад медичної освіти; викладання; інтерактивне навчання; форми та методи.

Літ. 8.

Ihor Kozynets, teacher of the of Surgery and Emergency Medicine Department,
Head of the Nursing Department of the Specialized Medical College
of the Cherkasy Medical Academy

Olga Kozynets, Ph.D. (Pedagogy), teacher of the Physical Therapy
and Occupational Therapy Department
Cherkasy Medical Academy

**METHODOLOGICAL ASPECTS OF IMPROVING THE TEACHING
OF HUMAN ANATOMY AND PHYSIOLOGY TO STUDENTS OF EDUCATION
IN THE SPECIALTY 223 “MEDICAL NURSING”**

It is argued that the study of human anatomy and physiology is given a significant place in the system of medical education. The required scope of knowledge, abilities and skills in human anatomy and physiology is outlined, which must be mastered by a student of medical education. Based on the degree of awareness of learning material, teaching methods