Vadym Tynnyi, *Ph.D. (Pedagogy), Associate Professor of the*
Foreign Languages Department,
Kyiv National Economic University named after Vadym Hetman
ORCID: https://orcid.org/0000-0002-4795-3031
Olga Belyakova, *Senior Lecturer of the Foreign Languages Department,*
Kyiv National Economic University named after Vadym Hetman
ORCID: https://orcid.org/0000-0001-9468-7787

LEVERAGING ARTIFICIAL INTELLIGENCE FOR EFFECTIVE FOREIGN LANGUAGE COMPETENCE

The article investigates the peculiarities of applying artificial intelligence (AI) dialogue systems aimed at advancing university students' interactional foreign language competence. The application of these systems when learning English as a foreign language significantly fosters the acquisition of language skills by university students. However, the interactional competence of the students studying foreign language lacks profound and comprehensive analysis. The factors affecting the introduction of AI dialogue systems into foreign language learning include assignments characteristics, technological methods implemented, learning tasks, forms of students' activity, capabilities of the technologies introduced. While applying AI dialogue systems, students' interaction and problem-solving skills need more sophisticated and effective methods of improving. The AI-based interaction implementing system should acquire features of real human interaction characterized by culture peculiarities as well as humor and compassion. The results of the study testify that applying AI-based interaction system during foreign language acquisition is still underdeveloped. There are issues concerning language competency, meaning-based communicative situations, critical thinking, discussion and problem-solving skills in foreign language learning that need further elaboration.

AI-based communication system can provide full-scale tracking of individual learning strategies and peculiarities. Therefore, students are equipped with tools of building up their personal efficient learning expertise. Applying AI foreign language communication system allows teachers to incorporate students' preferences and characteristics into the lessons and enhance their learning efficiency through high-tech multimedia resources and various learning activities.

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

Ref. 14.

Вадим Тинний, *кандидат педагогічних наук,*
доцент кафедри іноземних мов
Київського національного економічного університету імені Вадима Гетьмана
ORCID: https://orcid.org/0000-0002-4795-3031
Ольга Бєлякова, *старший викладач кафедри іноземних мов*
Київського національного економічного університету імені Вадима Гетьмана
ORCID: https://orcid.org/0000-0001-9468-7787

ВИКОРИСТАННЯ ШТУЧНОГО ІНТЕЛЕКТУ ДЛЯ ЕФЕКТИВНОГО ФОРМУВАННЯ ІНШОМОВНОЇ КОМПЕТЕНЦІЇ

Стаття досліджує особливості застосування діалогових систем штучного інтелекту (ШІ), спрямованих на розвиток інтерактивної іншомовної компетенції студентів. Застосування цих систем під час вивчення англійської мови як іноземної значно сприяє набуттю ними мовних навичок. Однак, формування інтерактивної компетенції студентів протягом вивчення іноземної мови комплексно ще не досліджувалася. Під час застосування діалогових систем ШІ навички взаємодії та вирішення проблем студентів потребують більш складних та ефективних методів їх покращення. Система взаємодії на основі ШІ повинна набути рис природної людської взаємодії. Результати дослідження свідчать про те, що рівень застосування системи взаємодії на основі ШІ під час вивчення іноземної мови все ще недостатній. Існує низка проблем, пов'язаних із вдосконаленням мовної компетенції та реалізацією комунікативних ситуацій.

Система комунікації на основі ШІ може забезпечити повноцінне відстеження індивідуальних стратегій та особливостей навчання. Студенти, таким чином, оснащені інструментами для формування власного ефективного досвіду навчання та подальшого поглиблення іншомовних знань і вмінь.

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

Statement of the problem. Nowadays massive sets of human language collected into big data are firmly integrated into artificial intelligence driven systems creating new opportunities for language teaching and learning. New technological advancements, in particular, high performance artificial

neural networks providing efficient language system functions. As for learning capabilities, the technology can successfully monitor learner's progress and enhance his or her results, as well as determine learner's strategies by analyzing performance data. Moreover, massive data also causes the problem of fairness and transparency. Big data by its nature is very closely interrelated with language learning. It is an essential resource for human activity, but one should be very considerate when using this phenomena.

AI-based communication systems are widely applied throughout various fields of social activity including marketing, retail, wholesale, entertainment, education and others. A distinctive feature of AI-based communication system is modelling human conversation by means of text or speech generation.

Interactional competence can be defined as an ability to employ available language resources aimed at engaging communication resources by the interlocutor for conveying their interaction intents in real-life situations. For advancing foreign language acquisition methods, a number of AI-based applications aimed at developing foreign language learner's interactional competence through creative tasks have been created. The result of enhancing students' communication abilities while learning foreign language is their efficient interactional competence.

There are two factors to base on when considering interactional competence as collaborative and asymmetric interaction – psycholinguistic (individual perspective) and sociolinguistic (interactional perspective). While communicating by means of foreign language interlocutors interact and collaborate during mutual conversations.

An individual view of interactional competence refers to interlocutor's communication skills. The following criteria should be considered while analyzing individual's communicational competence – vocabulary knowledge and grammatical skills, fluency and pronunciation, subject control. The situational circumstances and social factors are not considered by individual perspective of interactional competence. The outcome of effectively developed interactional competence is awareness of communication rules as well as employing interactional and language resources, for example, interchanging and assignment management in a certain context. Developing interactional competence in day-to-day language practice fosters the learner's skills of applying language for social interaction and academic language skills.

The focus of sociolinguistic component of interactional competence include speakers' linguistic choices, their goals, and corresponding effect on the partners of conversation. Nowadays, everyday communicative situations do not provide conditions for improving learners' foreign language interactional competence both in and out of the classroom as the foreign language speaking surrounding is rather limited. During language acquisition by means of interactional methods and communication systems learners reduce anxiety and enhance their motivation to engage in speaking activities.

The effective application of AI-based communication system when learning foreign language requires students' confidence and positive relation towards it. As for the results of applying AI-based communication system in the process of foreign language acquisition it should be emphasized that it is essential for enhancing learning efficiency. Besides, AI-based communication system has an effective potential for advancing learners' abilities of solving various learning problems by technical means. The above mentioned technological advancement will define the way learners manage various course problems, consider future trends and collaborate while employing different resources and learning strategies. Modern information society creates favourable prerequisites for cultivating individual, interpersonal, social and cognitive abilities of foreign language learners.

Moreover, developing the learning experience while learning foreign language requires engaging cultural factors for constructing education process. The study confirms that considering cultural issues to design language learning efficiently influences students' attitude, creates positive relation, and, thus, provides high-quality learning results. Nevertheless, the effect of engaging cultural and interaction issues in AI-based communication system during foreign language learning needs further thorough research. The engaging will favor enhancing students' intercultural competence, consider learners' characteristics, incentivize learning foreign language.

Analysis of recent research and publications. Nowadays, the notion of artificial intelligence is the mainstream of research activities all over the world. Among the scholars engaged in this research are: L. Morska, N. Novokhatska, I. Zachepa, V. Hrytsyshyn, O. Zagorodnia, N. Gabrusiev, M. Dooly, D. Crystal, M. Byram, M. Fleming, C. Kirsch, M. Jewell, M. Wild etc.

Ethical values, in particular, management and leadership, transparency and accountability, security and protection, confidentiality, to be applied when using artificial intelligence are considered in the work of O. Petroe, I. Regeilo, O. Borodienko, O. Bazelyuka, I. Drach and others.

O. Baranov [1] explores the notion of "artificial intelligence". N. Podkovyroff, O. Shamshin devote their research to the modern education transition to a digital format focused on individualization of learning and implementation of artificial intelligence into the educational space, as well as its capabilities in learning and teaching in higher education as a tool leading towards transforming the educational process and increasing its efficiency.

As for researchers Fatih Aydemir and Ahmet Gocen [2], the focus of their study is the potential ways of demonstrating the capabilities of artificial intelligence in education, as well as further possible consequences of these processes in the schools and the whole education system. The moral aspects of using artificial intelligence and the confidentiality of personal data in higher education are covered in the paper by O. Khoroshailo and S. Kochergina [3]. Another issue of the teacher's role and artificial intelligence in the field of education is thoroughly elaborated in the works of Cathrine V. Felix [4]. The potential of generative artificial intelligence as a basis of modern chatbots and a tool providing interactive and personalized learning are investigated by Leticia Owusu Ansah and David Baidoo-Anu [5].

Scholars T. Besarab, L. Holubnycha, T. Moroz, and O. Moshynska consider the issue of using ChatGPT aimed at developing an English language course, curriculum for students in the field of legal sciences [6]. The works of Hao Yu and Yunyun Guo discover educational potential of generative artificial intelligence in detail. The trends of developing artificial intelligence in education are outlined in the following sectors: intelligent learning, collaborative learning, personalized education and virtual learning [7]. N. Akopyants directed his study to the analysis of the ChatGPT chatbot as an effective artificial intelligence resource for mastering English [8]. The issue of academic integrity in the use of chatGPT in higher education as well as artificial intelligence performance are researched by E. Sabzalieva and V. Arianna [9].

A number of studies have addressed the possibilities of applying artificial intelligence in teaching and learning foreign languages, including adaptive strategies for enhancing learning efficiency. M. Burlak and Yu. Hrynyova explore the methods of applying artificial intelligence tools in learning a foreign language by higher education students [10].

As a result, we can sum up that the subject of artificial intelligence is now being actively developed by scholars. The issue for further research will be devoted to professional training of students in foreign language via artificial intelligence.

Presentation of the main material. After analyzing scientific resources we can testify that most researchers confirm positive effect of technological advancement of communication systems used for English learning activities aimed at enhancing students' interactional competence. The focus of arranging assignments and education process by means of communication system is intensive communication and linguistic tools. Besides, the degree of students involvement in learning foreign language serves as a measure of student's progress in knowledge acquisition, simultaneously advancing their skills as well as participation in the process. Due to the lack of sufficient experience of introducing and enhancing AI-based communication system in foreign language learning, technological means still need further expansion. In the current situation, computer functional capabilities are limited and learner's motivation as well as efficiency, usually caused by introducing new technological advancements, is somewhat low. The analysis of course design, assignments, scope of technological involvement, learning outcomes, students' participation revealed positive attitude towards AI-based communication system. As a result of repetition-based language learning strategies students develop theoretical knowledge and skills. Moreover, communication system allows students to correct their mistakes, learning strategies through direct dialogue which provides prompt feedback and support resulting in higher level of language knowledge and skills.

The possibility of engaging in real-life communication activities using personal language expertise encourages students to further enhance their foreign language abilities and reduces their anxiety. However, gradually the motivation to go on and develop foreign language learning expertise tends to decrease as a result of students' reducing interest due to increasing significance of human factor compared to AI-based dialogue systems. So, there are still some issues regarding valuable support for students aimed at improving their language speaking. Among others capabilities of AI-based communication systems while learning foreign language are evaluation of students' speaking abilities by means of synchronous feedback and analysis of students' learning patterns which further advance their metacognitive reasoning strategies. Communication AI-based systems provide a wide scope of valuable information independently of learner's location.

Modern digital environment provides students with a wide range of language learning resources including content materials and activities modelling real life situations. Through these technologies learners can adjust timing and content strategy according to their emotional, motivational, cognitive and behavioral characteristics [11]. Due to the independently monitored students' learning activities by means of high technologies they can adjust strategies to meet their personal goals in various educational settings. According to the self-regulated learning theory goal-oriented activities are accomplished on the basis of learners' personal emotions, ideas, and behaviors.

In today's variable learning environment students can improve their course efficiency if they exempt more efforts to correct their strategy. The implementation of culture issues, humor style and sympathy into learning is essential for long-term academic accomplishment and interaction competence due to favorable psychological and emotional atmosphere. Nevertheless, it was revealed that AI-based communication system lacks strategies aimed at improving problem-solving and discussion abilities. So, further studies should be devoted to overcome these faults.

Although learner's personal characteristics are predominantly defined by cognitive abilities as well as cultural views, the significance of learners' cultural awareness and cognitive skills have sufficiently been undervalued while developing AI-based communication system for foreign language learning purposes. As Benfilali, Nadif, Khartite, Benattabou, and Bouih argue, second language learning is naturally accompanied by demonstrating person's cultural identity and experience [12]. When advancing foreign language skills students simultaneously get acquainted with peculiarities of native culture as well as others which transforms foreign language learning into intercultural educational process.

For enhancing efficiency of AI-based communication system it is worth to consider cultural issues when designing behavioral patterns of this system. The content and linguistic attributes of the system should be consistent with particular culture. Properly designed communication system can apply different modes and discourse considering certain cultural traditions and habits. Communication behaviors are quite often perceived and selected mainly according to cultural specifications [13].

Recent researches revealed that AI-based communication system is capable of detecting and adjusting to learners' personal behavior resulting in encouraging students to apply foreign language skills. The problems faced by learners due to different cultural experience could be settled by introducing empathetic modes in AI-based communication systems for learning foreign language. That help students adjust to different learning conditions. As Cundiff, Nadler, and Swan view, empathy refers to personal opinion, cultural values, and perceptions, like culturally related humor [14].

Communication systems based on culturally substantiated empathic samples for foreign language learning will ensure learners' better cultural awareness and overcome psychological barriers between different nations.

For providing higher efficiency of AI-based communication system for foreign language learning, the system model should contain functions or algorithms aimed at fostering learners' comprehension of other culture experiences including high context and low context civilizations. Through creating one's own personal values, standards in social activity, as well as beliefs, an individual constructs personal senses of life.

Intercultural empathy functions are essential for supporting students with low language learning outcomes. The result of introducing cultural empathy into learning provides better comprehension of communication, emotional interaction and further productive language learning activities.

However, applying cultural elements into AI-based communication systems encounters a number of ethical and legal problems in different cultures. Considering ethical norms will ensure accountable and adjusting strategies for all communication partners. Our point of view is the following: since various social platforms are capable of self-regulating, ethical frameworks should provide effective regulations.

When developing communication skills during foreign language acquisition learners interact and perceive each other by sharing their ideas and viewpoints, as well as gain better understanding of their personalities. Nevertheless, various technological improvements will not enhance the efficiency of discussion. An example of a mechanical associative learning is audio method of language learning supported by AI-technology means. In our opinion, due to discussion procedure while learning foreign language speaking abilities of students, as well as general educational technique of language learning, significantly enhance. When discussing various controversial issues learners should spontaneously create personal ideas and viewpoints during the most intensive period of the debate. As result, students' interactional competence considerably improves. Besides, the accurateness of students' presentations is much higher due to their lexicology, language, speaking techniques.

Recently, a number of considerable subjects for discussion regarding education quality have appeared. The discussion was caused by limitations of AI's capability of modelling systemic human reasoning. Academicians argue that AI-technology does not jeopardize mankind and foster further improvement of applications. Modern digital environment and artificial technology applications are doomed to affect education sector. The mainstream of this process is largely determined by the mechanisms and goals of providing foreign language learning.

When implementing AI-based foreign language communication technologies as novelty in educational practices, students can experiment with new software tools for improving their communication expertise. Among these tools are the ones aimed at improving pronunciation by means of voice recognition software. Introducing new communication software tools also requires combining experimentation encouragement, transparency and students' consent.

In our opinion, the potential of AI-based software tools including virtual reality, automated translation, for efficient combining with interpersonal communication should be thoroughly investigated. The underlying benefits of foreign language learning by means of AI communication software in a multicultural society are promising for research and practice in the future.

Conclusions. Nowadays, the quality of teaching communication in foreign language and level of communication competence still needs further improvement. The reason is the lack of graduates' ability of communicating in a foreign language and being a full member of global transcultural society.

Due to the introduction of AI-based communication system learners can efficiently search for information,

actively participate in online discussions, provide immediate feedback etc. AI system allows to provide necessary individual assistance and guidance for students. Moreover, it allows to encourage advancing students' critical thinking and problem-solving skills that will enable them to perform an efficient learning and research activity.

Efficient design of AI-based foreign language communication system requires comprehensive analysis of instructions, spoken language teaching methods, the impact of communication systems, and provision of individual learning strategies. One of the key functions of AI communication system is thorough tracking of various learning strategies and individual peculiarities. This will enable students to build up their personal efficient learning expertise. Utilization of the AI-based foreign language communication system allows to apply multimedia resources and learning activities which incorporate students' preferences and characteristics into the lessons, thus, enhancing their learning efficiency while advancing communicative competence.

REFERENCES

1. Baranov, O. (2023). Definition of the term "artificial intelligence". Information and Law, No. 1(44), pp. 32–49. Available: https://www.researchgate.net/publication/374131202_ Definition_of_the_term_artificial_intelligence [in Ukrainian].

2. Gocen, A. & Aydemir, F. (2021). Artificial Intelligence in Education and Schools. Research on Education and Media, Vol. 12, No. 1, pp. 13–21. Available at: https://doi.org/10.2478/rem-2020-0003 [in English].

3. Khoroshailo, O.S. & Kochergina, S.S. (2023). Using artificial intelligence to improve the quality of teaching foreign languages in higher education institutions. *Scientific Journal of the National Pedagogical University named after M. P. Dragomanov. Series 5. Pedagogical Sciences: Realities and Prospects. Collection of Scientific Proceedings*, No. 93, pp. 123–127. DOI: https://doi.org/10.31392/npu-nc.series5.20 23.93.25 [in Ukrainian].

4. Felix, C.V. (2020). The Role of the Teacher and AI in Education, Innovations in Higher Education Teaching and Learning, Vol. 33, No. 1, pp. 33–48. DOI: https://doi.org/10.1108/s2055-364120200000033003. [in English].

5. Baidoo-Anu, D. & Owusu Ansah, L. (2023). Education in the Era of Generative Artificial Intelligence (AI): Understanding the Potential Benefits of ChatGPT in Promoting Teaching and Learning. SSRN Electronic Journal, Vol. 7, No. 1, pp. 52–62. DOI: https://doi.org/10.2139/ssrn.4337484. [in English].

6. Kostikova, I., Holubnycha, L., Besarab, T., Moshynska, O., Moroz, T. & Shamaieva, I. (2024). Chat GPT for professional English course development. Int. J. Interact. Mobile Technol. (iJIM), Vol. 18, No. 02, pp. 68–81. DOI: https://doi.org/10.39 91/ijim.v18i02.46623 [in Ukrainian].

7. Yu, H. & Guo, Y. (2023). Generative Artificial Intelligence Empowers Educational reform: Current status, issues, and prospects. Generative artificial intelligence empowers educational reform: current status, issues, and prospects, Vol. 8. DOI: https://doi.org/10.3389/feduc.2023.1183162 [in English].

8. Akopyants, N. (2023). Using ChatGPT in the process of learning English: Advantages and possibilities", *Bulletin of the National Technical University "KhPI". Series: Current problems of development of Ukrainian society,* No. 1, pp. 69–72. DOI: https://doi.org/10.20998/2227-6890.2023.1.13 [in Ukrainian].

9. Sabzalieva, E. & Arianna, V. (2023). ChatGPT and Artificial Intelligence in Higher Education: Quick Start Guide. United Nations Educational, Scientific Cultural Org. [in English].

10. Burlak, M. & Grynyova, Y. (2024). Application of artificial intelligence tools for learning a foreign (English) language. *Journal of Science and Education,* Vol. 1(19), pp. 713–724. DOI: https://doi.org/10.52058/2786-6165-2024-1(19)-713-724 [in Ukrainian].

11. An, Z., Gan, Z. & Wang, C. (2020). Profiling Chinese EFL students' technology-based selfregulated English learning strategies. PLoS One, Vol. 15(10). DOI: https://doi.org/ 10.1371/journal.pone.0240094 [in English].

12. Benfilali, I., Nadif, B., Khartite, B., Benattabou, D. & Bouih, A. (2021). Cross gender oral communication from biological difference and socialized identity to mutual understanding. *Journal of World Englishes and Educational Practices,* Vol. 3(5), pp. 13–27. DOI: https://doi.org/10.32996/jweep.20 21.3.5.2 [in English].

13. Endrass, B. & Andre, E. (2014). Integration of cultural factors into the behavioral models of virtual characters. Natural Language Generation in Interactive Systems. DOI: https://doi.org/10.1017/CBO9780511844492.010 [in English].

14. Cundiff, N.L., Nadler, J.T. & Swan, A. (2009). The influence of cultural empathy and gender on perceptions of diversity programs. *Journal of Leadership & Organizational Studies,* Vol. 16 (1), pp. 97–110. [in English].

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"Будьте самі шукачами, дослідниками. Не буде вогника у вас – вам ніколи запалити в інших".

Василь Сухомлинський
український педагог, публіцист

"Не бійтеся життя. Повірте, що життя варте того, щоб його прожити, – і ваша віра допоможе вам втілити це твердження в реальність".

Вільям Джеймс
американський психолог, філософ

ᏇᏍᏇᏋᏍᏇᏋᏍᏇᏇᏋᏍᏇᏋᏍᏇᏇᏋᏍᏇᏋᏍᏇᏇᏋᏍᏇᏋᏍᏇᏇ