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**AI-POWERED PEDAGOGY: FOREIGN LANGUAGE STUDY IN HIGHER EDUCATION**

The paper explores the transformative role of Artificial Intelligence (AI) in foreign language study within the context of higher education. It discusses how AI has redefined traditional teaching methods by introducing innovative pedagogical tools. Through an in-depth analysis, the research illustrates the enhancement of communicative capabilities, where AI significantly improves the interaction dynamics in the target language among students. Presently, AI-driven language platforms enable personalized learning, catering to individual strengths and cultural backgrounds. However, concerns emerge about the potential erosion of traditional teaching roles in the face of AI's capabilities. Yet, for AI to enhance the learning process, educators must possess robust digital competencies to effectively leverage AI technologies. Furthermore, the utilization of AI enables the customization of learning experiences, adapting to individuals' needs, propensities, and skill levels, thus fostering motivation and commitment to language acquisition. AI's capability to offer immediate and precise feedback is also highlighted as a critical factor in expediting the learning process and easing the anxiety related to performance evaluation. Moreover, the emergence of intelligent conversational assistants is showcased as a pivotal development in the domain. These AI-driven language bots act as virtual language partners, offering realistic conversation practice and proficiency evaluations that contribute to a supportive and boundless learning environment. While acknowledging the substantial benefits of AI in foreign language education, the paper concludes by reaffirming the irreplaceable role of human teachers as the central organizers of the educational process. It is implied that the successful integration of AI in language pedagogy rests upon its alignment with conventional teaching practices guided by experienced educators.

**Key words:** artificial intelligence, higher education, foreign language education, pedagogy, artificial intelligence tools.

**Introduction.** The integration of Artificial Intelligence (AI) in higher education has sparked a transformative shift in pedagogy, particularly in foreign language learning. Currently, neural networks and chatbots rapidly entered different areas

of our lives, including education area. Every day are appearing more and more of different forms of artificial intelligence. Nowadays artificial intelligence tools can generate images, texts, cards, diagrams, presentations, mind maps, lesson plans,

and other educational materials within a few seconds. Chatbots are able to carry on a conversation, answer questions, comment on the performed work, and also give recommendations on how it can be improved.

At the same time this has led to the situation when many teachers start to concern that as students can use AI to write essays and complete other assignments aimed at practicing language skills, there is no point in assigning homework. In addition, it is suggested that in the future, AI will be able to replace teachers. Analysing these trends, it is important to find the ways how a foreign language teacher can not only withstand the risks and threats of digitalization, but also make artificial intelligence an assistant and helper, and make the learning process more qualitative, effective and interesting using the possibilities given by artificial intelligence.

**Analysis of recent research and publications.**

The question of the role of artificial intelligence in foreign language study in higher education has been studied by many scientists all over the world. Among them we can name Ayotunde, Jamil, and Çavuş (2023), Kuo (2020), Pikhart (2020), Schmidt and Strassner (2022), Tobing et al. (2023), Zhai (2023) and others.

**Aim of research.** The article is devoted to the study of the multifaceted role of artificial intelligence in enhancing language acquisition, analysing its impact on curriculum design, personalized learning, and linguistic proficiency assessment in the realm of higher education. Presently, numerous AI-driven language learning platforms enable learners to progress at their preferred speed, navigating language materials and pinpointing areas of difficulty. These platforms engage users in tasks aligning with their strengths, cater to individual interests, and consider diverse cultural backgrounds. Artificial intelligence, with its remarkable capabilities, has revolutionized educational paradigms, offering innovative tools and approaches to optimize foreign language learning. This article aims to dissect the nuanced applications of AI in language study, examining its potential to revolutionize teaching methodologies and empower learners in higher education settings.

**Problem statement.** The introduction of AI into the educational process is an inevitable consequence of the digitalization of education. The sci-

entific and methodological literature depicts that as a result of such digitalization, many professions are being transformed, including the profession of a foreign language teacher.

The ability to interact with artificial intelligence and use it for the purposes of teaching a foreign language is a component of the digital competence of a foreign language teacher, which is understood as the level of proficiency in digital competencies [Ayotunde, Jamil, & Çavuş, 2023]; [Pikhart, 2020]; [Deng, 2022]. A foreign language teacher must be able to use digital tools, programs and online resources for teaching a foreign language, create his/her own digital learning materials and digital environments, organize and manage the learning process in a digital environment. AI-driven language learning solutions offer educators insights into their curriculum's shortcomings, highlighting areas for lecture and practice enhancement. These tools pinpoint the most challenging aspects of the language for students and identify learners requiring additional guidance. It is absolutely clear that a teacher who does not have a high level of digital competence will not be able to fully use artificial intelligence technologies in the educational process.

Artificial intelligence is entering universities along with so-called assistive technologies, i.e. computer programs that allow us to convert text to speech and speech to text, zoom, predict text, translate, spell check and run search engines. Already, many platforms that foreign language teachers use in the educational process, like Miro, Canva, Notion, etc., install artificial intelligence assistants that, in one click, are able to generate the texts and assignments teachers need, images, diagrams, cards and other teaching materials. Foreign language courses already implement chatbots that answer questions from course participants, thereby reducing the time spent by teachers on routine actions [Kuo, 2020]; [Tobing et al., 2023]; [Huang et al., 2023]. Chat GPT, for instance, can check written work, point out errors and demonstrate how to correct them. This gives educators the opportunity to tap into the algorithms that power artificial intelligence and do their jobs even better. So, skilfully using AI, a teacher can make the learning process more efficient, and also transfer some of his/her functions to the computer, freeing up the time to perform more intellectual

and creative tasks [Schmidt & Strassner, 2022]; [Zhai, 2023]; [Pham, 2022].

**Results.** Discussing the role of artificial intelligence in education, we aim to delve into its specific application in teaching foreign languages, harnessing the potential of neural networks. The benefits of artificial intelligence in language education are compelling.

*Enhanced Communication.* AI broadens avenues for effective foreign language communication. The enhanced communication facilitated by artificial intelligence in foreign language learning encompasses various dimensions:

- Accessibility and inclusivity. AI-driven language learning platforms break down barriers to communication. These platforms offer accessibility to learners globally, irrespective of geographical boundaries or time zones. Students from diverse backgrounds, irrespective of their physical location, can engage in language learning, fostering a truly inclusive learning environment.

- Real-time interaction. AI-enabled chatbots and language learning applications provide immediate interaction. Learners can engage in real-time conversations, receiving instant responses and guidance. This instant feedback cultivates an environment conducive to language practice, as learners can swiftly apply newly acquired language skills in conversational contexts.

- Cultural exchange. AI-powered language platforms often simulate real-life situations. They incorporate cultural nuances and context, enabling learners to immerse themselves in diverse cultural settings. This fosters a deeper understanding of cultural nuances within language learning, encouraging a more holistic approach to communication.

- Adaptive conversational experiences. Some AI-based language learning tools adapt to individual learning styles. They can engage learners in personalized conversations tailored to their proficiency levels, ensuring a challenging yet comprehensible experience. This adaptability ensures that learners interact at a level conducive to their language growth.

- Voice recognition and pronunciation. AI tools often feature voice recognition technology, allowing learners to practice pronunciation and receive immediate feedback on their speech. This aspect of AI-based communication tools

enhances learners' speaking skills, providing accurate guidance for improvement.

- Natural language processing (NLP). AI leverages NLP to understand and process human language. This technology helps in deciphering context, idiomatic expressions, and colloquialisms, allowing learners to grasp language nuances beyond literal translations.

- Multimodal learning. AI-powered platforms integrate diverse forms of content, including text, images, audio, and video. This multimodal approach caters to various learning styles, enhancing comprehension and retention of language material.

In essence, the augmented communication facilitated by AI in foreign language learning transcends conventional methods, offering an immersive, dynamic, and inclusive learning environment that fosters effective language communication and cultural understanding [V. Gupta & Gupta, 2023]; [S. Gupta, 2023]; [T. Golub et al., 2022]; [Dudenaite and Dudenaite, 2023].

*Personalization.* Tailoring content to individual student characteristics, interests, and language proficiency levels. The personalization brought about by AI in higher education for language learning encompasses various facets:

- Adaptive learning paths. AI-powered platforms analyse individual learning patterns and preferences. They then customize learning pathways, adapting the pace and complexity of content delivery to match each student's proficiency level. This adaptive approach ensures that learners receive content suited to their current understanding, fostering a comfortable yet challenging learning environment.

- Customized content delivery. AI algorithms curate learning materials based on students' interests, enabling a more engaging learning experience. By integrating topics or materials aligned with students' hobbies, preferences, or career aspirations, AI makes learning more relevant and meaningful, increasing learner motivation.

- Individualized feedback and support. AI-driven systems generate personalized feedback tailored to students' performance. These systems not only identify areas of strength and weakness but also provide specific guidance on improvement tailored to each student's needs. This personalized feedback loop helps students address their shortcomings more effectively.

– Real-time progress tracking. AI-powered platforms track students' progress in real-time, generating comprehensive profiles of their learning journey. This tracking allows educators to intervene promptly if students encounter challenges or lag behind, offering timely support and resources.

– Catering to language proficiency levels. AI assesses students' language proficiency levels and tailors content accordingly. It provides appropriate challenges for advanced learners while offering foundational materials and reinforcement for beginners, ensuring an optimized learning pace for each student.

– Personalized assessment and recommendations. AI analyzes students' performance data to offer tailored recommendations for supplementary materials, exercises, or specific areas that need improvement. This individualized guidance supports students in addressing their weaknesses and refining their language skills.

Overall, the personalized learning facilitated by AI in higher education goes beyond standardized content delivery. It creates a dynamic learning environment where each student's unique characteristics, interests, and proficiency levels are considered and catered to, fostering a more engaging, effective, and rewarding learning experience.

*Motivation.* AI contributes significantly to fostering motivation among students for studying foreign languages and linguistic concepts in several ways:

– Gamification and interactive learning. AI-powered language learning platforms often integrate gamified elements, turning language practice into an engaging experience. Features like point systems, leaderboards, badges, and interactive challenges incentivize participation and progress, making learning enjoyable and encouraging students to engage regularly.

– Multimedia and interactive tools: AI-powered language learning tools often integrate multimedia elements like videos, interactive quizzes, and audio exercises. These diverse learning formats cater to different learning styles, making the learning process more enjoyable and engaging.

– Community engagement: AI-enabled platforms may facilitate language exchange forums or connect learners with native speakers. This fosters a sense of community and collaboration,

encouraging students to engage actively in language practice and cultural exchange.

By leveraging these motivational strategies, AI transforms language learning from a mere academic pursuit into an engaging, interactive, and rewarding journey. It creates an environment where students are motivated to persist in their language studies, thereby enhancing their linguistic proficiency and cultural understanding.

Let us move on to a review of artificial intelligence technologies that can be involved in the process of teaching a foreign language. First, let's look at programs designed directly for these purposes. These are, for example, the Duolingo and Babbel applications.

The educational platform Duolingo offers courses in more than 30 languages. Duolingo's BirdBrain AI tool learns each user's profile and makes predictions about their learning trajectory, providing a personalized learning experience. The system tracks tasks that cause difficulties for the course participant, and also remembers mistakes made in these tasks, on the basis of which it forms a further training plan. The platform's Explain My Answer feature allows language learners to chat with the Duo bot. The bot can rate and comment on the answer, as well as offer additional examples that will help the student better understand and master the material. Thanks to the Roleplay function, one can earn points for practicing in real situations of communication with virtual characters from different countries.

Currently, there are several quite effective online resources for editing texts in a foreign language using AI technologies. One such resource is Grammarly, which corrects over 150 types of errors, such as errors in grammar, spelling, punctuation, writing style, and sentence structure. If there are errors, Grammarly provides recommendations for correcting them, offering various options. Working with this service allows students to analyse their texts, developing critical thinking skills, which can be useful to them in the future when writing coursework, master's theses, scientific articles, annotations and other written works.

Language bots, once rudimentary and ineffective, have evolved into intelligent conversational assistants that mimic interactions with educated individuals, displaying even a sense of humour. As chatbot capabilities advanced, they

found application in foreign language learning. Students now engage in dialogues with these bots, filling the void in language practice often absent in real-world settings. AI-powered chatbots offer tailored responses, assessing language proficiency and offering guidance for improvement. Importantly, students feel at ease interacting with these bots, unafraid of errors, akin to conversing with a human teacher. Nowadays, a multitude of internet-utilized chatbots like A.L.I.C.E., Mitsuku, Splotchy, Cleverbot, among others, facilitate language communication. Engaging with such chatbots proves invaluable in surmounting language barriers and fostering limitless foreign language practice.

There are also AI tools that were not created for foreign language teaching, but can be used for this purpose. These tools include Chat GPT, which was already mentioned. Since one of the important features of Chat GPT is its ability for context-sensitive understanding and text generation, the platform takes into account previous messages and responds in a context-aware manner, creating natural and relevant communication situations. This feature of the Chat GPT allows teachers and students to interact with a virtual interlocutor while conducting dialogues, discussing various topics, asking and answering questions. With Chat GPT, students can get extra practice and support outside of the classroom, improve their reading, writing and speaking skills, expand their vocabulary, and improve their communication style. But nevertheless in the classroom, the key organizer of the educational process should still be the teacher.

In addition to programs that can be used for teaching a foreign language, there are also teaching assistants based on AI. The Twee is one of such assistants. This platform was developed specifically to facilitate the process of preparing tasks on various aspects of a foreign language like vocabulary, grammar, reading, listening, speaking, and writing. With its help, a teacher can create texts and different types questions to them such as open-ended, with a choice of the correct answer, true/false questions. In addition, the platform generates lexical and grammatical exercises for filling in gaps, matching words with definitions, opening parentheses, arranging words in the correct order, etc. Twee transcribes videos, formulates

questions to these videos, finds interesting facts and quotes of famous people on a chosen topic, creates discussion questions, lists of advantages and disadvantages, lists of essay topics, and other tasks. The tasks generated by the platform must, however, be carefully checked. Not all of them are ready for use without proper correction. And, nevertheless, this system helps to significantly reduce the teacher's time for preparation to classes, and also stimulates the creative process, offering a large selection of ideas and tasks.

Simultaneously, examination of scholarly resources reveals the most significant drawbacks in integrating AI within university education:

- AI lacks inherently human traits such as morality, empathy, and the capacity for sympathetic and supportive interactions.
- Absence of intuitively appropriate responses to diverse real-life scenarios.
- Potential risks exist in AI's capability to gather personal data that might be misused without individuals' consent.

**Conclusion.** The advent of Artificial Intelligence in the realm of foreign language learning within higher education institutions signifies a transformative shift in pedagogical practices. These AI-enhanced tools not only personalize the educational experience but also foster a more efficient learning environment, enabling students to progress at an individual pace. Through platforms like Duolingo and Grammarly, along with innovative AI assistants such as Twee, learners are equipped with real-time feedback, error correction, and tailored exercises that significantly improve language proficiency and motivation.

Moreover, this technological integration enables educators to transcend traditional teaching roles. By offloading administrative duties and routine grading tasks to AI systems, teachers can redirect their focus towards cultivating students' critical thinking abilities and interactive skills—elements that AI alone cannot nurture. Consequently, educators can enrich the learning experience, drawing upon their unique human capacities to guide, inspire, and provide nuanced feedback to learners.

Despite its remarkable potential, the incorporation of AI into language learning requires careful and ethical considerations. The emphasis must remain on a symbiotic

relationship where AI complements the teacher's role without supplanting it. Acknowledging AI's limitations, such as its lack of empathy and nuanced understanding, is vital in designing pedagogical models that harness the strengths

of both technology and human educators. Thereby, a balanced approach can truly capitalize on the advantages that AI presents, ensuring that it serves as a powerful ally in the evolution of foreign language education.

#### REFERENCES

1. Ayotunde, O. O., Jamil, D. I., & Çavuş, N. (2023). The impact of artificial intelligence in foreign language learning using learning management systems: a systematic literature review. *Information Technologies and Learning Tools*, 95(3), 215–228. <https://doi.org/10.33407/itlt.v95i3.5233>.
2. Deng, M. (2022). Application of Artificial Intelligence Technology in College Students' Foreign Language Learning. *IEEE Xplore*. <https://doi.org/10.1109/ecei53102.2022.9829486>.
3. Dudenaitė, D., & Dudenaitė, D. (2023, August 1). AI in institutional language learning. Retrieved from <https://media-and-learning.eu/type/featured-articles/ai-in-institutional-language-learning/>.
4. Golub, T., Kovalenko, O., & Zhygzyhtova, L. (2022). Digital pedagogy in higher education. *Collection of Scientific Papers «SCIENTIA»*, (June 10, 2022; Sydney, Australia), 7–9. Retrieved from <https://previous.scientia.report/index.php/archive/article/view/253>.
5. Gupta, S. (2023, June 28). How AI-Driven platforms are empowering Language Learning. Retrieved from <https://elearningindustry.com/how-ai-driven-platforms-are-empowering-language-learning>.
6. Gupta, V., & Gupta, C. (2023). Navigating Foreign Language-Taught Degrees: Embracing Artificial Intelligence-Driven Language translators to overcome linguistic challenges. *IEEE Computer*, 56(9), 71–76. <https://doi.org/10.1109/mc.2023.3290686>.
7. Huang, X., Zou, D., Cheng, G., Chen, X., & Xie, H. (2023). Trends, Research Issues and Applications of Artificial Intelligence in Language Education. *Educational Technology & Society*, 26(1), 112–131. <https://www.jstor.org/stable/48707971>.
8. Kuo, T. (2020). The current situation of AI foreign language education and its influence on college Japanese teaching. In *Lecture Notes in Computer Science* (pp. 315–324). [https://doi.org/10.1007/978-3-030-49913-6\\_27](https://doi.org/10.1007/978-3-030-49913-6_27).
9. Pham, T. N. (2022). Artificial Intelligence application in foreign language teaching and learning. *Advances in Image and Video Processing*, 10(5). <https://doi.org/10.14738/aivp.105.13061>.
10. Pikhart, M. (2020). Intelligent information processing for language education: The use of artificial intelligence in language learning apps. *Procedia Computer Science*, 176, 1412–1419. <https://doi.org/10.1016/j.procs.2020.09.151>.
11. Schmidt, T., & Strassner, T. (2022). Artificial intelligence in foreign language learning and teaching. *Anglistik*, 33(1), 165–184. <https://doi.org/10.33675/angl/2022/1/14>.
12. Tobing, M. B., Sna, F. I., Hayrunnisa, N. R., Haswuri, N. I. T., Sutarsyah, C., & Munifatullah, F. (2023). An exploration of artificial intelligence in English Language teaching as a foreign language. *International Journal of Social Science and Human Research*, 06(06). <https://doi.org/10.47191/ijsshr/v6-i6-78>.
13. Zhai, C. (2023). A systematic review on artificial intelligence dialogue systems for enhancing English as foreign language students' interactional competence in the university. *Computers & Education: Artificial Intelligence*, 4, 100134. <https://doi.org/10.1016/j.caeai.2023.100134>.

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## **ШТУЧНИЙ ІНТЕЛЕКТ У ПЕДАГОГІЦІ: ВИВЧЕННЯ ІНОЗЕМНОЇ МОВИ У ВИЩІЙ ОСВІТІ**

Стаття досліджує трансформаційну роль штучного інтелекту (ШІ) у вивченні іноземної мови в контексті вищої освіти. У статті досліджується переосмислення традиційних методів навчання в зв'язку з появою та використанням можливостей штучного інтелекту, та запровадження інноваційних педагогічних інструментів. За допомогою поглибленого аналізу дослідження демонструються комунікативні можливості, завдяки яким штучний інтелект значно покращує динаміку взаємодії на заняттях під час комунікації іноземною мовою. Наразі мовні платформи, створені на основі штучного інтелекту, дозволяють персоналізувати навчання, враховуючи індивідуальні сильні сторони та культурне походження. Однак виникає занепокоєння щодо потенційного зникнення традиційної ролі педагога в разі широкого застосування штучного інтелекту у вищій освіті. Проте, щоб штучний інтелект покращив процес навчання, викладачі повинні володіти сучасними цифровими навичками та ефективно використовувати технології ШІ. Крім того, використання штучного інтелекту дозволяє персоналізувати навчальний досвід, пристосовуючи його до потреб, здібностей і навичок студентів, тим самим сприяючи мотивації оволодінню мовою. Здатність штучного інтелекту запропонувати миттєвий і точний зворотний зв'язок також є критичним фактором для прискорення процесу навчання та полегшення стресових ситуацій, пов'язаних із оцінюванням. Крім того, поява інтелектуальних мовних помічників є ключовим фактором розвитку освітньої галузі. Керовані штучним інтелектом мовні боти діють як віртуальні мовні партнери студентів, пропонуючи реалістичну практику розмови та оцінювання кваліфікації, що сприяє створенню сприятливого та безмежного навчального середовища. Визнаючи суттєві переваги штучного інтелекту в навчанні іноземним мовам, стаття завершується підтвердженням незамінної ролі викладачів як організаторів навчального процесу, стверджуючи, що успішна інтеграція штучного інтелекту в освітній процес, зокрема, в галузі вивчення іноземної мови, ґрунтується на його узгодженні з традиційними методами навчання під керівництвом досвідчених педагогів.

**Ключові слова:** штучний інтелект, вища освіта, іноземна мова, педагогіка, інструменти штучного інтелекту.