РОЗДІЛ 3
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THE ROLE OF AI IN ENGLISH LANGUAGE TEACHING WITHIN TECHNICAL UNIVERSITIES

The modern technological shift greatly changes various aspects of people's lives, including education. This transformation also influences the way knowledge is disseminated, acquired, and evaluated, including the rapid integration of artificial intelligence into traditional learning methods. Modern artificial intelligence offers advanced tools for personalized learning, automated assessment, and interactive content delivery. This raises a critical and timely question: can AI truly replace human English language teachers, especially in the specialized environments of technical universities? This article aims to address this question through a comprehensive analysis.

The research first analyses the current state of artificial intelligence implementation in language learning, illustrating its most impactful applications and functionalities by reviewing recent research. It also states the diverse and often underestimated responsibilities, unique contributions, and inherent pedagogical value that English language teachers bring to technical university settings. Finally, the study critically evaluates the strengths and limitations of artificial intelligence against human roles.

Our findings indicate that while AI has significant advantages, such as 24/7 accessibility, instant and personalized feedback, data collection for tailored instruction, and automation of routine tasks, it has limitations that currently prevent it from fully replacing human English language teachers in technical universities. AI does not provide a genuine understanding, empathy, and the ability to handle complex, unstructured human communication. Furthermore, AI cannot complete the human teacher's role in motivation, providing socio-emotional support, or introducing cultural context that is essential for effective communication. AI also cannot replace human teachers in curriculum design, authentic assessment, mentorship, and adapting to unforeseen classroom dynamics. The article concludes that AI cannot completely replace human English language teachers, instead, a more realistic and beneficial future lies in a human-AI collaboration.

Key words: *artificial intelligence, English language teaching, English for Specific Purposes, technical university, human-AI collaboration.*

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РОЛЬ ШТУЧНОГО ІНТЕЛЕКТУ В НАВЧАННІ АНГЛІЙСЬКІЙ МОВІ В ТЕХНІЧНОМУ УНІВЕРСИТЕТІ

Сучасний технологічний прогрес суттєво змінює різні аспекти життя людей, зокрема, й освітню галузь. Ця трансформація впливає на способи поширення, отримання та оцінки знань, включаючи швидку інтеграцію штучного інтелекту в традиційні методи навчання. Сучасний штучний інтелект пропонує різноманітні інструменти для персоналізованого навчання, автоматизованого оцінювання та інтерактивної розробки навчального контенту. Це провокує виникнення питання: чи може штучний інтелект справді замінити викладачів англійської мови, особливо в спеціалізованому середовищі технічних університетів? Ця стаття має на меті розглянути це питання шляхом комплексного аналізу.

У статті аналізується поточний стан впровадження штучного інтелекту у процес вивчення мов, ілюструючи його найефективніші застосування та функціональні можливості, у огляді актуальних наукових досліджень. Також наголошується на часто недооціненій відповідальності, унікальному внеску та педагогічній цінності, яку викладачі англійської мови привносять у навчальне середовище технічних університетів. Нарешті, дослідження критично оцінює сильні сторони та обмеження штучного інтелекту порівняно з людиною.

Результати дослідження засвідчують, що хоча штучний інтелект має значні переваги, такі як цілодобова доступність, миттєвий та персоналізований зворотний зв'язок, збір даних для індивідуального навчання та автоматизація рутинних завдань; він має обмеження, які наразі перешкоджають йому повністю замінити викладачів англійської мови в технічних університетах. Штучний інтелект не забезпечує справжнього розуміння, емпатії та здатності відповідати складному, неструктурованому людському спілкуванню. Крім того, штучний інтелект не може замінити вчителя, який забезпечує мотивацію, соціально-емоційну підтримку та впроваджує культурний контекст, необхідний для ефективної комунікації. ШІ також не може замінити вчителів у розробці навчальних програм, автентичному оцінюванні, наставництві та адаптації до непередбаченого розвитку подій у класі. У статті робиться висновок, що штучний інтелект не може повністю замінити вчителів англійської мови, натомість найбільш реалістичною та продуктивною у майбутньому є співпраця людини та штучного інтелекту.

Ключові слова: штучний інтелект, викладання англійської мови, англійська мова для спеціальних цілей, технічний університет, співпраця людини та штучного інтелекту.

Problem statement. Modern technological paradigm shift is reshaping many spheres of our lives, including everyday lifestyle, global and national economy, labour market, education, etc. It also changed the way how knowledge is disseminated, acquired, and evaluated across all academic disciplines in all educational levels. Thus, the integration of artificial intelligence (AI) into educational processes of all kinds is rapidly transforming traditional learning methods and principles, offering new tools for personalized training, automated assessment, and interactive content delivery.

In the specific domain of language education, the impact of artificial intelligence has been also profound. AI-powered applications, ranging from grammar checkers and pronunciation trainers to sophisticated chatbots, are becoming more and more popular and widespread nowadays. The adoption and continuous evolution of these artificial intelligence capabilities raise a critical and timely question: can AI, with its growing presence in educational technology and with its evolving capabilities, replace human English language teachers, especially in specialized and often demanding environments of technical universities where the mastery of English for Specific Purposes (ESP) is essential for professional success and global competitiveness? This question makes it necessary to conduct a thorough examination of both current possibilities of artificial intelligence and the irreplaceable nuances of human pedagogy.

The aim of the article is to study this complex and ethically charged question by first analysing the current state of artificial intelligence implementation in language learning, illustrating its most impactful applications and functionalities. In

the research there are also highlighted the diverse and often underestimated responsibilities, unique contributions, and pedagogical value that English language teachers bring to technical university settings. Finally, the strengths and limitations of artificial intelligence against human teachers are evaluated, arguing that while artificial intelligence can, and indeed should, serve as a powerful supplementary and supportive tool within language instruction, it is unlikely to fully replicate the educational experience provided by human educators.

Analysis of recent research and publications. The application of artificial intelligence in foreign language learning has progressed significantly during a couple of tenths of years, implementing machine learning, natural language processing (NLP), and speech recognition technologies into learning environments. The implementation of artificial intelligence in language learning is studied by many researchers, among them we can name Baker and Siemens (Baker and Siemens, 2014), Daud A., Aulia A. F., Muryanti M., Harfal Z., Nabilla O., Ali H. S. (Daud et al., 2025) and many others. Analysing modern research, we may state that key AI-driven tools and functionalities include:

– automated grammar and style checkers. Tools like Grammarly or LanguageTool offer real-time feedback on syntax, punctuation, spelling, and even stylistic improvements, providing immediate corrective measures (Dizon & Gold, 2023; Miranty et al., 2025; Ghufron & Rosyida, 2018; Su, 2024; Golub et al., 2025);

– pronunciation and speech recognition software. Thus, applications that use artificial intelligence can analyse learners' pronunciation, compare it to native speaker models, and offer targeted feedback and drills (Carrier, 2017; Evers & Chen, 2020);

– intelligent tutoring systems (ITS) and chatbots. Such systems can simulate students' conversational interactions, answer queries, explain grammatical concepts, and provide practice opportunities. Some advanced chatbots can also easily adapt to learners' progress and offer them personalized learning paths (Syuhra et al., 2025; Bobula, 2024);

– personalized learning platforms. AI algorithms can analyse a student's learning patterns, strengths, and weaknesses and, based on it, generate customized content, recommend resources, and adapt the instructions (Kanta, 2023);

– automated assessment. Artificial intelligence can generate specific types of assignments, such as multiple-choice questions, essays, etc. on different language levels, and even provide basic feedback on written responses (Golub et al., 2025).

The mentioned tools are especially useful and convenient to use as they offer a significant number of benefits, among which we can note that they are accessible 24/7, can provide instant feedback, and offer a degree of personalization that might be challenging for a human teacher to provide especially to classes with a large number of students.

Research results. Nowadays, the role of an English language teacher in a technical university extends far beyond giving grammar and vocabulary instructions and correcting mistakes. In fact, modern teachers have to be good in complex pedagogical expertise and subject matter knowledge, and have well-developed interpersonal skills that are crucial for breading a technically proficient and globally competent future specialists. Teachers in technical universities nowadays have to specialize in English for specific purposes, they have to be able to design curricula that satisfy the specific linguistic needs of future engineers, IT specialists, or science students. So, they have to understand technical jargon and scientific writing conventions, have good presentation skills, and be able to take part in professional communication relevant to the fields of their students. Thus, effective teachers nowadays must implement diverse modern methodologies, adapt their teaching to varied learning styles, and continually innovate to keep students engaged.

Language learning, especially at higher educational levels, involves developing critical thinking, analysis, synthesis, and evaluation skills as well. Thus, modern teachers need to be able to facilitate debates, encourage students' nuanced argumentation, and guide students in expressing complex ideas precisely. At the same time, we must admit that artificial intelligence currently does not have the capacity for genuine critical interaction and the nuanced scaffolding that are required for these higher-order cognitive skills.

As for human teachers, nowadays, there are also obligatory different kinds of tasks they have to complete besides just teaching, for instance, to provide empathetic feedback, build rapport, motivate students, and address individual learning anxieties. At the lessons, teachers facilitate collaborative learning, group discussions, and presentations, which are vital for developing

communication, teamwork, and presentation skills that are essential attributes for future engineers and scientists. This human connection is irreplaceable for social and emotional growth.

One more crucial thing in foreign language learning is understanding language in its cultural context. It is essential even if we speak about English for specific purposes and even if we mean teaching future technical specialists and engineers. Therefore, even in ESP, teachers usually introduce cultural nuances, appropriate professional etiquette, and the unspoken rules of interaction, which artificial intelligence still struggles to convey meaningfully. Teachers also design courses, in which they include authentic assessment tasks that reflect and represent real-world communication scenarios, and provide qualitative feedback that goes beyond simple error correction, and offers an overview of students' strengths and areas for improvement. Often, language teachers serve as mentors as well, guiding students not only in language learning but also in their academic and professional development, offering advice on presentations, networking, and job interview skills.

Despite the irreplaceable aspects of human teaching, artificial intelligence offers some advantages that can significantly improve and empower foreign language education. Thus, AI tools can provide consistent practice and feedback to a large number of students simultaneously, overcoming geographical and time barriers, which is quite difficult to do for human teachers and takes much time and effort. Artificial intelligence can also identify specific areas of weakness (for example, a particular grammar rule or phoneme) and provide targeted, repetitive drills until mastery is achieved. And it is very helpful for teachers.

AI platforms are also beneficial in data collection and simplify teachers' work in this area significantly, as they can easily and quickly collect vast amounts of data on student performance, which allows teachers to identify common errors made by students, track their progress, and based of this data tailor future instruction more effectively. Also, the process of tasks creation is much simplified for teachers by AI, as grading simple quizzes, checking basic grammar, and providing initial drafts of writing feedback can be automated, and it frees up teachers' time for more complex instructional duties.

At the same time, while being already powerful, artificial intelligence currently has significant limitations that hinder its ability to fully replace human English language teachers, particularly in technical universities. Thus, as it was already briefly mentioned, while AI processes data based on algorithms, it does not truly understand language nuances, cultural contexts, or human emotions; it cannot provide empathetic support, recognize underlying anxieties, or adapt its approach based on a student's emotional state or specific, unarticulated needs. While chatbots can simulate conversations, they struggle with open-ended discussions requiring spontaneity, wit, negotiation, or the interpretation of non-verbal cues; they cannot facilitate dynamic group discussions or engage in nuanced Socratic dialogue.

It is well known that fostering critical thinking, argumentation, and persuasive communication is essential for technical professionals, especially those who need to write research papers or give project presentations, and it requires human guidance, intellectual challenge, and the ability to respond creatively to unforeseen student responses. Thus, a human teacher is still essential here. Teachers' passion, personality, and ability to build rapport are also very powerful motivators for students. Artificial intelligence, no matter how sophisticated it is, cannot inspire students in the same way nor can it create the vibrant, collaborative classroom community that often enhances learning. While AI can adapt based on programmed rules, it cannot react effectively in truly unexpected situations, cannot answer unexpected students' questions, or struggles with the need to completely remake an instructional strategy in real-time based on classroom dynamics. Learning a foreign language is a social activity, thus, the interaction with a human teacher and groupmates during the lessons provides students with a sense of community, shared goals, and accountability that modern AI cannot replicate.

Thus, the idea of completely replacing English language teachers in technical universities with artificial intelligence appears to be not the best because of both current technological limitations and the inherent complexities of human education. Instead, a more realistic and beneficial for educational process improvement is human-AI collaboration, where artificial intelligence augments the teacher's capabilities rather than supplants them. As it was analysed in the article, in such a hybrid model, artificial intelligence can handle repetitive, data-intensive, and administrative tasks,

such as providing instant grammar and spelling checks, offering personalized vocabulary drills, automating basic listening and pronunciation exercises, and collecting performance data for the teacher. Such automation frees up the human teacher to focus on higher-value activities such as designing and facilitating complex communication tasks: presentations, project discussions, technical report writing workshops; assessing the effectiveness of communication, the logical flow of arguments, and the appropriate tone for technical contexts; developing critical thinking and problem-solving skills; fostering interpersonal and cultural communication by facilitating group projects, cross-cultural communication simulations, and discussions on ethical considerations in technical fields; mentoring and inspiring students – building a supportive learning environment, addressing individual learning difficulties, and motivating students to achieve their full potential.

Conclusions and prospects for further research. Thus, we may conclude that while artificial intelligence significantly improves various aspects of education, its capacity to replace English language teachers in technical universities remains highly improbable fully. AI rapidly completes automating repetitive tasks, offering personalized drills, and processing vast amounts of data. However, the core of effective language teaching, especially in the context of English for specific purposes, relies on human attributes such as empathy, adaptability, nuanced understanding of cultural and pragmatic contexts, and the ability to foster critical thinking and interpersonal communication skills.

Instead of a replacement, the future of English language education in technical universities will win from implementation of artificial intelligence into teaching and learning processes as a helper. AI will undoubtedly continue developing and becoming an increasingly sophisticated and helpful tool that supports both teachers and learners. However, the human teachers, with their unique pedagogical expertise, emotional intelligence, and ability to create a dynamic, engaging, and ethically grounded learning environment, will remain a significant part of comprehensive language education. Thus, the challenge lies not in replacing humans with machines but in intelligently integrating artificial intelligence to empower teachers and enrich the learning experience for future technical professionals.

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