











ORIGINAL

Trends in The Use of Artificial Intelligence for Automating Assessment in English Language Teaching

Tendencias en el Uso de la Inteligencia Artificial Para Automatizar la Evaluación en la Enseñanza del Inglés

Anna Khomyk¹  , Tetyana Dniprovskaya²  , Olga Kondrashova²  , Antonina Varlakova³  , Oksana Ivasiuk⁴  

¹Department of Foreign Languages for Sciences, Ivan Franko National University of Lviv, Lviv. Ukraine.

²Department of Philology and Publishing, Kremenchuk Mykhailo Ostrogradskyi National University, Kremenchuk. Ukraine.

³Foreign Languages Department, National Transport University, Kyiv. Ukraine.

⁴Department of English for Engineering №1, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv. Ukraine.

Cite as: Khomyk A, Dniprovskaya T, Kondrashova O, Varlakova A, Ivasiuk O. Trends in The Use of Artificial Intelligence for Automating Assessment in English Language Teaching. LatIA. 2025; 3:286. <https://doi.org/10.62486/latia2025286>

Submitted: 02-05-2024

Revised: 18-12-2024

Accepted: 22-04-2025

Published: 23-04-2025

Editor: PhD. Rubén González Vallejo 

Corresponding author: Anna Khomyk 

ABSTRACT

This study aims to analyze the potential of using artificial intelligence (AI) for automating assessment and English language teaching, as well as its impact on personalizing the learning process. A systematic literature review was conducted using a targeted search strategy across relevant academic databases, including Google Scholar, ResearchGate, and Scopus. As a result of this review, 52 academic papers dedicated to the use of AI for automating assessment and foreign language teaching processes were selected. The findings revealed that AI demonstrates significant potential in personalized learning, skill development, assessment automation, and enhancing teachers' professional development. The possibility of using AI to automate the knowledge assessment process, thereby reducing the workload for educators and increasing the objectivity of evaluation, was explored. The article explores the potential applications of technologies like ChatGPT4 and virtual reality in automating educational processes and assessments, emphasizing their capacity to enhance access to education without limitations of time and space. However, the paper acknowledges the challenges of integrating AI systems into education, encompassing ethical, pedagogical, and technical considerations. Ultimately, the article examines strategies to optimize the benefits of AI in higher education and anticipates the future trajectory of AI development within the educational context.

Keywords: Adaptive Learning; AI Algorithms; Knowledge Assessment; Language Tests; Process Automation.

RESUMEN

Este estudio busca analizar el potencial del uso de la inteligencia artificial (IA) para automatizar la evaluación y la enseñanza del inglés, así como su impacto en la personalización del proceso de aprendizaje. Se realizó una revisión sistemática de la literatura mediante una estrategia de búsqueda dirigida en bases de datos académicas relevantes, como Google Scholar, ResearchGate y Scopus. Como resultado de esta revisión, se seleccionaron 52 artículos académicos dedicados al uso de la IA para automatizar los procesos de evaluación y enseñanza de lenguas extranjeras. Los hallazgos revelaron que la IA demuestra un potencial significativo en el aprendizaje personalizado, el desarrollo de habilidades, la automatización de la evaluación y la mejora

del desarrollo profesional docente. Se exploró la posibilidad de utilizar la IA para automatizar el proceso de evaluación de conocimientos, reduciendo así la carga de trabajo de los educadores y aumentando la objetividad de la evaluación. El artículo explora las posibles aplicaciones de tecnologías como ChatGPT4 y la realidad virtual para automatizar los procesos y evaluaciones educativas, destacando su capacidad para mejorar el acceso a la educación sin limitaciones de tiempo ni espacio. Sin embargo, el artículo reconoce los desafíos de integrar los sistemas de IA en la educación, abarcando consideraciones éticas, pedagógicas y técnicas. Finalmente, examina estrategias para optimizar los beneficios de la IA en la educación superior y anticipa la trayectoria futura del desarrollo de la IA en el contexto educativo.

Palabras clave: Aprendizaje Adaptativo; Algoritmos De IA; Evaluación de Conocimientos; Pruebas de Idiomas; Automatización de Procesos.

INTRODUCTION

In contemporary times, artificial intelligence (AI) systems play a significant role in various aspects of life, including education. Utilizing AI in the educational process presents new opportunities for enhancing learning, personalizing instruction, and preparing future generations for the challenges of the modern world.⁽¹⁾

The integration of AI into the education sector has a long history, dating back to early experiments. From simple systems performing limited tasks to modern models capable of processing and analyzing vast amounts of data, this evolution has paved the way for new educational possibilities.⁽²⁾

Among these opportunities is the individualization of learning through adaptive learning systems, a personalized approach for each student based on their needs, which involves monitoring and assessing progress, and utilizing machine learning algorithms to analyze data and identify problem areas.

Such capabilities offered by artificial intelligence provide educators with essential information to optimize the learning process.⁽³⁾ However, despite the attractive prospects of using AI in education, there are serious challenges.

These include ethical issues related to the use of student data, privacy protection, and considering individual perceptions of AI-generated content. These aspects require thorough analysis and discussion before such systems are fully integrated into educational practice.⁽⁴⁾ Integrating AI in English language teaching and automating assessment can significantly improve the quality of education, personalize approaches to students, and optimize knowledge evaluation. However, this process also requires careful consideration of ethical and technical aspects to ensure the appropriate use of technologies in the educational environment.

The use of AI in education presents new opportunities for both students and educators. Many researchers have explored the use of AI, AR, and VR in education and foreign language learning. Scholars express positive views on the role of VR in optimizing learning.⁽⁵⁾

In the context of rapid technological development, there is a significant research gap regarding the effectiveness of using AI in the automation of assessment in English language teaching. Previous studies often focus on individual aspects, such as assessment accuracy or the acceptability of AI methods, but do not generalize data on overall trends and practical approaches.

Our systematic review aims to fill this gap by synthesizing existing knowledge and research findings. Through a structured analysis, we can identify critical trends, shortcomings, and opportunities for further research, thereby contributing to the development of more effective methods for automating assessment in English language education.

The growing relevance of AI technologies, particularly in educational environments, presents both new opportunities and challenges in knowledge assessment. This paper aims to provide a systematic review of the literature on the history and current state of AI applications in higher education, with a focus on the prospects and challenges that arise when using AI for knowledge assessment.⁽⁶⁾ Reviewing the stages of AI integration into educational practice has allowed for an analysis of its contribution to personalized learning and the potential of the latest tools.

Artificial intelligence, as a technology that mimics human intellectual activity, was first introduced in 1956.⁽⁷⁾

Since then, its development has undergone five key stages: initial experiments, expert systems, knowledge-based learning systems, machine learning, and interactive and modern technologies. Each stage of AI development in education demonstrates its potential to enhance the effectiveness of the learning process.⁽⁸⁾

In particular, knowledge-based systems such as ALEKS, Carnegie Learning, Smart Sparrow, Juku Learning, and Newton enable the adaptation of curricula to students' individual needs, providing personalized tasks and feedback.⁽⁹⁾

These tools improve students' academic outcomes, allow the evaluation of their strengths and weaknesses, and make learning more flexible and accessible.

Thus, this study focuses on analyzing the trends in AI use for automating assessment processes in the context of English language teaching. As AI becomes increasingly integrated into educational practice, especially in language learning, it is essential to evaluate its potential to improve the quality and efficiency of knowledge assessment.⁽¹⁰⁾

Attention is directed towards studying the advantages, challenges, and prospects of using AI to assess students' language competencies accurately.

This study aims to systematically review and analyze existing research on the use of AI for automating assessment processes in English language teaching. It seeks to identify key trends, effectiveness, advantages, and limitations of such technologies and determine possible directions for future research in this field.

1. What are the current trends in using artificial intelligence for automating assessment in English language teaching?
2. What are the advantages and limitations of applying AI for automated language knowledge assessment?
3. What research gaps exist in using AI to automate English language education assessment, and what areas require further investigation?

METHOD

This study employed the methodology of a systematic literature review (SLR), which ensures a structured and rigorous approach to identifying, analyzing, and synthesizing relevant research. This enables the drawing of reliable and evidence-based conclusions through a detailed review of existing sources. SLR can also be described as a systematic approach to searching and critically analyzing research on a specific topic, followed by integrating the results to understand the research question comprehensively. In this case, the SLR methodology was used to systematize research on the use of AI in English language learning.

This systematic review aims to synthesize the available evidence on the use of technology and AI in English language teaching. This research followed the SLR methodological approaches, which include three main phases: planning, conducting, and documenting. The study was conducted in accordance with the PRISMA methodological recommendations for searching, screening, and analyzing scientific materials. Methodologically, the process was organized into three main phases: planning, implementation (data collection, coding), and analysis.

Materials

To conduct a systematic review, it is planned to collect and analyze scientific sources related to the use of technology and AI in learning English as a foreign language. Materials for the study were obtained through a thorough search in international databases: Scopus, Web of Science, ERIC (Education Resources Information Center), Google Scholar, ScienceDirect, SpringerLink.

The search covered the period from 2014 to 2025, since it is at this time that there is an active implementation of innovative digital solutions in the field of language education. Preference was given to peer-reviewed scientific articles, as well as empirical studies containing data on the effectiveness or practical use of AI technologies in the process of learning English.

Methodological stages of conducting SLR

1. Initial stage

At the initial stage, the purpose and research questions of the review were clearly defined.

A research protocol was developed, which consisted of: formulation of the research purpose and key questions; definition of criteria for inclusion and exclusion of sources;

At this stage, scientific databases for literature search were also selected (in particular, Scopus, Web of Science, ERIC, Google Scholar) and keywords were determined for the purpose of forming search queries. Criteria for assessing the quality of research were also established.

2. Conduction phase

This stage included the systematic execution of the following subprocesses. A literature search was carried out in selected databases using combinations of keywords. In particular, the following keywords were selected: "artificial intelligence", "language learning", "English as a foreign language", "educational technology", etc. The selected works cover publications from 2019 onwards. Researchers, as expected, demonstrate increased interest in topics such as virtual and augmented reality in education, pedagogical methodologies, teaching strategies, educational policies, and assessment practices.

The next stage involved determining relevance. Each source was assessed for compliance with the target criteria, which included: focus on the use of AI/technology in English language teaching, empirical nature of the study, peer-reviewed sources, time range (e.g., 2019-2025).

Next, a two-stage screening was conducted - first by titles and abstracts, then by full texts.

In order to establish reliability and validity, standardized methodological quality assessment tools - the so-called checklists - were applied.

Key information was extracted from the selected sources: authors, year of publication, methodology, sample, main results and conclusions.

Then, the main materials were analyzed and synthesized. The synthesis was carried out to form generalized conclusions about the effectiveness of the selected technologies.

Sample and source inclusion procedure

This systematic review identified a total of 1201 records in relevant scientific databases devoted to research on the application of AI in English language testing. Initially, all duplicates were rejected (-123 sources). In the next stage, all keywords were checked for thematic relevance, and 114 studies were rejected. The next stage of screening included an additional check of the relevance of the studies (169 sources were rejected).

In the next stage, the formed inclusion and exclusion criteria were used.

Hence, in this study, 52 articles were selected from 1201 records in relevant databases dedicated to research on the use of AI in English language testing (figure 1).

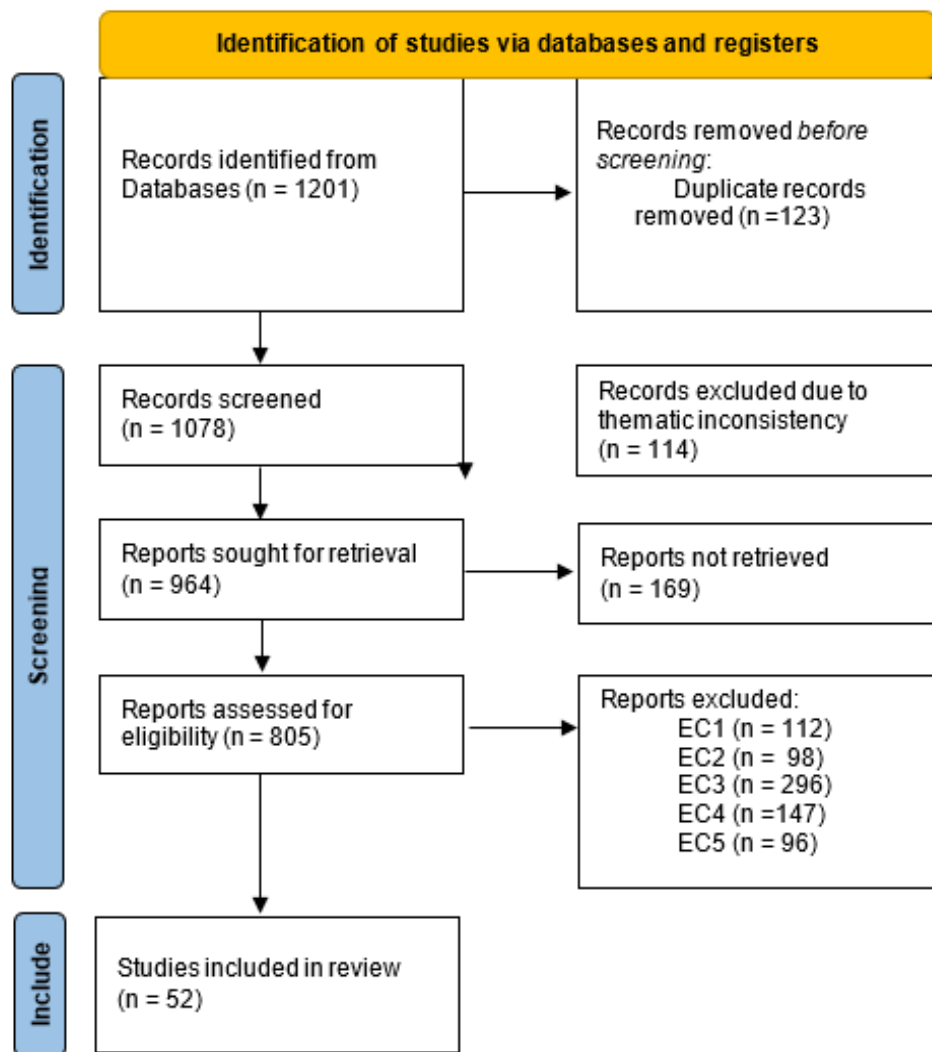


Figure 1. The process of collecting and screening materials

Inclusion criteria

IC1. Time range: from 2019 to 2025.

IC2. Thematic relevance. Articles should contain information on artificial intelligence, new technologies, virtual reality and augmented reality (VR) and augmented reality (AR) in the system of learning foreign languages.

IC3. Articles are written in English.

IC4. Available in full text with open access.

IC5. Published in peer-reviewed journals or at relevant conferences.

Exclusion criteria

EC1. Publications before 2019.

EC2. Articles that do not thematically correspond to the chosen focus.

EC3. Publications written in a language other than English.

EC4. Articles that are not in the open access.

EC5. Materials published on popular science websites or not in peer-reviewed journal.

Data Analysis

After the selection procedure was completed, 52 publications that met the established criteria were analyzed. The main method was thematic analysis, which was aimed at identifying, organizing and interpreting semantic patterns (themes) in text data. The method was based on the approach, which consists of 6 key stages.

At the first stage, all 52 selected sources were read in full to form a general idea of their content. Active reading was carried out with the fixation of first impressions and previous ideas. The next stage involved the formation of initial codes. A data-driven approach was used for coding - codes arose without a pre-defined categorization, without imposing a theoretical framework. Codes were attached to fragments that related: AI functionality, types of assessment (formative, summative), ethical issues, pedagogical interaction, impact on students' motivation and self-reflection.

After the initial coding, the codes were grouped into potential themes. The collected codes were compared with each other to identify semantic connections. As a result, thematic clusters were formed that reflected the key areas of research: assessment automation, personalization and adaptive technologies, use of interactive tools, ethical and normative challenges.

Next, the relevance of the themes to the coded data was checked. Each theme was rethought and clarified to avoid duplication.

To ensure the reliability of the thematic analysis, a part of the data was recoded at a second stage a week after the first cycle. The categories were also discussed with an independent expert.

RESULTS

A comprehensive analysis of the existing research on systematic reviews of previous studies was conducted to identify gaps in the current scientific field.

The studies were thoroughly examined, revealing that most focus on VR in education, while research dedicated to the application of AI for knowledge assessment in English language teaching remains limited.

This suggests that further exploration of articles addressing the application of AI in English language assessment is needed to identify areas requiring additional investigation.

A review of prior studies on AI, VR, and AR in education is provided in table 1.

This table presents the results of studies related to the use of artificial intelligence, augmented reality, and virtual reality in education, focusing on their impact on the learning process and outcomes and identifying gaps for further research.

A systematic review of the literature enabled the selection of 10 studies out of 52 sources that explicitly addressed the use of artificial intelligence to automate assessment in teaching English. The review of the most relevant sources demonstrates a wide range of studies covering topics from assessment automation to the individualization of learning using AI. The issues range from technical challenges to the ethical use of learners' data.

Education is rapidly evolving in the era of digital technologies, where technological advances are profoundly transforming teaching and learning methods. Integrating artificial intelligence (AI) in education opens up vast opportunities to enhance the efficiency and relevance of teaching.^(26, 27, 28) These advances not only improve existing educational processes but also open new prospects for shaping the future of learning. In this context, the systematic review of the literature provided a detailed examination of current AI applications being developed and future prospects that will reshape the educational landscape.

Firstly, the focus is on expanding educational content and offering new interactive materials for learner testing. Additional information and explanations can be obtained by generating texts on various topics and disciplines, thereby expanding the available educational content to align with learners' developmental levels and understanding.⁽²⁹⁾

Automating functions such as creating personalized learning plans, providing two-way feedback, and evaluating work is arguably the most significant advantage of using AI in English language learning and assessment.

Table 1. Key studies on the research problem.

Authors	Purpose	Research design	Methods	Results
Mushthoza et al. ⁽¹¹⁾	The impact of artificial intelligence on teaching and testing English	Experimental study	Analysis of future learning strategies with an emphasis on the use of AI in teaching	Changing educational strategies through the implementation of AI in English language teaching
Owan et al. ⁽¹²⁾	Using AI tools for measurement and evaluation in education	Experimental study	Exploring the potential of AI tools to automate assessment and data analytics	Increasing automation in scoring and improved data analytics
Chen et al. ⁽¹³⁾	A twenty-year review of the development of artificial intelligence in education	Literature review	An overview of the evolution of AI in education over the past 20 years, with key achievements and challenges	Identification of key achievements and problems in the implementation of artificial intelligence in education
Swiecki et al. ⁽¹⁴⁾	Assessment in the age of artificial intelligence	Survey-based research	Learning with the use of AI for assessment in modern educational systems	Improving evaluation efficiency through the use of AI tools
Crompton and Burke ⁽¹⁵⁾	State of use of artificial intelligence in higher education	Literature review	Analysis of the integration of AI in higher education and its impact on teaching and learning practices	Increased adaptability of teaching thanks to the implementation of AI
Paek and Kim ⁽¹⁶⁾	Global trends in the impact of artificial intelligence on education	Analytical research	Analysis of global research on the impact of AI on education, with an emphasis on global trends	Determination of the main directions and trends of the development of AI in education
Hartono et al. ⁽¹⁷⁾	The use of AI in teaching English: views of teachers and learners	Experimental study	Data collection through surveys of teachers and students	Positive impressions from the use of AI in teaching English
Kot and Nykyporet ⁽¹⁸⁾	Using AI to improve English proficiency in higher education	Experimental study	Studying the impact of various AI programs and tools on improving English language skills	Increasing the level of English language proficiency among students of higher education
Zhai et al. ⁽¹⁹⁾	Review of artificial intelligence in education for the period 2010-2020	Literature review	Analysis of the development and implementation of AI in education over the last ten years	Determination of the main trends and challenges in the implementation of AI in educational processes
Bogusevski et al. ⁽⁹⁾	Teaching and learning physics using a 3D virtual learning environment	Thematic study	Investigating the impact of VR and virtual laboratories on physics learning	Enhancing the understanding of physics through VR and virtual labs
Checa and Bustillo ⁽¹⁰⁾	Advantages and limitations of virtual reality in the educational process	Literature review	An overview of the impact of VR on student engagement and technical limitations	The benefits of VR have been identified, but it faces certain limitations
Chen et al. ⁽²⁰⁾	Effects of multidimensional concept maps based on augmented reality	Experimental study	Research on the impact of AR concept maps on the success and motivation of students	The positive influence of conceptual maps on motivation and learning outcomes
Frewen et al. ⁽²¹⁾	Teaching psychology in virtual reality	Mixed study	Evaluation of the impact of VR on the teaching of psychology	Increased immersion and involvement in the study of psychology
Guerra-Tamez ⁽²²⁾	The impact of virtual reality immersion on the learning experience of art and design students	Experimental study	Exploring the impact of VR immersion on the learning experience of art students	Significantly improve the learning experience with a streaming experience
Guppy et al. ⁽²³⁾	The future of digital learning in higher education after COVID-19, for high school students	Survey-based study	A survey of teachers and students about digital learning after the pandemic	Digital learning will remain an integral part of higher education
Huang ⁽²⁴⁾	Studying the effect of virtual reality on the primary virtual reality display on the scientific self-efficacy of high school students	Experimental study	Research on the impact of a VR headset on the self-awareness of performers in scientific disciplines	Significant improvement in scientific self-awareness among students

Devadze and Gechbaia (25)	The use of virtual reality in the educational process to increase the motivation and interest of students	Empirical study	The methodology includes the experimental use of virtual reality (VR) in the educational process, student surveys, and data analysis of student motivation and interest	The study confirmed that integrating VR technologies into the educational process significantly increases students' motivation and interest in learning, compared to traditional teaching methods. Students noted greater involvement, ease of learning the material, and an interactive approach during classes
---------------------------	---	-----------------	---	--

AI systems can quickly and objectively assess learners' knowledge and skills, freeing teachers from routine tasks and allowing them to devote more time to individualized work.^(30, 31)

Another powerful impetus for education, in general, and for learning English in particular, is adaptive learning. AI systems are trained to analyze learners' data, including their responses, learning pace, and errors, to identify specific areas where additional support tailored to each learner's needs and level is needed.⁽³²⁾

The systematic review revealed a higher number of studies regarding virtual reality (VR) in education. This is because the use of VR in education opens up new opportunities for deepening and enriching learners' educational experiences.^(33, 34, 35, 36, 37) AI systems can analyze data and create personalized educational scenarios, allowing learners to immerse themselves in a virtual world and acquire practical skills. This approach can be beneficial for learning technical and vocational skills.

In this context, it is worth mentioning ethical considerations and trends towards the 'creation' of virtual teachers. AI-based virtual teachers can provide learning materials, answer questions, and offer additional exercises and tasks to consolidate knowledge. It can also be used for automatic testing and homework grading. This allows Teachers to save time, which they can dedicate to more creative work with students, though ethical concerns remain open.^(38, 39)

In English language learning and assessment, AI systems today offer learners non-standard tasks that require applying and developing problem-solving skills in unexpected situations. By analyzing each learner's problem-solving process, they can offer guidance and instructions to enhance these skills. In this aspect, AI offers alternative ways of presenting information or tasks adapted for each foreign language.

Thus, articles dedicated to trends in the use of artificial intelligence for automating assessment in teaching English demonstrate the diversity of possibilities that AI offers, which can be beneficial in higher education.

DISCUSSION

Research in the fields of artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) in education encompasses various aspects of integrating these technologies to enhance the learning process, particularly by improving student motivation and engagement, reducing cognitive load, and improving learning outcomes.⁽⁴⁰⁾

A systematic review of trends in using artificial intelligence to automate assessment in teaching English showed increasing interest in this technology, especially between 2019 and 2025. However, further research is needed to gain a deeper understanding of AI's effectiveness in knowledge assessment. Studies show that AI assesses knowledge transparently, which can significantly increase student motivation and highlight the need for further trials in different cultural and educational contexts.⁽⁴¹⁾

Particular attention is still paid to the effectiveness of game mechanics in AR-based educational applications. Research indicates that competitive and collaborative approaches can impact learners' motivation, learning efficiency, and anxiety levels, underscoring the importance of designing balanced educational tools. A study dedicated to the implementation of VR in higher education evaluated five semesters of VR lab use, revealing both the strengths and challenges of this technology, including its potential in knowledge assessment.⁽⁴²⁾

Researchers such as Zhang et al.⁽¹⁾, Alkhabra et al.⁽⁸⁾, Tezer et al.⁽⁴³⁾ are also exploring AI's potential in scientific education, including the design and implementation of immersive experiences to improve understanding of complex scientific concepts. At the same time, some studies emphasize the importance of building structured frameworks for integrating AI into the educational process to ensure maximum learning efficiency.⁽⁴⁴⁾

A crucial aspect is utilizing AI to foster creativity in learners, particularly in language disciplines. It has been demonstrated that AI promotes creative thinking and enhances interest in the subject. Still, researchers note a lack of empirical data on the long-term impact of AI on educational outcomes.⁽⁴⁵⁾

Research on AI's impact on cognitive load, motivation, and other psychological aspects underscores the importance of selecting suitable methods and technologies to prevent learners from being overwhelmed. Meanwhile, the market for AI-based learning and training applications continues to grow; however, there

remains a need for an analysis of their effectiveness across various learning areas.

Attention must also be paid to the potential of artificial intelligence (AI) for automating knowledge assessment in English language learning. AI enables the creation of adaptive systems that cater to the individual needs of each learner, thereby significantly enhancing the effectiveness of the learning process.

AI automates assessment and analyses learners' strengths and weaknesses, providing teachers with detailed information for personalized work with each learner.⁽⁴⁶⁾ One of OpenAI's most renowned products is the GPT (Generative Pre-trained Transformer) series of text generation models that use neural networks. These models can produce high-quality text and even engage in dialogues with users. The GPT series currently includes both core versions and the latest ones.⁽⁴⁷⁾

The latest and most potent version, GPT-4, has enormous parameters (175 billion) and consists of 96 or 175 layers, depending on the configuration. This model demonstrates incredible capabilities in text generation, natural language processing tasks, and user interaction.⁽⁴⁸⁾ Integrating ChatGPT-4 in education opens new perspectives on how learners can study and interact with educational content.

With its advanced natural language processing capabilities, ChatGPT-4 can serve as a virtual learning companion, providing detailed explanations, answering questions, and offering practical examples. This technology can be used in various ways in English language learning, such as enriching discussions, conducting interactive exercises, or offering personalized support for learners with special needs.^(49, 50)

By incorporating ChatGPT-4 into their teaching activities, educators can create a more dynamic and engaging environment for foreign language learning. Learners can interact with this AI to gain explanations of complex concepts, explore additional topics beyond the classroom, and even receive assistance in completing homework and passing tests. Accordingly, ChatGPT-4 promotes learner autonomy, helping them develop research and problem-solving skills independently.^(51, 52)

ChatGPT-4 is important in providing access to accurate and up-to-date information in contexts where traditional educational resources are limited. However, despite the apparent advantages, the use of ChatGPT-4 in education must be accompanied by ethical reflection and appropriate pedagogical supervision. It is essential to ensure that this technology is used responsibly and ethically so that it does not replace human interaction and the crucial role of teachers in the learning process.^(53, 54)

CONCLUSIONS

The systematic review confirmed the high potential of using AI in teaching English, considering the current automation of knowledge assessment. In particular, the analysis showed that AI allows transforming traditional educational processes and affects their effectiveness. It is proven that learning becomes more personalized and interactive.

In modern research, there is a growing interest in the following scientific trends: adaptive assessment systems, automated feedback, the use of VR/AR technologies to create a personalized environment. The vast majority of works are focused on writing texts, formative assessment and policy development in the field of digital education.

The study also highlights the main advantages of using AI. It is indicated that artificial intelligence enables automatic assessment of tasks, allows for the personalization of curricula according to the individual needs of students. In addition, the use of AI makes it possible to reduce the workload on teachers. This allows them to focus on the creative aspects of learning.

However, there are some gaps in current research, mainly related to the methodological component, as there is a lack of empirical research on this topic.

Despite its promise, the research has several significant limitations. First, most of the selected articles cover only the period since 2019, limiting access to earlier studies and their findings. Second, the limited research across different cultural and educational contexts calls for further investigation to determine the effectiveness of AI in diverse educational systems and learner preparedness levels. Technical challenges, such as the accuracy of automatic grading and the ethical aspects of using learners' data, also require further study.

Further research should focus on a deeper analysis of AI's effectiveness in knowledge assessment and its application in various educational contexts. It is worth exploring AI's potential for developing creative skills in learners and developing ethical frameworks for the use of AI technologies in education. Additional empirical data are needed on the long-term impact of AI integration on educational outcomes and its potential to reduce cognitive load and increase learning motivation.⁽⁵⁵⁾

REFERENCES

1. Zhang M, Ding H, Naumceska M, Zhang Y. Virtual reality technology as an educational and intervention tool for children with autism spectrum disorder: Current perspectives and future directions. *Behav Sci.* 2022;12(5):138. <https://doi.org/10.3390/bs12050138>

2. Zhang X, Chen Y, Hu L, Wang Y. The metaverse in education: Definition, framework, features, potential applications, challenges, and future research topics. *Front Psychol.* 2022;13:1016300. <https://doi.org/10.3389/fpsyg.2022.1016300>
3. Spitsyn V, Antonenko I, Synkovska O, Dzevytska L, Potapiuk L. European values in the Ukrainian higher education system: Adaptation and implementation. *J Curric Teach.* 2024;13(3):102. <https://doi.org/10.5430/jct.v13n3p102>
4. Shalatska HM, Zotova-Sadylo OY, Makarenko OY, Dzevytska LS. Implementation of e-assessment in higher education. In: *Proceedings of the 16th International Conference ICT in Education, Research and Industrial Applications. Integration, Harmonization and Knowledge Transfer*; 2020. p. 1172-1186. Available from: <https://lib.iitta.gov.ua/id/eprint/727256/1/20201172.pdf>
5. Kuzmenko A, Biriukova B, Tiahlo N, Tiahlo L. Means of forming a culture of academic integrity of postgraduate students: Experience of Ukraine and the European Union. *J Curric Teach.* 2024;13(3):136. <https://doi.org/10.5430/jct.v13n3p136>
6. Bacca Acosta JL, Baldiris Navarro SM, Fabregat Gesa R, Kinshuk K. Framework for designing motivational augmented reality applications in vocational education and training. *Australas J Educ Technol.* 2019;35(3). <https://doi.org/10.14742/ajet.4182>
7. Alam A. Social robots in education for long-term human-robot interaction: Socially supportive behaviour of robotic tutor for creating robo-tangible learning environment in a guided discovery learning interaction. *ECS Trans.* 2022;107(1):12389-403. <https://doi.org/10.1149/10701.12389ecst>
8. Alkhabra YA, Ibrahim UM, Alkhabra SA. Augmented reality technology in enhancing learning retention and critical thinking according to STEAM program. *Humanit Soc Sci Commun.* 2023;10(1):174. <https://doi.org/10.1057/s41599-023-01650-w>
9. Bogusevski D, Muntean C, Muntean GM. Teaching and learning physics using 3D virtual learning environment: A case study of combined virtual reality and virtual laboratory in secondary school. *J Comput Math Sci Teach.* 2020;39(1):5-18. <https://doi.org/10.70725/297454nsjryb>
10. Checa D, Bustillo A. Advantages and limits of virtual reality in learning processes: Briviesca in the fifteenth century. *Virtual Real.* 2020;24(1):151-61. <https://doi.org/10.1007/s10055-019-00389-7>
11. Mushthoza DA, Syariatun N, Tahalele O, Telussa SI, Rasmita R, Mokodenseho S. Analyzing the impact of artificial intelligence (AI) on the future of English language teaching and learning. *J Educ.* 2023;6(1):1549-57. Available from: <https://www.jonedu.org/index.php/joe/article/view/3115>
12. Owan VJ, Abang KB, Idika DO, Etta EO, Bassey BA. Exploring the potential of artificial intelligence tools in educational measurement and assessment. *Eurasia J Math Sci Technol Educ.* 2023;19(8):em2307. doi:10.29333/ejmste/13428
13. Chen X, Zou D, Xie H, Cheng G, Liu C. Two decades of artificial intelligence in education. *Educ Technol Soc.* 2022;25(1):28-47. Available from: <https://www.jstor.org/stable/48647028>
14. Swiecki Z, et al. Assessment in the age of artificial intelligence. *Comput Educ Artif Intell.* 2022;3:100075. <https://doi.org/10.1016/j.caeai.2022.100075>
15. Crompton H, Burke D. Artificial intelligence in higher education: The state of the field. *Int J Educ Technol High Educ.* 2023;20(1):22. <https://doi.org/10.1186/s41239-023-00392-8>
16. Paek S, Kim N. Analysis of worldwide research trends on the impact of artificial intelligence in education. *Sustainability.* 2021;13(14):7941. <https://doi.org/10.3390/su13147941>
17. Hartono WJ, et al. Artificial intelligence (AI) solutions in English language teaching: Teachers-students perceptions and experiences. *J Educ.* 2023;6(1):1452-61. Available from: <https://jonedu.org/index.php/joe/article/view/3101>

18. Kot SO, Nykyporets SS. Utilization of artificial intelligence in enhancing English language proficiency in tertiary education. In: Niczyporuk J, Batiuk O, editors. *Science and Education in the Third Millennium: Information Technology, Education, Law, Psychology, Social Sphere, Management*. Lublin (Poland): Institute of Public Administration Affairs; 2024. p. 250-74. <https://doi.org/10.5281/zenodo.11279390>
19. Zhai X, et al. A review of artificial intelligence (AI) in education from 2010 to 2020. *Complexity*. 2021;2021(1):8812542. <https://doi.org/10.1155/2021/8812542>
20. Chen CH, Huang CY, Chou YY. Effects of augmented reality-based multidimensional concept maps on students' learning achievement, motivation and acceptance. *Univ Access Inf Soc*. 2019;18(2):257-68. <https://doi.org/10.1007/s10209-017-0595-z>
21. Frewen P, Oldrieve P, Law K. Teaching psychology in virtual reality. *Scholarsh Teach Learn Psychol*. 2024;10(4):526-35. <https://doi.org/10.1037/stl0000341>
22. Guerra-Tamez CR. The impact of immersion through virtual reality in the learning experiences of art and design students: The mediating effect of the flow experience. *Educ Sci*. 2023;13(2):185. <https://doi.org/10.3390/educsci13020185>
23. Guppy N, et al. The post-COVID-19 future of digital learning in higher education: Views from educators, students, and other professionals in six countries. *Br J Educ Technol*. 2022;53(6):1750-65. <https://doi.org/10.1111/bjet.13212>
24. Huang W. Examining the impact of head-mounted display virtual reality on the science self-efficacy of high schoolers. *Interact Learn Environ*. 2022;30(1):100-12. <https://doi.org/10.1080/10494820.2019.1641525>
25. Devadze A, Gechbaia B. Using virtual reality in the educational process to increase students' motivation and interest. *E-Learning Innov J*. 2024;2(2):21-35. <https://doi.org/10.57125/ELIJ.2024.09.25.02>
26. Kravchuk O, Kit H, Yemelianova O, Tolchieva H, Beseganich I. With regard to the means and priorities for the development of the professional education system (The experience of the EU countries for Ukraine). *J Curric Teach*. 2023;12(5):123. <https://doi.org/10.5430/jct.v12n5p123>
27. Hasanova IZK. The role of the advocate's motions and complaints in a criminal trial: A scoping review. *Futurity Econ Law*. 2024;4(4):25-41. <https://doi.org/10.57125/FEL.2024.12.25.02>
28. Devterov I, Tokar L, Silvestrova O, Lozo O, Poperechna G. Philosophical dimensions of digital transformation and their impact on the future. *Futurity Philos*. 2024;3(4):4-19. <https://doi.org/10.57125/FP.2024.12.30.01>
29. Asaju K, Munya P. Digital democracy and elections in Nigeria: An assessment of the 2023 governorship election in Taraba State. *Futurity Soc Sci*. 2024;2(4):4-23. <https://doi.org/10.57125/FS.2024.12.20.01>
30. Yurko I, Riabtsev D. The role of investment, innovation and efficient use of resources in ensuring long-term economic sustainability. *Law Bus Sustain Herald*. 2024;4(1):4-20. Available from: <https://lbsherald.org/index.php/journal/article/view/62>
31. Yang FC-O, Lai HM, Wang YW. Effect of augmented reality-based virtual educational robotics on programming students' enjoyment of learning, computational thinking skills, and academic achievement. *Comput Educ*. 2023;195:104721. <https://doi.org/10.1016/j.compedu.2022.104721>
32. Irwanto I, Dianawati R, Lukman IR. Trends of augmented reality applications in science education: A systematic review from 2007 to 2022. *Int J Emerg Technol Learn*. 2022;17(13):157-75. <https://doi.org/10.3991/ijet.v17i13.30587>
33. Khan T, Johnston K, Ophoff J. The impact of an augmented reality application on learning motivation of students. *Adv Hum Comput Interact*. 2019;2019:1-14. <https://doi.org/10.1155/2019/7208494>
34. Lin YC, Hou HT. The evaluation of a scaffolding-based augmented reality educational board game with competition-oriented and collaboration-oriented mechanisms: Differences analysis of learning effectiveness,

motivation, flow, and anxiety. *Interact Learn Environ.* 2024;32(2):502-21. <https://doi.org/10.1080/10494820.2022.2091606>

35. Marks B, Thomas J. Adoption of virtual reality technology in higher education: An evaluation of five teaching semesters in a purpose-designed laboratory. *Educ Inf Technol.* 2022;27(1):1287-305. <https://doi.org/10.1007/s10639-021-10653-6>

36. Matovu H, et al. Immersive virtual reality for science learning: Design, implementation, and evaluation. *Stud Sci Educ.* 2023;59(2):205-44. <https://doi.org/10.1080/03057267.2022.2082680>

37. Mulders M, Buchner J, Kerres M. A framework for the use of immersive virtual reality in learning environments. *Int J Emerg Technol Learn.* 2020;15(24):208-24. Available from: <https://www.learntechlib.org/p/218562/>

38. Obeid S, Demirkan H. The influence of virtual reality on design process creativity in basic design studios. *Interact Learn Environ.* 2023;31(4):1841-59. <https://doi.org/10.1080/10494820.2020.1858116>

39. Rojas-Sánchez MA, Palos-Sánchez PR, Folgado-Fernández JA. Systematic literature review and bibliometric analysis on virtual reality and education. *Educ Inf Technol.* 2023;28(1):155-92. <https://doi.org/10.1007/s10639-022-11167-5>

40. Seufert C, et al. Classroom management competency enhancement for student teachers using a fully immersive virtual classroom. *Comput Educ.* 2022;179:104410. <https://doi.org/10.1016/j.compedu.2021.104410>

41. Smutny P. Learning with virtual reality: A market analysis of educational and training applications. *Interact Learn Environ.* 2023;31(10):6133-46. <https://doi.org/10.1080/10494820.2022.2028856>

42. Sonntag D, Albuquerque G, Magnor M, Bodensiek O. Hybrid learning environments by data-driven augmented reality. *Procedia Manuf.* 2019;31:32-7. <https://doi.org/10.1016/j.promfg.2019.03.006>

43. Tezer M, et al. Trends of augmented reality applications and research throughout the world: Meta-analysis of theses, articles and papers between 2001-2019 years. *Int J Emerg Technol Learn.* 2019;14(22):154-74. Available from: <https://www.learntechlib.org/p/217151/>

44. Wenk N, et al. Effect of immersive visualization technologies on cognitive load, motivation, usability, and embodiment. *Virtual Reality.* 2023;27(1):307-31. <https://doi.org/10.1007/s10055-021-00565-8>

45. Williams R. An academic review of virtual learning environments. *ICRRD Qual Index Res J.* 2022;3(2):143-5. Available from: <https://icrrd.com/article/292/an-academic-review-of-virtual-learning-environments>

46. Adem H, Berkessa M. A case study of EFL teachers' practice of teaching speaking skills vis-à-vis the principles of Communicative Language Teaching (CLT). *Cogent Educ.* 2022;9(1):2087458. <https://doi.org/10.1080/2331186X.2022.2087458>

47. Alotumi M. Factors influencing graduate students' behavioral intention to use Google Classroom: Case study-mixed methods research. *Educ Inf Technol.* 2022;27(7):10035-63. <https://doi.org/10.1007/s10639-022-11051-2>

48. Paragae IPNS. Innovative teaching strategies in teaching English as a foreign language. *Engl Teach Linguist J (ETLiJ).* 2023;4(1). <https://doi.org/10.30596/etlij.v4i1.12990>

49. Latifi F, Kasumi H. Teachers' perspectives on innovative and interactive teaching methods: Perspective of mobile learning. *Int J Interact Mobile Technol (iJIM).* 2022;16(23):73-83. <https://doi.org/10.3991/ijim.v16i23.36217>

50. Bashynska I, Garachkovska O, Kichuk Y, Podashevskaya T, Bigus O. Smart Education 4.0: Balancing Dual-Distance and Reskilling Revolution. *Stud of Appl Econ.* 2021;39(6). <https://doi.org/10.25115/eea.v39i6.5262>

51. Chiu TKF, Xia Q, Zhou X, Chai CS, Cheng M. Systematic literature review on opportunities, challenges,

and future research recommendations of artificial intelligence in education. *Comput Educ Artif Intell.* 2023;4:100118. <https://doi.org/10.1016/j.caeai.2022.100118>

52. Bondar I, Humenchuk A, Horban Y, Honchar L, Koshelieva O. Conceptual and innovative approaches of higher education institutions (HEIS) to the model of training a successful specialist formation during a COVID pandemic. *J of Manag Inf and Dec Sc.* 2021;24(3):1-8. <https://www.abacademies.org/articles/conceptual-and-innovative-approaches-of-higher-education-institutions-heis-to-the-model-of-training-a-successful-specialist-format-10269.html>

53. Gumenyuk T, Kushnarov V, Bondar I, Haludzina-Horobets V, Horban Y. Transformation of Professional Training of Students in the Context of Education Modernization. *Stud of Appl Econ.* 2021;39(5). <https://doi.org/10.25115/eea.v39i5.4779>

54. Boiko O, Dolhusheva O, Shvets K, Nadolska Yu, Yepifantseva L. Interactive Approaches to Teaching English in the Framework of the “New Ukrainian School”. *Int J of Inf and Educ Technol.* 2025;15(5):976-987. <https://doi.org/10.18178/ijiet.2025.15.5.2304>

55. Bondarchuk J, Dvorianchykova S, Yuhan N, Holovenko K. Strategic approaches: Practical applications of English communication skills in various real-life scenarios. *Multidisciplinary Science Journal*, 2025;7(3):e2025100. <https://doi.org/10.31893/multiscience.2025100>

FINANCING

The authors did not receive financing for the development of this research.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Anna Khomyk.

Data curation: Olga Kondrashova.

Formal analysis: Tetyana Dniprovskaya, Olga Kondrashova.

Research: Olga Kondrashova, Antonina Varlakova.

Methodology: Anna Khomyk, Tetyana Dniprovskaya.

Project management: Anna Khomyk.

Supervision: Anna Khomyk, Tetyana Dniprovskaya.

Validation: Antonina Varlakova, Oksana Ivasiuk.

Display: Oksana Ivasiuk.

Drafting - original draft: Oksana Ivasiuk.

Writing - proofreading and editing: Tetyana Dniprovskaya, Olga Kondrashova, Antonina Varlakova.