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ENHANCING STUDENTS' ENGLISH READING COMPREHENSION WITH AI ASSISTANCE

Abstract. University students frequently grapple with advanced vocabulary, nuanced texts, and critical analysis, impeding their reading comprehension, a cornerstone for academic success across disciplines. Traditional pedagogical methods often fall short in providing the individualized and adaptive support crucial for addressing these diverse learning gaps, leading to student frustration and diminished academic performance. This article explores the transformative potential of artificial intelligence (AI) in revolutionizing English language instruction, specifically targeting reading comprehension enhancement. It delves into how core AI technologies, such as Natural Language Processing and machine learning, underpin intelligent reading assistants, facilitating personalized learning pathways and delivering immediate, data-driven feedback. The discussion encompasses the practical integration of AI tools, emphasizing their significant benefits in bolstering vocabulary acquisition, cultivating critical thinking skills through AI-guided analysis, and fostering dynamic collaborative learning environments. Furthermore, the article highlights AI's role in improving accessibility, streamlining assessment processes, and offering actionable insights for educators. Despite these numerous advantages, crucial challenges related to AI adoption are addressed, including technological barriers, student adaptation, data privacy concerns, and the imperative for robust quality control and comprehensive teacher training. The paper underscores the necessity of a balanced approach, ensuring AI complements traditional instruction and human interaction rather than replacing them, thereby mitigating risks like over-reliance or academic misconduct.

Ultimately, this piece provides a comprehensive overview of how AI is poised to profoundly reshape reading, learning, and teaching, advocating for ethical deployment and continuous research to maximize its educational impact.

Keywords: artificial intelligence (AI), benefits of AI in reading comprehension, English reading comprehension, higher education, strategies.

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ПОКРАЩЕННЯ РОЗУМІННЯ ПРОЧИТАНОГО АНГЛІЙСЬКОЮ МОВОЮ ЗА ДОПОМОГОЮ ШІ

Анотація. Здобувачі вищої освіти часто стикаються зі значними труднощами у роботі з розширеною лексикою, нюансами текстів та критичним аналізом, що перешкоджає їхньому розумінню прочитаного – фундаментальній навичці для академічного успіху в усіх дисциплінах. Традиційні педагогічні методи часто не забезпечують індивідуалізованої та адаптивної підтримки, яка є вирішальною для подолання цих різноманітних прогалин у навчанні, що призводить до розчарування здобувачів та зниження їхньої академічної успішності. Ця стаття досліджує трансформаційний потенціал штучного інтелекту (ШІ) у революціонізації викладання англійської мови, спрямований зокрема на покращення розуміння прочитаного. Вона заглиблюється в те, як основні технології ШІ, такі як обробка природної мови та машинне навчання, є основою розробки інтелектуальних помічників для читання, полегшуючи персоналізовані навчальні траєкторії та забезпечуючи миттєвий зворотний зв'язок на основі даних. Обговорення охоплює практичну інтеграцію інструментів ШІ, підкреслюючи їхні значні переваги у збагаченні словникового запасу, розвитку навичок критичного мислення за допомогою ШІ-орієнтованого аналізу та сприянні динамічному спільному навчанню. Крім того, стаття висвітлює роль ШІ у покращенні доступності, оптимізації процесів оцінювання та наданні дієвих даних

для викладачів. Попри ці численні переваги, розглядаються критичні виклики, пов'язані з впровадженням ШІ, включаючи технологічні бар'єри, адаптацію студентів, питання конфіденційності даних, а також необхідність надійного контролю якості та комплексного навчання викладачів. Робота підкреслює важливість збалансованого підходу, що забезпечує доповнення ШІ традиційного навчання та людської взаємодії, а не їхню заміну, тим самим зменшуючи ризики, такі як надмірна залежність або академічна недобросовісність. Зрештою, ця стаття надає всебічний огляд того, як ШІ має глибоко переформатувати читання, навчання та викладання, виступаючи за етичне впровадження та безперервні дослідження для максимізації його освітнього впливу.

Ключові слова: штучний інтелект (ШІ), переваги ШІ в розумінні прочитаного, розуміння прочитаного англійською мовою, вища освіта, стратегії.

Problem statement. Reading comprehension stands as a cornerstone of English language education, forming a critical foundation for academic success across all disciplines. From understanding complex scientific papers to dissecting historical documents and analyzing literary works, the ability to effectively comprehend written material is paramount for university students. However, a significant challenge exists: university students frequently struggle with the nuanced demands of higher-level texts. This struggle manifests in several key areas such as encountering advanced and specialized vocabulary, and deficiencies in applying critical analysis skills to deconstruct and evaluate information.

Traditional pedagogical approaches, while valuable, often face limitations in providing the individualized and adaptive support necessary to address these diverse and specific comprehension gaps. Consequently, students may fall behind, experience frustration, and their overall academic performance can suffer.

The rapid advancements in artificial intelligence (AI) present a transformative opportunity to revolutionize English language instruction and directly address these reading comprehension challenges. AI's capacity for personalized learning, immediate feedback, and data-driven insights holds significant potential for improving students' reading comprehension by offering dynamic and adaptive learning environments that consider individual needs and learning styles. The integration of AI into English lessons could provide innovative solutions to empower university students to navigate complex texts with greater proficiency and confidence, ultimately fostering a deeper level of academic engagement and success.

Analysis of recent research and publications. Though AI is a relatively recent development, much has been written about its use in language teaching. For instance, it is highly debated in the academic literature [5] how Artificial Intelligence (AI) tools can enhance human knowledge and intellectual capabilities within the educational sector. Danesi [2] provides a comprehensive exploration of how AI is reshaping

language education. Ademola [1] explores how artificial intelligence (AI) is transforming reading strategies and its impact on reading habits, comprehension techniques, and educational outcomes. In addition, the author discusses how AI-driven recommendations can personalize reading materials to individual preferences and comprehension levels, leading to more efficient learning. Fu and Hiniker [3] investigate the impact of AI tools on students' reading processes and cognitive engagement.

Based on a study of students using AI for reading support, it found that while initial interactions promoted higher-order thinking, students tended towards more passive reading over time. The research highlighted AI's utility for summarizing, understanding complex terms, and encouraging critical thinking. The authors propose design implications for future AI reading-support systems, suggesting structured support for lower-level tasks and proactive prompts for higher-order thinking, emphasizing the need for adaptive features to balance efficiency with cognitive engagement.

Enhancing reading comprehension with AI-generated adaptive texts was also investigated [4]. The potential of AI-driven adaptive texts to improve students' reading comprehension and learning outcomes through personalized instruction was explored. It is highlighted that reading comprehension remains vital in the digital age, despite evolving reading habits [6]. Moreover, it is emphasized that constructive and personalized learning activities can aid knowledge construction, and AI can enhance the effectiveness and accessibility of these activities, including the potential of generative AI. Finally, a study by Wei [7] concludes that AI-mediated language instruction holds promise for revolutionizing language learning by improving outcomes, motivating learners, and promoting autonomy.

In view of the above, **the purpose of the article** is to explore the impact of artificial intelligence on reading comprehension and education. It aims to get insights into the core AI technologies that underpin these advancements, detailing how they enable personalised learning. Furthermore, the article outlines the practical implementation of AI reading assistants, highlighting their benefits in areas like vocabulary enhancement and critical thinking development. Finally, it addresses the challenges and best practices for integrating AI into educational settings, while also looking ahead to future trends and the profound implications for learning. Ultimately, this piece aims to provide a comprehensive overview of how AI is revolutionising the way we read, learn, and teach.

Presentation of the main material. The advent of AI is reshaping the terrain of reading, moving beyond traditional methods to offer dynamic and personalised learning experiences and real-time comprehension assessment. While conventional reading often relies on static texts and self-driven comprehension, AI-enhanced approaches utilise sophisticated algorithms to create interactive and adaptive

environments. This shift allows for more targeted instruction and real-time feedback, fundamentally transforming how individuals engage with and understand written material.

At the heart of this transformation lie core AI technologies such as Natural Language Processing (NLP) and machine learning. NLP enables AI systems to understand, interpret, and generate human language, making it possible for machines to analyse text, identify key concepts, and even summarise complex information. Machine learning algorithms, on the other hand, allow these systems to learn from vast amounts of data, adapt to individual user behaviour, and continuously improve their performance in tasks like comprehension assessment and content recommendation. These technologies collectively form the backbone of intelligent reading assistants, driving their ability to provide tailored support.

Implementing AI reading assistants involves several key considerations, from choosing popular platforms to integrating them with existing educational infrastructure. Many AI reading platforms are emerging, offering features like adaptive learning, progress tracking, and interactive exercises. Effortless integration with Learning Management Systems (LMS) is crucial for widespread adoption, allowing educators to manage assignments, track student performance, and personalise learning pathways effectively. These personalised pathways utilise advanced data analytics to tailor educational journeys based on individual needs, preferences, and progress tracking mechanisms, ensuring that students focus on areas requiring improvement at their optimal pace.

Real-time comprehension assessment is a hallmark of AI-enhanced reading, moving beyond traditional summative tests to provide immediate insights. This is achieved through automated comprehension checks, which might involve quick quizzes or cloze activities, and interactive questioning that prompts deeper engagement with the text. Performance analytics track student progress over time, identifying areas of strength and weakness, while immediate feedback systems provide instant corrections and explanations, allowing students to rectify misunderstandings promptly.

AI significantly enhances vocabulary acquisition through innovative methods. Contextual vocabulary learning exposes students to new words within authentic texts, helping them grasp meaning from surrounding information. Spaced repetition systems optimise memory retention by scheduling review sessions at scientifically determined intervals. Word relationship mapping helps students understand synonyms, antonyms, and conceptual connections, fostering a richer understanding of language, while personalised vocabulary lists ensure that instruction is tailored to each individual's specific needs.

Beyond basic comprehension, AI plays a vital role in fostering critical thinking skills. AI-guided analysis prompts encourage students to explore deeper into texts,

asking questions that stimulate reflection and evaluation. Deep reading strategies are promoted through AI's ability to highlight subtle nuances and thematic connections. Inference training helps students develop the ability to deduce meaning from implicit information, and AI assists in the interpretation of complex texts by breaking down difficult passages and providing contextual support.

Collaborative learning features are also enhanced by AI, creating dynamic and engaging group environments. AI-moderated discussions can guide conversations, ensure fair participation, and identify key discussion points. Peer review systems, facilitated by AI, provide structured feedback mechanisms, while group comprehension activities allow students to work together on challenging texts. Social learning analytics offer insights into group dynamics and individual contributions, helping educators understand and optimise collaborative efforts.

Data-driven instruction is revolutionised by AI, providing educators with unprecedented insights into student learning. AI systems collect and analyse student performance metrics, identifying patterns in reading behaviour and pinpointing specific comprehension gaps. Progress visualisation tools present this data in an accessible format, allowing teachers to make informed instructional decisions and tailor their teaching strategies to individual and collective needs, ultimately leading to more effective interventions.

Accessibility and inclusion are significantly improved by AI reading technologies. Text-to-speech capabilities benefit visually impaired students and those with reading difficulties, transforming written text into audible content. Multiple language support broadens access for non-native speakers, while learning disability accommodations, such as adjustable reading speeds and simplified text options, cater to diverse learning needs. Universal design principles are integrated into AI platforms, ensuring that the learning environment is inherently accessible to all users.

AI also transforms assessment and evaluation processes, making them more efficient and insightful. AI-powered testing systems can generate adaptive assessments that adjust difficulty based on student performance. Performance tracking provides continuous monitoring of progress, moving beyond single-point assessments. Automated grading for various question types reduces teacher workload, and comprehensive progress reporting offers detailed insights into student growth, enabling more targeted and timely interventions.

Successful implementation of AI reading assistants requires careful planning and execution. Integration strategies must be well-defined to ensure effortless connectivity with existing educational tools. Comprehensive teacher training requirements are essential to equip educators with the skills and confidence to utilise AI effectively. Student orientation needs to familiarise students with new technologies, and robust technical support considerations are paramount to address any issues that may arise, ensuring a smooth and productive learning experience.

However, challenges in AI adoption must be addressed. Technology barriers, such as lack of infrastructure or digital literacy, can hinder implementation. Student resistance may arise from unfamiliarity or discomfort with new tools, while privacy concerns regarding data collection and usage require transparent policies and secure systems. Quality control measures are crucial to ensure that AI-generated content and feedback are accurate, reliable, and pedagogically sound, maintaining trust in the technology.

Looking to the future, the terrain of AI reading technology is constantly evolving. Emerging AI technologies, such as advanced large language models and multimodal AI, promise even more sophisticated reading experiences. Predicted developments include highly personalised adaptive learning agents and more intuitive human-AI interaction. Industry forecasts suggest widespread adoption in educational settings, while research directions continue to explore the cognitive impacts of AI on reading and the ethical considerations of its use.

While the benefits are numerous, it is important to consider potential challenges. First, it is evident that heavy reliance or over-reliance on AI for tasks like summarizing might hinder the development of deeper analytical and critical reading skills; therefore, a balanced approach is crucial. Second, the ease with which AI can generate content raises concerns about cheating. Then, as with any technology that collects student data, privacy concerns need to be addressed. Furthermore, educators need proper training to effectively integrate AI tools into their teaching practices. Finally, it should be noted that AI should complement traditional teaching methods, providing personalized support and automating tasks, rather than replacing direct instruction and human interaction.

Conclusions. AI holds transformative potential for improving reading comprehension at the university level. With thoughtfully designed tools and strategies, educators can create more inclusive, engaging, and effective reading experiences. However, the success of these innovations depends on ethical implementation, pedagogical balance, and ongoing research into best practices.

AI offers a powerful suite of tools to revolutionize reading comprehension in English lessons by providing personalized, engaging, and efficient learning experiences. By leveraging AI to adapt content, provide instant feedback, identify learning gaps, and create customized materials, educators can significantly enhance students' reading abilities. However, a thoughtful and balanced approach is necessary to maximize these benefits while mitigating potential drawbacks and ensuring that AI supports, rather than replaces, the development of essential critical thinking skills.

As further research directions, one can conduct qualitative and quantitative studies on student and educator perceptions of AI tools for reading comprehension, including their willingness to adopt these tools, perceived benefits, challenges, and concerns.

References:

1. Ademola, E.O. (2024). Reading strategies in the AI Age: Enhancing comprehension and engagement with advanced technologies. In *Proceedings of the 38th iSTEAMS Multidisciplinary Bespoke Conference. 15th–19th July, 2024, University of Ghana, Accra, Ghana* (pp. 105-124). dx.doi.org/10.22624/AIMS/ACCRABESPOKE2024P13
2. Danesi, M. (2024). *AI in foreign language learning and teaching: Theory and practice*. New York: Nova Science Publishers.
3. Fu, Y., & Hiniker, A. (2025). Supporting Students' Reading and Cognition with AI. *arXiv*. <https://arxiv.org/abs/2504.13900>arxiv.org, <https://doi.org/10.48550/arXiv.2504.13900>
4. He, X. (2024). Enhancing reading comprehension with AI-generated adaptive texts. *International Journal of New Developments in Education*, 6(7), 46–52. <https://doi.org/10.25236/IJNDE.2024.060708>.
5. Jackson, E.A., & Jackson, H.F. (2024). Enhancing human knowledge and capabilities with Artificial Intelligence tools for education. *Educational Challenges*, 29(2), 139–150. <https://doi.org/10.34142/2709-7986.2024.29.2.09>
6. McCarthy, K. S., & Yan, E. F. (2024). Reading comprehension and constructive learning: Policy considerations in the age of artificial intelligence. *Policy Insights from the Behavioral and Brain Sciences*, 11(1), 19–26. <https://doi.org/10.1177/23727322231218891>
7. Wei, L. (2023). Artificial intelligence in language instruction: Impact on English learning achievement, L2 motivation, and self-regulated learning. *Frontiers in Psychology*, 14:1261955. <https://doi.org/10.3389/fpsyg.2023.1261955>

Література:

1. Ademola, E.O. (2024). Reading strategies in the AI Age: Enhancing comprehension and engagement with advanced technologies. In *Proceedings of the 38th iSTEAMS Multidisciplinary Bespoke Conference. 15th–19th July, 2024, University of Ghana, Accra, Ghana* (pp. 105-124). dx.doi.org/10.22624/AIMS/ACCRABESPOKE2024P13
2. Danesi, M. (2024). *AI in foreign language learning and teaching: Theory and practice*. New York: Nova Science Publishers.
3. Fu, Y., & Hiniker, A. (2025). Supporting Students' Reading and Cognition with AI. *arXiv*. <https://arxiv.org/abs/2504.13900>arxiv.org, <https://doi.org/10.48550/arXiv.2504.13900>
4. He, X. (2024). Enhancing reading comprehension with AI-generated adaptive texts. *International Journal of New Developments in Education*, 6(7), 46–52. <https://doi.org/10.25236/IJNDE.2024.060708>.
5. Jackson, E.A., & Jackson, H.F. (2024). Enhancing human knowledge and capabilities with Artificial Intelligence tools for education. *Educational Challenges*, 29(2), 139–150. <https://doi.org/10.34142/2709-7986.2024.29.2.09>
6. McCarthy, K. S., & Yan, E. F. (2024). Reading comprehension and constructive learning: Policy considerations in the age of artificial intelligence. *Policy Insights from the Behavioral and Brain Sciences*, 11(1), 19–26. <https://doi.org/10.1177/23727322231218891>
7. Wei, L. (2023). Artificial intelligence in language instruction: Impact on English learning achievement, L2 motivation, and self-regulated learning. *Frontiers in Psychology*, 14:1261955. <https://doi.org/10.3389/fpsyg.2023.1261955>