ARTIFICIAL INTELLIGENCE TECHNOLOGIES FOR DEVELOPING ENGLISH READING COMPETENCE AMONG UPPER-SECONDARY SCHOOL STUDENTS

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Abstract: The rapid development of artificial intelligence (AI) is creating new opportunities for language education through adaptive learning, personalised instruction, and immediate feedback. This paper examines the pedagogical potential of AI technologies for developing English reading competence among upper-secondary school students. It reviews the theoretical foundations of reading competence, considers the role of AI-supported tools in reading instruction, and discusses their advantages, limitations, and methodological implications. The analysis suggests that AI can support vocabulary development, reading comprehension, differentiated instruction, reading strategies, learner motivation, and autonomy when integrated appropriately. However, effective implementation requires teacher guidance, critical evaluation of AI-generated content, attention to digital literacy, and responsible consideration of privacy, ethics, and academic integrity. The paper concludes that AI can contribute to the development of English reading competence when it complements, rather than replaces, sound pedagogical practice.

Keywords: artificial intelligence, reading competence, English language teaching, upper-secondary school students, digital learning, personalised learning, educational technology

Introduction

The digital transformation of education has become a defining characteristic of twenty-first-century teaching and learning. Educational institutions are increasingly integrating digital technologies into classroom instruction to enhance learning outcomes and prepare learners for participation in knowledge-based societies. Artificial intelligence has emerged as an influential technological development, with applications ranging from intelligent tutoring systems and adaptive learning to automated feedback and personalised instructional support (OECD, 2024; UNESCO, 2023). Reading competence occupies a central position in foreign-language learning. Students with well-developed reading competence can comprehend authentic texts, interpret ideas critically, expand their vocabulary, and use acquired knowledge in communicative situations. Online reading also requires learners to apply purposeful strategies when navigating and processing digital texts (Anderson, 2003). However, many upper-secondary students experience difficulties in understanding complex English texts because of limited vocabulary, insufficient reading strategies, and low motivation.

AI technologies offer potential solutions to some of these challenges by supporting personalised learning, generating vocabulary explanations, adapting materials, and providing immediate feedback. At the same time, their educational use requires careful pedagogical and ethical consideration (UNESCO, 2023; OECD, 2024). Therefore, investigating the pedagogical role of AI in developing English reading competence is both theoretically significant and practically relevant. The purpose of this paper is to examine the educational potential of AI technologies in improving English reading competence among upper-secondary school students and to identify methodological principles for their effective implementation.

Literature Review

Reading competence can be understood as the ability to comprehend, analyse, interpret, evaluate, and use written information effectively in different communicative contexts. Within contemporary approaches to language education, reading competence extends beyond decoding linguistic forms and involves strategic, cognitive, linguistic, and sociocultural dimensions. Effective readers identify main ideas, understand explicit and implicit information, recognise an author’s purpose, make inferences, and evaluate textual content. Online reading additionally requires learners to manage information and apply appropriate reading strategies while navigating digital environments (Anderson, 2003; Grabe & Stoller, 2020). Upper-secondary students are expected to work with increasingly complex academic and authentic texts. At this stage, learners should not only understand information but also compare ideas, evaluate arguments, identify supporting evidence, and integrate information from different sources. Teachers therefore need instructional approaches that promote deeper comprehension, strategic reading, critical thinking, and learner autonomy (Grabe & Stoller, 2020).

Artificial intelligence provides opportunities to support these objectives through adaptive instruction and personalised learning. AI refers to computer systems capable of performing tasks associated with human intelligence, including language processing, pattern recognition, decision-making, and recommendation. Recent developments in generative AI have expanded the range of educational applications available to teachers and learners (UNESCO, 2023).

In English language education, AI technologies can perform several pedagogical functions. They can generate reading materials at different proficiency levels, simplify texts while retaining their central meaning, provide explanations of unfamiliar vocabulary, generate comprehension questions, summarise texts, recommend reading materials, and support monitoring of learning progress. Applications such as ChatGPT, Microsoft Copilot, Google Gemini, Diffit, MagicSchool AI, and Quizlet AI provide teachers with tools for creating differentiated learning materials and learners with immediate access to explanations and feedback.

AI can contribute to the development of English reading competence through several interconnected mechanisms. First, it can support vocabulary acquisition by providing contextual definitions, synonyms, antonyms, pronunciation information, and example sentences when learners encounter unfamiliar words. Second, AI can facilitate differentiated instruction by adapting materials to different proficiency levels. Third, it can support reading strategies such as skimming, scanning, predicting, inferencing, summarising, and identifying key information through interactive exercises and immediate feedback (Anderson, 2003; Grabe & Stoller, 2020).

Fourth, AI may support learner motivation through interactive environments, personalised recommendations, and adaptive tasks. Fifth, it can encourage learner autonomy by enabling students to practise reading beyond the classroom, receive immediate support, and monitor aspects of their learning progress. Nevertheless, these benefits depend on how the technology is integrated into instruction; AI should support learners’ cognitive engagement rather than replace it (UNESCO, 2023).

Practical Applications in Upper-Secondary Schools

Successful integration of AI into English reading instruction requires purposeful pedagogical planning. Before reading, AI can be used to generate vocabulary previews, background information, prediction questions, and visual organisers that activate learners’ prior knowledge. During reading, AI-supported tools can provide lexical explanations, simplify difficult passages, generate guiding questions, and help students identify main ideas and supporting details. AI chatbots may also facilitate discussions about text content and help learners clarify misunderstandings.

After reading, AI can support comprehension quizzes, summarisation tasks, vocabulary activities, critical-thinking questions, and reflective writing. Teachers may also use AI-assisted assessment tools to support formative assessment and identify learning gaps. However, teachers should remain responsible for evaluating the quality, appropriateness, and accuracy of AI-generated materials (UNESCO, 2023).

The use of AI technologies offers several potential educational benefits. Personalisation allows instructional materials and activities to be adapted to learners’ needs and proficiency levels, while immediate feedback can help learners identify and address difficulties without waiting for subsequent classroom feedback. AI can also reduce some aspects of teachers’ preparation workload, allowing more time for interaction, facilitation, and individual support. In addition, digital access enables students to practise reading beyond the classroom. AI may also contribute to more inclusive learning when tools are designed to accommodate differences in learners’ needs, pace, and access to support; however, issues of unequal access and digital capacity must also be considered (OECD, 2024).

Despite its potential, AI should be implemented responsibly. One major concern is the reliability of AI-generated information: AI systems can produce inaccurate or misleading outputs, so teachers should verify materials before using them in instruction. Digital literacy is another important consideration, as both teachers and students need sufficient knowledge to use AI tools effectively and critically. Professional development is therefore essential (OECD, 2024).

Ethical concerns also require attention. Excessive dependence on AI may weaken opportunities for independent thinking if learners accept generated responses without evaluation. Students should therefore be encouraged to question, verify, and critically evaluate AI-generated content. Data privacy, academic integrity, bias, equitable access, and the protection of human agency are additional concerns that require clear institutional guidance (UNESCO, 2023; OECD, 2024). Consequently, AI should complement rather than replace pedagogically sound teaching practices. To maximise the educational value of AI technologies, teachers should integrate AI into established pre-reading, while-reading, and post-reading frameworks.

Reading tasks should continue to emphasise higher-order thinking, including analysis, evaluation, interpretation, and synthesis. AI-generated materials should be aligned with curriculum objectives and relevant CEFR proficiency descriptors. Students should receive explicit guidance on responsible AI use, information verification, and digital ethics. Collaborative learning activities should accompany AI-supported independent learning in order to maintain meaningful classroom interaction and communication. Finally, continuous assessment should address not only reading comprehension but also learners’ strategic reading behaviour and critical-thinking skills.

Conclusion

Artificial intelligence technologies have considerable potential as pedagogical resources for developing English reading competence among upper-secondary school students. Through adaptive learning, personalised support, vocabulary assistance, immediate feedback, and interactive learning environments, AI can support reading comprehension, motivation, and learner autonomy. However, its effectiveness depends on pedagogically sound implementation.

Teachers remain central to the learning process: they design meaningful learning experiences, guide students’ critical thinking, evaluate AI-generated content, and ensure responsible and ethical use of technology. Future research should examine the long-term effects of AI-assisted reading instruction, compare different AI-based educational platforms, and develop evidence-based methodological models for integrating AI into English language curricula. A balanced combination of human pedagogy and intelligent technologies may contribute to the quality of foreign-language education while preparing learners for participation in increasingly digital learning environments.

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