

RESEARCH ARTICLE**The Use of Generative AI for Developing Reading Comprehension Skills in English: A Conceptual Review**

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Article Received: 06/07/2026; Article Accepted: 08/08/2026; Published Online: 09/08/2026

Abstract:

Reading comprehension is a fundamental component of English language proficiency and plays an important role in academic success, professional development, and lifelong learning. For English as a Foreign Language (EFL) learners, comprehending English texts can be challenging because of limited vocabulary, complex grammatical structures, unfamiliar cultural references, difficulty identifying main ideas, and limited exposure to authentic reading materials. The emergence of Generative Artificial Intelligence (GenAI) has introduced new possibilities for supporting reading comprehension through interactive explanations, text simplification, vocabulary assistance, question generation, summarization, personalized feedback, and adaptive reading activities. This conceptual review examines the potential role of generative AI in developing English reading comprehension skills among learners. Particular attention is given to vocabulary development, identification of main ideas, inferential reading, summarization, critical reading, learner autonomy, and personalized learning. The review also discusses important challenges, including inaccurate AI-generated explanations, overdependence, reduced independent reading, privacy concerns, academic integrity, and the possibility of superficial comprehension. The paper argues that generative AI is most effective when it is used as a supplementary reading assistant rather than a replacement for authentic reading and teacher guidance. A human-AI collaborative model is proposed in which learners independently engage with texts, use AI strategically for clarification and feedback, and subsequently demonstrate comprehension through independent tasks. The review concludes that generative AI can enhance English reading instruction when integrated critically, ethically, and pedagogically into learner-centred language education.

Keywords: Generative AI, reading comprehension, English language learning, EFL learners, artificial intelligence, vocabulary, critical reading, personalized learning

1. Introduction

Reading comprehension is one of the central skills required for effective English language learning. University students are expected to read textbooks, research articles, reports, newspapers, websites, technical documents, and other academic materials. Successful reading involves much more than recognizing individual words. Readers must understand meanings, identify important information, recognize relationships among ideas, infer implied meanings, evaluate arguments, and connect new information with prior knowledge. For EFL learners, English reading can be particularly challenging. Students may struggle with unfamiliar vocabulary, complex sentence structures, idiomatic expressions, discourse organization, cultural references, and discipline-specific terminology. These difficulties can affect academic performance and reduce students'

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confidence in reading English texts independently.

Traditional reading instruction involves pre-reading activities, vocabulary instruction, comprehension questions, teacher explanations, group discussions, summarization, and follow-up exercises. Although these methods remain effective, teachers may face challenges in providing individualized assistance to every learner. Generative Artificial Intelligence has introduced new possibilities for addressing some of these challenges. GenAI systems can analyse texts, explain vocabulary, generate questions, simplify complex passages, produce summaries, provide examples, and engage learners in interactive discussions about texts. The educational value of these systems, however, depends on how learners use them. If students simply ask AI to summarize every text, they may avoid the cognitive processes required for genuine reading comprehension. Conversely, if AI is used to support questioning, vocabulary analysis, reflection, and critical evaluation, it may strengthen reading development.

This conceptual review examines the role of generative AI in developing English reading comprehension and considers its potential benefits, challenges, and pedagogical implications.

2. Generative AI and English Reading

Generative AI refers to AI systems capable of producing new content in response to user instructions. In language education, these systems can interact with learners through natural language.

For reading comprehension, GenAI can function as:

- a vocabulary assistant;
- a text explanation tool;
- a question generator;
- a summarization assistant;
- a discussion partner;
- a reading tutor;
- a critical-thinking facilitator;
- a personalized learning assistant.

A learner reading a difficult English article can ask AI to explain a particular paragraph, clarify unfamiliar vocabulary, generate comprehension questions, or explain the relationship between two ideas.

This interactive capability distinguishes generative AI from traditional static digital reading resources.

3. Vocabulary Support

Vocabulary knowledge is strongly associated with reading comprehension. Learners who encounter a large number of unfamiliar words may struggle to understand the overall meaning of a passage.

Generative AI can provide immediate vocabulary assistance. Students can ask for:

- definitions;
- synonyms;
- antonyms;
- pronunciation;
- example sentences;
- collocations;
- contextual meanings;
- word forms.

For example, when encountering the word "significant," learners can ask AI to explain its meaning in the

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specific sentence rather than relying only on a general dictionary definition.

AI can also distinguish different meanings of polysemous words according to context.

This can help students develop both vocabulary breadth and vocabulary depth.

However, students should be encouraged to infer meaning from context before asking AI. Otherwise, immediate AI assistance may reduce their ability to use contextual clues independently.

4. Identifying Main Ideas

Understanding the main idea is a fundamental reading skill.

Generative AI can support learners by asking them questions such as:

- What is the central argument?
- What is the author's main purpose?
- Which sentence expresses the key idea?
- What evidence supports the central claim?

Rather than simply requesting a summary, students can first identify the main idea independently and then compare their interpretation with AI-generated feedback.

This approach encourages metacognitive awareness.

Students can also ask AI to provide several possible interpretations and evaluate which interpretation is best supported by the text.

5. Inferential Reading

Effective readers often need to understand information that is not explicitly stated.

Inferential comprehension involves using textual evidence and background knowledge to understand implied meanings.

Generative AI can create inference-based questions based on a reading passage.

For example:

“What can be inferred about the author's attitude toward technology?”

The learner must identify evidence and construct an interpretation.

AI can then provide alternative interpretations for discussion.

This can encourage learners to move beyond literal comprehension toward deeper reading.

However, AI-generated interpretations should not be treated as automatically correct. Students should be required to support their interpretations with textual evidence.

6. Summarization Skills

Summarization is an important academic reading skill because students frequently need to condense lengthy texts into shorter forms.

Generative AI can produce summaries at different levels of detail.

However, simply receiving an AI-generated summary may not develop the learner's own summarization ability.

A more effective pedagogical approach is:

Read → Write your own summary → Ask AI for comparison → Identify differences → Revise independently

Students can compare their summary with AI output and determine whether important information has been omitted or unnecessary details included.

This transforms AI from a replacement for comprehension into a tool for developing comprehension.

7. Simplifying Complex Texts

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Academic English can contain long sentences, technical vocabulary, passive structures, and complex arguments.

Generative AI can explain difficult passages in simpler English.

For example, learners can request:

“Explain this paragraph using intermediate-level English.”

The system may provide a simplified explanation while preserving the general meaning.

This can help learners gradually access texts that would otherwise be difficult.

Nevertheless, simplified text should be used as support rather than a permanent substitute for authentic academic English. Learners need continued exposure to appropriately challenging texts.

8. Developing Critical Reading

Critical reading requires readers to evaluate information rather than simply understand it.

Generative AI can support critical reading by encouraging students to ask:

- What evidence supports the author's claim?
- Is the argument logically convincing?
- Are alternative viewpoints considered?
- What assumptions does the author make?
- Is the evidence sufficient?
- Are there possible biases?

Students can also ask AI to generate counterarguments and then evaluate them using the original text.

This can transform reading into an analytical process.

An important advantage is that students can challenge AI itself. If AI provides an interpretation, students can be asked to determine whether the interpretation is supported by the text.

9. Personalized Reading Support

Learners have different proficiency levels and reading difficulties.

Generative AI can personalize reading support by adjusting explanations according to learner needs.

For example:

Beginner learner: Vocabulary definitions and simple explanations

Intermediate learner: Paragraph analysis and comprehension questions

Advanced learner: Critical analysis, argument evaluation, and academic discussion

AI can also generate additional exercises based on individual weaknesses.

Such personalization can support differentiated instruction in university English classrooms.

10. Learner Autonomy

Generative AI can extend reading support beyond classroom hours.

Students can independently ask questions about texts, clarify unfamiliar expressions, generate practice questions, and discuss interpretations.

This may encourage learners to take greater responsibility for their reading development.

However, autonomy requires students to know when and how to use AI. They should be encouraged to attempt comprehension independently before seeking AI assistance.

A useful principle is:

Think first → Ask AI second → Evaluate third → Apply independently

11. Reading Motivation

Long or difficult English texts can discourage learners.

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Interactive AI support may make reading more engaging by allowing students to ask questions and receive immediate explanations.

Students can also connect reading materials to their interests. After reading an article about technology, for example, they can ask AI to generate discussion questions related to their academic field.

Such interaction may increase engagement.

However, technology should not replace sustained reading. Students still need to develop the ability to read longer texts independently without constant AI assistance.

12. Challenges and Limitations

Despite its potential, generative AI presents several challenges.

12.1 Inaccurate Explanations

AI may sometimes provide incorrect interpretations, definitions, or summaries.

12.2 Overdependence

Students may use AI before attempting to understand a text themselves.

12.3 Superficial Comprehension

If learners rely only on AI summaries, they may avoid detailed reading.

12.4 Academic Integrity

Students may submit AI-generated summaries or analyses as their own work.

12.5 Privacy

Students may upload copyrighted, unpublished, or sensitive documents to AI systems.

12.6 Reduced Metacognition

Excessive assistance may reduce students' awareness of their own comprehension processes.

Therefore, AI literacy must accompany AI-supported reading instruction.

13. Role of Teachers

Teachers remain central to effective AI-supported reading instruction.

Teachers can:

- select appropriate texts;
- design reading objectives;
- teach reading strategies;
- evaluate AI-generated explanations;
- monitor student interaction with AI;
- develop critical reading activities;
- assess independent comprehension.

Teachers should also teach students how to verify AI responses using reliable sources and textual evidence.

A classroom activity can involve students comparing their own interpretation with an AI interpretation and defending their position using evidence from the text.

14. Human-AI Collaborative Reading Model

A useful model for AI-assisted reading can involve five stages.

Stage 1: Independent Reading

Students first read the text independently and identify the main ideas.

Stage 2: AI Assistance

Students use AI to clarify selected vocabulary, grammar, or difficult passages.

Stage 3: Critical Comparison

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Students compare their understanding with AI-generated explanations.

Stage 4: Independent Application

Students answer comprehension questions, write a summary, or analyse the text without AI assistance.

Stage 5: Reflection

Students reflect on what they understood, where they needed assistance, and how their reading strategies can improve.

This model maintains learner responsibility while benefiting from AI support.

15. Pedagogical Implications

Generative AI can contribute to reading instruction in several ways.

First, it can provide immediate individualized support.

Second, it can generate differentiated comprehension activities.

Third, it can assist teachers in developing vocabulary and reading exercises.

Fourth, it can support critical reading through debate and alternative interpretations.

Fifth, it can extend reading practice beyond the classroom.

However, reading instruction should continue to emphasize authentic texts, independent comprehension, critical thinking, and teacher guidance.

16. Recommendations**For Students**

Students should:

- read texts independently before using AI;
- use AI for clarification rather than replacement;
- verify AI explanations;
- support interpretations with textual evidence;
- practise summarizing independently;
- gradually reduce AI assistance.

For Teachers

Teachers should:

- integrate AI into process-based reading activities;
- teach students to evaluate AI output;
- design AI-supported critical reading tasks;
- combine AI activities with human discussion;
- assess independent reading performance.

For Institutions

Institutions should:

- provide AI-literacy training;
- develop responsible AI policies;
- address privacy and copyright issues;
- support teacher professional development;
- promote equitable access to technology.

17. Future Research

Future empirical studies should investigate whether generative AI produces measurable improvements in English reading comprehension.

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Research could examine:

- vocabulary acquisition;
- literal comprehension;
- inferential comprehension;
- critical reading;
- summarization;
- reading motivation;
- reading anxiety;
- learner autonomy.

Longitudinal studies should investigate whether students who regularly use AI develop stronger independent reading skills or become increasingly dependent on AI assistance.

Comparative studies could examine traditional instruction, AI-assisted instruction, and blended human-AI instruction.

Researchers should also investigate differences across proficiency levels and academic disciplines.

18. Conclusion

Generative AI has significant potential to support the development of English reading comprehension skills. Its ability to explain difficult passages, provide vocabulary support, generate comprehension questions, produce summaries, facilitate discussion, and personalize learning can make reading more accessible and interactive for EFL learners.

The technology is particularly valuable because it can provide immediate assistance outside classroom hours. Students can ask questions about difficult texts and receive explanations suited to their proficiency level. However, effective reading development requires more than access to explanations. Learners need to develop independent comprehension, inference, critical analysis, vocabulary knowledge, and metacognitive awareness. Excessive reliance on AI-generated summaries or interpretations may undermine these abilities. Therefore, generative AI should be used as a **reading support tool rather than a substitute for reading**. The most effective approach is a human-AI collaborative model in which students first engage independently with texts, use AI selectively for clarification and feedback, critically evaluate AI responses, and demonstrate comprehension through independent tasks.

When implemented responsibly, generative AI can contribute to a more personalized, interactive, and learner-centred approach to English reading instruction. Its ultimate educational value depends not on how much AI-generated content students receive, but on how effectively the technology helps them become more capable, critical, and independent readers of English.

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