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From Passive Answers to Active Inquiry: How AI Supports Critical Reading in EFL Classrooms

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ABSTRACT

This study investigates the integration of ChatGPT, a generative AI tool, into critical reading instruction for university-level EFL learners. Recognizing the importance of higher-order reading skills such as evaluating arguments, recognizing bias, synthesizing information, and generating counterarguments, the research explores how AI-supported tasks influence both skill development and learner perceptions. Using a mixed-methods sequential explanatory design, the study engaged 35 second-year English majors in an eight-week intervention. Data collection included pre- and post-tests, five AI-integrated reading tasks, a structured questionnaire, and semi-structured interviews. Quantitative results revealed significant improvements in students' ability to recognize bias, generate counterarguments, and identify main ideas. Qualitative analysis of ChatGPT interaction screenshots and student reflections demonstrated behavioral progression from surface-level clarification-seeking to more critical inquiry and evaluative questioning. Students reported high motivation and appreciation for AI's role in supporting comprehension and

analysis. However, they also expressed skepticism, frequently verifying AI outputs and reflecting on potential bias. These behaviors contrast with earlier studies that emphasized uncritical reliance on AI tools, highlighting the emergence of critical digital literacy in this context. The findings suggest that AI can serve not only as a comprehension aid but also as a scaffold for cognitive and ethical engagement. When paired with explicit instruction, AI tools hold promises for fostering critical literacy and responsible use of technology in EFL education.

Keywords: Critical Reading, AI in Education, ChatGPT

Introduction

In recent years, the integration of Artificial Intelligence (AI) into educational contexts has created new possibilities for enhancing students' learning experiences. In the field of English as a Foreign Language (EFL) education, AI tools have been increasingly adopted to support language development, particularly by providing personalized feedback, promoting learner autonomy, and stimulating higher-order thinking (Ahmadi, 2018; Cahyani et al., 2023; Holmes et al., 2019; Kasirzadeh & Gabriel, 2022).

Among the key academic skills necessary for success in the 21st century, critical reading stands out as an essential competency. Critical reading not only involves comprehension but also requires students to evaluate arguments, detect bias, synthesize information, and challenge assumptions (Paul & Elder, 2008). Although the importance of critical reading is well acknowledged, many EFL learners, especially in Asian contexts, still face difficulties in developing higher-order reading skills (Khamkhong, 2018; Le et al., 2024).

Traditional reading instruction often emphasizes surface-level comprehension, leaving limited opportunities for students to develop analytical literacy and critical inquiry. AI tools, particularly those powered by natural language processing such as ChatGPT, offer promising affordances for fostering critical reading and critical digital literacy. By simulating Socratic dialogue, suggesting alternative perspectives, and encouraging reflection, AI systems can potentially scaffold deeper engagement with texts (Fakour & Imani, 2025). Nevertheless, while prior research has demonstrated the motivational benefits and comprehension gains associated with AI integration, fewer studies have systematically examined how AI supports specific critical reading sub-skills such as recognizing bias or generating

counterarguments or how learners critically evaluate AI-generated content in EFL settings.

Thus, the present study aims to bridge this gap by investigating: how AI-supported tasks can enhance five core critical reading sub-skills which are identifying main ideas, evaluating arguments, recognizing bias and tone, generating counterarguments, and synthesizing ideas among EFL university students, and how students perceive and critically engage with AI tools during reading activities.

Specifically, this study is guided by the following research questions:

RQ1: To what extent do AI tools support the development of EFL students' critical reading skills, specifically in identifying main ideas, evaluating arguments, recognizing bias and tone, generating counterarguments, and synthesizing ideas?

RQ2: What are students' perceptions and attitudes toward using AI tools in critical reading tasks?

By addressing both cognitive skill development and learners' critical digital literacy, this research contributes pedagogical insights into the ethical and effective integration of AI into critical reading instruction in EFL contexts. Furthermore, the findings highlight the importance of fostering reflective and independent inquiry skills alongside AI-assisted learning.

Literature Review

Critical Reading in EFL Contexts

Critical reading, within EFL education, is increasingly recognized as a vital set of cognitive skills enabling learners to move beyond literal comprehension toward interpretive, evaluative, and synthetic engagement with texts (Liu, 2019; Yu, 2015). We must likewise consider how to teach students to be engaged readers with the texts they are reading (Anderson, in press). Building on educational frameworks such as Bloom's Taxonomy (Walter, 2024), critical reading involves higher order processes analysis, evaluation, and creation that are essential for academic success and informed citizenship in the 21st century.

Traditional reading instruction emphasized strategic comprehension skills such as identifying main ideas. These foundational strategies have evolved in the digital era, where AI-powered tools now offer dynamic support for developing critical reading and higher-order thinking skills such as evaluating arguments, detecting bias, and synthesizing information across sources. (Ahmadi, 2018; Karimi & Khawaja, 2023; Kasirzadeh & Gabriel, 2022; Walter, 2024). Integrating AI into reading pedagogy represents not only

technological innovation but also a shift toward fostering more autonomous and reflective readers.

However, EFL learners often face significant challenges in mastering these higher-order skills. Limited linguistic proficiency, unfamiliarity with argument-based texts, and cultural factors that discourage questioning can confine learners to surface-level reading (Ahmadi, 2018; Yu, 2015). Without deliberate scaffolding and repeated practice, students may struggle to evaluate information critically or to synthesize diverse perspectives, particularly when engaging with complex academic materials (Fakour & Imani, 2025).

Numerous non-AI studies have highlighted similar challenges. For example, Le et al. (2024) found that Vietnamese EFL students employ various strategies for critical reading but still struggle with evaluating arguments and recognizing bias, indicating a need for more explicit instructional approaches. Likewise, Irgin (2023) demonstrated how engaging learners in analyzing narratives through digital storytelling can promote critical literacy and multi-perspective thinking, even outside AI contexts. However, much of the existing research still focuses on traditional print texts or classroom activities, leaving gaps in understanding how critical reading skills transfer to diverse digital or technology-enhanced environment.

Given these persistent challenges, scholars increasingly highlight five dimensions as central to critical reading development: identifying main ideas, evaluating arguments, recognizing bias and tone, generating counterarguments, and synthesizing ideas (Liu, 2019; Walter, 2024; Yu, 2015). Mastery of these sub-skills equips EFL learners not only for academic contexts but also for navigating a media-saturated global society where critical literacy is indispensable. Moreover, they are particularly relevant in preparing students for academic study and participation in a media-rich, information-driven society. Previous studies also suggest that explicit instruction in critical thinking contributes positively to EFL learners' reading comprehension (Fahim & Sa'eepour, 2011).

AI Integration in Language and Reading Education

The integration of Artificial Intelligence (AI) into language education has opened new avenues for personalized learning, feedback, and scaffolding, especially in reading instruction. Pack and Maloney (2024) emphasize that whether educators want it or not, the proverbial Pandora's box has been opened and generative AI is not going away. Despite the challenges this technology presents, there is significant potential for generative AI to enact beneficial changes in the field of language education, for students, teachers, and other stakeholders. As agents that will shape the future of this field, it is incumbent that teachers and researchers address the ethical and pedagogical

issues that stem from utilizing generative AI through further exploration, research, and discussion. (pp. 1007-1018)

AI applications such as ChatGPT, Grammarly, and Quillbot utilize natural language processing technologies to assist learners with instant feedback, paraphrasing support, tone analysis, and writing suggestions (Ahmadi, 2018; Karimi & Khawaja, 2023). These tools provide students with opportunities to engage more deeply with texts by simplifying complex ideas, rephrasing arguments, and highlighting stylistic nuances.

In the context of EFL education, AI-assisted tools have been shown to foster learner motivation and engagement. Studies indicate that the use of AI tools correlates with increased reading persistence, higher levels of curiosity, and greater confidence when interacting with challenging texts (Fakour & Imani, 2025; Huang & Wilson, 2021). Van den Berg and du Plessiss (2023) further argue that AI's ability to provide individualized scaffolding can help EFL learners gradually move from surface-level comprehension to deeper analytical engagement. It also provides individualized scaffolding for comprehension tasks (Muthmainnah et al., 2022), especially when aligned with students' cognitive zones of proximal development.

However, while growing evidence supports the role of AI in enhancing basic language proficiency and surface-level comprehension, relatively fewer studies have systematically examined its effectiveness in developing higher-order reading skills such as critical analysis, synthesis of multiple perspectives, and evaluative judgment (Kasirzadeh & Gabriel, 2022; Walter, 2024). This gap emphasizes the need to move beyond treating AI as merely a comprehension support tool and instead explore its potential in cultivating critical literacy.

In summary, while AI integration holds significant promise for enhancing engagement and comprehension in EFL contexts, further research is necessary to understand how AI can support the deeper cognitive demands of critical reading and thinking.

AI and Critical Reading

Recent studies have started to explore the relationship between AI tools and the development of critical thinking and critical reading abilities. AI-supported environments, when appropriately designed, have the capacity to stimulate deeper inquiry by encouraging learners to ask reflective questions, challenge underlying assumptions, and consider multiple interpretations of a text (Kasirzadeh & Gabriel, 2022; van den Berg & du Plessis, 2023).

For example, Kasirzadeh and Gabriel (2022) demonstrated how AI-driven Socratic questioning techniques could provoke meta-cognitive

engagement, prompting students to move beyond passive acceptance of information toward more evaluative and analytical stances. Similarly, Walter (2024) emphasizes that AI-facilitated interaction can foster habits of inquiry, comparison, and critical synthesis, particularly when learners are guided to question AI outputs rather than accept them uncritically.

However, concerns remain about whether AI-generated content is culturally fair and reliable. Research shows that without strong critical literacy, students may easily accept biased, incomplete, or culturally inappropriate information (Walter, 2024; Karimi & Khawaja, 2023). This highlights the need for reading instruction to focus not only on using AI tools but also on teaching students how to question, verify, and combine information critically in digital environments (Fakour & Imani, 2025; Walter, 2024). Students should be required to learn not only technological adoption but also the development of critical digital literacy (Ng et al., 2021), including ethical reflection and students' empowerment to challenge AI-generated content.

Thus, while AI presents an opportunity to scaffold critical engagement with texts, its pedagogical use must be carefully framed to empower students as critical readers rather than passive consumers of AI-generated knowledge.

Despite these promising affordances, AI tools also present significant limitations that educators and learners must consider. Several studies have highlighted that AI-generated content can reflect cultural bias, producing interpretations or examples that align more closely with certain socio-cultural perspectives while neglecting others (Kasirzadeh & Gabriel, 2022; Walter, 2024). Additionally, there is concern that excessive reliance on AI might undermine learners' independent reasoning skills, leading to surface-level engagement rather than deeper critical inquiry (Karimi & Khawaja, 2023; Huang & Wilson, 2021). These limitations highlight the need to combine AI tools with explicit instruction and critical literacy so that learners can evaluate the accuracy, fairness, and objectivity of AI-generated information.

Methodology

Research Design

This study employed a mixed-methods sequential explanatory design (Creswell & Plano Clark, 2018) to explore the integration of AI tools into critical reading instruction in an EFL context. In this strategy, quantitative data collection and analysis were conducted first, followed by qualitative data collection to provide deeper explanations and contextualization of the quantitative findings.

The quantitative phase involved the administration of pre-tests and post-tests assessing students' critical reading sub-skills, formative assessment of performance across five AI-integrated reading tasks, and a structured questionnaire measuring perceptions toward AI use. The qualitative phase gathered rich descriptive data through thematic analysis of open-ended questionnaire responses, critical examination of screenshots reflecting students' inquiry behaviors, and semi-structured interviews with selected participants. This combination of multiple data sources enabled triangulation, thereby enhancing the validity and depth of the findings.

Participants

The participants were 35 second-year English major students from a university in Thailand. All had completed both Basic Reading and Critical Reading courses prior to the study. This selection ensured that students shared a comparable foundation in reading strategies, allowing the effects of AI-supported tasks on higher-order reading skills to be examined more directly, without interference from concurrent formal instruction. Participation was voluntary. Ethical protocols were strictly followed, including informed consent, the right to withdraw at any point without penalty, and assurance of confidentiality. The participants ranged in age from 19 to 21, with English proficiency from intermediate to upper-intermediate levels. All students demonstrated adequate digital literacy to engage with AI tools such as ChatGPT, although none had prior experience using AI for academic reading purposes.

Research Instruments

To assess students' critical reading development, a pre-test and post-test were administered. Both tests measured five targeted sub-skills: identifying main ideas, evaluating arguments, recognizing bias and tone, generating counterarguments, and synthesizing information. The same reading passage was used in both assessments to maintain consistency in content and difficulty level. The test items were reviewed by two experts in EFL reading instruction to ensure content validity. While the use of identical material facilitated comparability, it also introduced the possibility of memory or practice effects. This limitation was acknowledged and accepted, given the short study duration and the primary focus on relative skill development.

Students also completed five AI-integrated critical reading tasks over a five-week period. Each task required reading a short passage, interacting with ChatGPT, and composing a critical written response. Student work was evaluated using an analytic rubric that measured clarity, depth of analysis, and

critical engagement. Two independent raters scored the responses, and inter-rater reliability was established through calibration sessions prior to scoring. The resulting correlation coefficient ($r = 0.40$) indicates moderate agreement.

To explore students' inquiry behaviors during AI interactions, screenshots of their conversations with ChatGPT were collected. These screenshots served as qualitative data and were analyzed using Braun and Clarke's (2006) thematic analysis framework to identify patterns related to questioning strategies, perspective seeking, and reflection. Since no predefined coding scheme was used, themes were developed inductively to capture authentic student behavior.

After the intervention, a structured questionnaire was administered to gather students' perceptions of AI-supported reading. The questionnaire included twenty Likert-scale items covering perceived usefulness, trust in AI outputs, support for critical thinking, and awareness of AI limitations. Four open-ended questions were also included. The questionnaire was reviewed by two experts to ensure face and content validity.

Finally, semi-structured interviews were conducted with a purposively selected subset of participants to obtain deeper insights into their engagement, strategies, and attitudes. Interviews were audio recorded, transcribed verbatim, and analyzed thematically to complement and contextualize the quantitative findings.

Data Collection and Data Analysis

This study adopted a mixed-methods sequential explanatory design. Data were collected over an eight-week period following a structured instructional sequence. In the first week, participants attended an orientation session that introduced the study objectives, the five targeted critical reading sub-skills, and the use of ChatGPT. A standardized pre-test was then administered to assess students' baseline performance.

From the second to the sixth week, participants completed one AI-integrated reading task each week. Each task required reading a passage, engaging with ChatGPT, composing a critical written response, and capturing a screenshot of the interaction. These tasks were designed to support the development of skills in identifying main ideas, evaluating arguments, recognizing bias and tone, generating counterarguments, and synthesizing information.

In the seventh week, students completed a post-test and a structured questionnaire that collected data on their perceptions and experiences with AI-assisted reading. In the final week, a purposively selected subset of participants took part in semi-structured interviews to provide qualitative insights that helped explain and expand on the quantitative findings.

Table 1

Summary of Data Collection Procedures

Week	Activity	Purpose
1	Orientation session and pre-test	Introduce a study framework and assess baseline critical reading skills
2-6	Weekly AI-integrated critical reading tasks (one task per week)	Develop critical reading sub-skills through AI-supported inquiry
7	Post-test and perception questionnaire	Assess skill development and gather student perceptions
8	Semi-structured interviews	Explore deeper reflections and experiences

Quantitative data, including pre- and post-test scores, task performance, and Likert-scale responses, were analyzed using descriptive statistics and paired-samples t-tests with a significance level of 0.05.

Qualitative data from ChatGPT screenshots, open-ended responses, and interview transcripts were analyzed using thematic analysis based on Braun and Clarke's (2006) framework. This method was selected for its flexibility, transparency, and capacity to capture patterns of meaning across diverse data types without requiring a predetermined theoretical framework. It was particularly suited to this study's aim of identifying recurring inquiry behaviors, reflections, and critical engagement strategies emerging from authentic student interaction.

Results

This section presents the findings according to the two research questions guiding the study.

To what extent do AI tools support the development of students' critical reading skills?

Pre-Test and Post-Test Results

Students' critical reading performance was measured through a pre-test and post-test assessing five sub-skills: identifying main ideas, evaluating arguments, recognizing bias and tone, generating counterarguments, and synthesizing ideas.

Table 2 presents the mean scores and standard deviations for each skill before and after the intervention.

Table 2

Mean ($\underline{x}$) and Standard Deviation (S.D.) of Pre- and Post-Test Scores

Critical Reading Skill	Pre-test ($\underline{x}$)	S.D.	Post-test ($\underline{x}$)	S.D.	Gain	p-value
Identifying Main Ideas	7.9	0.30	8.9	0.21	1.0	.014
Evaluating Arguments	7.7	0.30	8.4	0.29	0.7	.266
Recognizing Bias and Tone	5.6	0.35	7.3	0.32	1.7	.009
Generating Counterarguments	7.0	0.30	8.1	0.24	1.1	.026
Synthesizing Ideas	6.0	0.35	7.4	0.30	1.4	.051

A paired-samples t-test was conducted to compare students' critical reading performance before and after the intervention. Statistically significant improvements were found in three sub-skills: Identifying Main Ideas (p = .014, gain = +1.0), Recognizing Bias and Tone (p = .009, gain = +1.7), and Generating Counterarguments (p = .026, gain = +1.1). The differences in Synthesizing Ideas (p = .051, gain = +1.4) and Evaluating Arguments (p = .266, gain = +0.7) were not statistically significant. This may be due to a ceiling effect, as students began with high pre-test scores, and because evaluating arguments is a complex skill requiring more time and practice to improve significantly.

Performance Across AI-Integrated Tasks

In addition to the pre-test and post-test comparisons, student performance across five AI-integrated critical reading tasks was analyzed to trace skill development throughout the intervention. Each task holistically targeted all five critical reading sub-skills, and student responses were scored using a five-point analytic rubric assessing clarity, depth, and evidence of critical engagement. Two experienced raters evaluated the responses, achieving practical alignment despite a moderate statistical correlation (r = 0.40). This moderate level of inter-rater reliability may reflect the inherent complexity and subjectivity involved in assessing higher-order skills such as evaluating arguments and recognizing bias. To ensure consistency, raters participated in calibration sessions and resolved scoring differences through discussion. As summarized in Table 3, students demonstrated consistent improvement across all skill domains.

Table 3

Average Scores by Skill Across Tasks 1–5

Skill	Task 1	Task 2	Task 3	Task 4	Task 5
Identifying Main Ideas	3.41	3.52	3.57	3.61	3.70
Evaluating Arguments	2.74	2.96	3.17	3.22	3.43
Recognizing Bias and Tone	2.29	2.78	3.00	3.22	3.26
Generating Counterarguments	2.39	2.78	2.83	3.00	3.35
Synthesizing Ideas	2.64	2.74	3.00	3.30	3.44

The data reveal steady growth across all five skill areas. Identifying Main Ideas showed consistently high scores from the outset, reflecting relative strength in surface-level comprehension. In contrast, Recognizing Bias and Tone and Generating Counterarguments exhibited the most substantial gains, rising from mean scores of 2.29 and 2.39 in Task 1 to 3.26 and 3.35 in Task 5, respectively. This indicates a significant strengthening of students' abilities to detect subtle biases, critique perspectives, and construct alternative viewpoints.

The progressive improvement across tasks underscores the value of repeated, scaffolded practice with AI-supported inquiry. Students moved beyond simple comprehension toward higher-level analysis and critique, as evidenced by increasingly sophisticated written responses over time.

Overall, the task performance data align with and reinforce the pre-post test results, demonstrating that structured AI integration can foster meaningful and sustainable growth in critical reading skills among EFL learners.

Screenshot Interaction Analysis

To gain more details, this study incorporated screenshots of students' interactions with ChatGPT to examine their critical engagement and inquiry behaviors during AI-integrated reading tasks. These screenshots, submitted alongside each of the five tasks, offered rich qualitative data that revealed how students formulated questions, responded to AI outputs, and evolved in their use of AI for critical thinking support.

Using Braun and Clarke's (2006) framework, thematic analysis was conducted to identify recurring interaction patterns. Seven prominent types of inquiry emerged, each corresponding to specific critical reading sub-skills. These included clarification-seeking, strategic prompting, evaluative questioning, and critical reflection. Table 4 summarizes the interaction types, aligned sub-skills, observed behaviors, and representative student quotes.

Table 4

Patterns of Inquiry Observed in ChatGPT Interactions

Interaction Type	Critical Reading Sub-skill(s)	Observed Behavior	Example
Asking about tone	Recognizing Tone and Bias	Clarification-seeking	"What is the tone of the article?"
Exploring counterarguments	Generating Counterarguments, Synthesizing Ideas	Perspective-taking, strategic prompting	"Can you provide an opposing viewpoint?"
Questioning bias	Evaluating Arguments, Recognizing Bias	Challenging, clarification-seeking	"Do you think this article is fair?"
Evaluating claims	Evaluating Arguments	Challenging	"Is this a strong argument?"
Rejecting AI bias	Recognizing Bias, Critical Use of AI	Strategic prompting	"That seems one-sided. Can you analyze it more objectively?"
Simplifying information	Managing and Clarifying	Clarification-seeking	"Can you explain this in simpler terms?"
Meta-reflection	Identifying Main Ideas, Meta-cognition	Strategic prompting	"What's the main idea I should focus on?"

Early tasks were dominated by clarification-seeking and basic prompting behaviors. Many students asked ChatGPT to define terms, explain tone, or summarize content, indicating a tendency to use the tool as a comprehension aid. This reflects the early stages of digital tool adoption, where interaction is primarily functional and surface-level.

By Tasks 4 and 5, however, a notable shift occurred. A growing number of students demonstrated more sophisticated inquiry behaviors, including challenging AI-generated interpretations, requesting alternative perspectives, and critically examining the objectivity or reasoning within AI responses. For instance, in Task 4, one student responded to ChatGPT's summary with:

> "This is too neutral. Can you show me how a critic would respond instead?"

This statement reflects an awareness of rhetorical positioning and a desire to explore divergent viewpoints. Similarly, during Task 5, another student wrote:

> "I want to write a response that shows both sides. Help me to challenge the author's view."

This move from seeking clarification to constructing arguments indicates the application of higher-order critical reading skills, particularly in generating counterarguments and synthesizing ideas.

Some students also began to interrogate the nature and reliability of AI-generated content itself. One student, for example, questioned the tone of ChatGPT's response, asking:

> "Are you being too polite? Can you analyze this more critically?"

Such moments suggest an emerging awareness of bias, tone, and the limitations of AI-generated discourse. These behaviors are indicative of both critical literacy and digital literacy development which are two interconnected goals of this study.

In sum, the screenshot data provide evidence that AI, when used interactively, can support more than basic comprehension. While most students initially approached ChatGPT for functional support, many progressed toward using it as a scaffold for critical inquiry. This behavioral direction aligns with quantitative gains observed in sub-skills such as Recognizing Bias, Generating Counterarguments, and Synthesizing Ideas. However, it is also possible that some critical behaviors reflected students' prior skepticism toward AI rather than being solely outcomes of the intervention. Such pre-existing attitudes could have influenced how learners interacted with AI tools and how critically they evaluated the information provided. These findings therefore support the argument that dialogic engagement with AI can play a meaningful role in fostering deeper reading practices, while also suggesting the need for careful interpretation regarding its specific impact.

What are students' perceptions and attitudes toward using AI tools in critical reading tasks?

Questionnaire Results

The Likert-scale questionnaire assessed students' perceptions across six dimensions: perceived usefulness, critical thinking support, engagement and motivation, trust in AI, critical awareness and integration Attitudes.

Table 5

Summarizes the Mean Scores Across Categories

Statement	Mean Score	Category	Mean by Category
How often do you use AI in your study?	4.54	Frequency of Use	4.54
Using AI tools helped me better understand the main ideas of the reading passages.	4.66	Perceived Usefulness	4.54
AI tools helped me evaluate arguments and recognize biases in texts.	4.63		
AI tools supported me in identifying emotional tone and bias.	4.29		
Using AI tools made critical reading tasks more manageable.	4.74		
AI tools helped me develop better strategies for analyzing texts.	4.40		
AI tools encouraged me to think critically about the reading materials.	4.69	Critical Thinking Support	4.58
Interacting with AI made me analyze information more carefully.	4.46		
AI tools motivated me to engage more deeply with reading tasks.	4.57	Engagement & Motivation	4.58
I felt more confident answering comprehension questions after using AI.	4.60		
AI-supported reading tasks increased my motivation to improve critical reading skills.	4.57		
I trusted the accuracy of the information provided by AI.	3.71	Trust in AI	4.11
I trusted the opinions or perspectives suggested by AI.	4.51		
I was aware that AI-generated responses might not always be accurate.	4.17	Critical Awareness	4.05
I critically evaluated the responses I received from AI tools.	3.86		
I checked other sources to verify the information given by AI.	3.91		
I considered potential biases in AI's responses during tasks.	3.71		
I was cautious when accepting AI-generated suggestions without further questioning.	4.60		
I feel that AI tools can be effectively integrated into English reading classes.	4.23	Integration Attitudes	4.23
I was satisfied with the use of AI tools to support my critical reading development.	3.69	Overall Satisfaction	3.69

Quantitative results indicated that students held generally positive attitudes toward the use of AI tools in supporting critical reading

development. Most questionnaire items received mean scores above 4.00, with the highest ratings found in the Perceived Usefulness category. Students strongly agreed that AI tools helped them understand main ideas ($\underline{x}$ = 4.66), evaluate arguments and identify bias ($\underline{x}$ = 4.63), manage reading tasks more easily (M = 4.74), and develop better strategies for text analysis ($\underline{x}$ = 4.40).

In the Critical Thinking Support category, students reported that AI encouraged deeper engagement with texts ($\underline{x}$ = 4.69) and more careful analysis of information ($\underline{x}$ = 4.46), suggesting that AI integration promoted higher-order cognitive skills rather than surface-level assistance.

AI tools were also perceived as motivating. Students agreed that AI enhanced their engagement with reading ($\underline{x}$ = 4.57), improved their confidence ($\underline{x}$ = 4.60), and increased motivation to develop critical reading abilities ($\underline{x}$ = 4.57).

However, trust in AI responses was more moderate. While students expressed some trust in AI-suggested perspectives ($\underline{x}$ = 4.51), they were more cautious about the accuracy of information ($\underline{x}$ = 3.71), reflecting an awareness of AI's limitations.

This critical opinion was supported by scores in the Critical Awareness category. Students acknowledged the need to verify AI-generated information ($\underline{x}$ = 4.17), evaluate AI responses critically ($\underline{x}$ = 3.86), consult other sources ($\underline{x}$ = 3.91), and avoid unquestioned acceptance of AI suggestions ($\underline{x}$ = 4.60).

Among the six measured dimensions, Critical Thinking Support ($\underline{x}$ = 4.58), Engagement and Motivation ($\underline{x}$ = 4.58), and Perceived Usefulness ($\underline{x}$ = 4.54) received the highest overall ratings. Trust in AI ($\underline{x}$ = 4.11) and Critical Awareness ($\underline{x}$ = 4.05) were slightly lower but still positive.

Overall, students viewed AI tools as effective aids in critical reading. They appreciated AI's support in comprehension, analysis, and motivation, while maintaining healthy skepticism and demonstrating growing digital literacy alongside critical literacy.

Open-ended Responses Analysis

Students' responses to open-ended questionnaire items were thematically analyzed to complement the quantitative findings. Five key themes emerged, reflecting both the pedagogical value and challenges of AI-supported reading.

Perceived Benefits of AI: Many students reported that AI helped simplify complex texts, highlight key points such as tone and bias, and

broaden their perspectives. AI's summarizing and explanatory features enabled deeper engagement, especially with difficult content.

> "AI helped me understand main ideas more quickly and detect tones that I didn't notice before."

> "It provides new viewpoints that I might not have thought about."

Students also noted that AI responses encouraged them to think beyond initial interpretations and engage in more reflective reading.

Challenges in AI Interaction: Despite the benefits, several challenges were noted. Students struggled with overly general or irrelevant answers, limitations in free versions (e.g., response caps), and difficulties in crafting effective prompts.

> "Sometimes AI gives a long answer that doesn't exactly fit the question."

> "If my prompt was not clear enough, the AI just gave me a general explanation."

These issues highlight the role of prompting skill in maximizing the effectiveness of AI support.

Critical Evaluation of AI Outputs: A notable number of students reported verifying AI responses by cross-checking with the original text, comparing with personal interpretations, or consulting external sources.

> "After receiving an AI answer, I always reread the article to double-check if the answer made sense."

> "I compared AI's summary with my understanding and found that AI missed some important points."

These practices indicate a developing sense of critical digital literacy and autonomous inquiry.

Suggestions for Improvement: Students proposed several enhancements to improve AI-assisted learning. These included adjustable response formats (e.g., summaries or bullet points), simplified language aligned with proficiency level, and visual outputs such as mind maps.

> "It would be great if AI could give us choices — a simple answer, a detailed one, or a mind map."

> "Sometimes the language was too academic."

These suggestions reflect a thoughtful awareness of how AI design could better support learning needs.

Emphasis on Critical Thinking: Students consistently emphasized that AI should complement, not replace, human thinking. They valued AI for expanding ideas and verifying interpretations but maintained that personal analysis remained essential.

> "AI is useful, but we must think critically and not just believe everything it says."

> "First, I read and interpret the article myself, and only then do I ask AI to double-check or offer other perspectives."

This theme aligns with broader educational goals of fostering metacognition, autonomy, and ethical technology use.

Interview Results

Semi-structured interviews with seven randomly selected participants reinforced the survey findings. Interviewees consistently described AI as a helpful but imperfect support tool. They appreciated AI's assistance in enhancing critical reading but emphasized that true comprehension must stem from personal reasoning.

Participants reported strategies such as double-checking AI answers, prompting AI more precisely, and combining AI assistance with independent analysis. Challenges mentioned included receiving answers that were too detailed or insufficiently specific.

Table 6

Thematic Summary of Students' Perceptions

Theme	Description	Example Quotes
AI as a Support Tool	AI facilitated deeper analysis but did not replace human thinking.	"I use AI to support, not to replace my analysis."
Critical Caution	Students verified AI outputs critically and cross-checked with sources.	"I double-checked with the article before accepting AI answers."
Prompting Difficulties	Students highlighted the need to craft effective prompts for quality outputs.	"Sometimes the first AI answer missed the point, so I had to ask again."
Suggestions for Improvement	Students requested clearer, customizable AI outputs.	"It would be helpful if AI offered mind mapping formats."

Thematic analysis of the interview revealed four key themes that reflect students' perceptions of AI as a tool in supporting their critical reading practices: AI as a Support Tool, Critical Caution, Prompting Difficulties, and Suggestions for Improvement.

AI as a Support Tool: A recurring theme among interviewees was that AI served as a cognitive assistant, enhancing understanding and analysis but not replacing personal reasoning. Many participants described using AI to clarify complex passages or check their understanding of a text. For example, one student stated, "I use AI to support, not to replace my analysis," while another explained, "When I didn't understand a paragraph, I asked AI to simplify it, then I rewrote it in my own words." These comments reflect how students leveraged AI to scaffold their comprehension while still maintaining intellectual ownership over their interpretation.

Critical Caution: Students consistently demonstrated a high level of critical caution in dealing with AI-generated responses. Several participants described a process of verifying information before accepting it. For example, one noted, "I double-checked with the article before accepting AI answers," while another shared, "I always read the original text again to make sure AI didn't change the meaning." Others described cross-referencing with online sources or using AI-generated summaries as only a starting point. This cautious attitude indicates that students engaged with AI reflectively, using it to support but not dictate their conclusions.

Prompting Difficulties: Many students reported difficulties in crafting effective prompts. A commonly mentioned issue was that initial AI responses were either too vague or overly detailed. For example, one student shared, "Sometimes the first AI answer missed the point, so I had to ask again," while another explained, "I had to change the question three times until I got a useful answer." Others found that asking overly broad questions led to generic or unhelpful responses. These responses suggest that prompt design is not intuitive and that students benefit from guidance and practice in communicating clearly with AI tools.

Suggestions for Improvement: Several students offered suggestions for how AI tools could better support their learning. A common request was for more customizable output formats. For instance, one student suggested, "It would be helpful if AI offered mind mapping formats," while another said, "I wish it could summarize into bullet points with main ideas and supporting details." Some students mentioned wanting visual aids or color-coded highlights to track arguments and evidence. These suggestions show that students were thinking critically not only about the content of AI responses but also about how information is best structured to aid learning.

Taken together, the interview findings complement the survey results, confirming students' overall positive attitudes toward AI in critical reading. However, interviews also revealed deeper insights—such as prompting strategies, habits of verification, and preferred output formats—that were not captured through Likert-scale responses. These qualitative findings emphasize the importance of developing students' prompt literacy, critical evaluation skills, and user-centered digital strategies to maximize the educational benefits of AI in EFL contexts.

Discussion and Implications

This study explores how EFL students engage with AI in critical reading. It confirms some prior findings while offering new insights into AI as a support for inquiry, verification, and deeper thinking. The statistically significant improvements in recognizing bias and tone, generating counterarguments, and identifying main ideas provide evidence that AI tools can support both basic and advanced reading sub-skills. These results align with the view of Kasirzadeh and Gabriel (2022) and Ahmadi (2018), who noted that AI, when thoughtfully implemented, can scaffold critical thinking processes. The progressive improvement observed across tasks also echoes the findings of Kaledio et al. (2024), who highlighted the role of sustained AI interaction in building learner competence over time.

Additionally, while students in this study initially performed well in identifying main ideas, more cognitively demanding skills such as argument evaluation and bias recognition required repeated practice and guided AI-supported inquiry to show measurable gains. This finding is consistent with Le et al. (2024), who found that even proficient EFL students in Vietnam struggled with evaluating arguments and recognizing bias despite employing various critical reading strategies, highlighting the need for more explicit instruction. This progression from surface-level questioning to higher-order critical inquiry reflects the core idea of cognitive apprenticeship. As Yu (2015) and Liu (2019) suggested, learners benefit most when they are gradually exposed to complex thinking tasks, supported by structured guidance and repeated practice. The use of AI in this study served as a form of digital scaffolding that allowed students to explore more sophisticated reasoning over time. Furthermore, these results align with findings by Zhang et al. (2025), who reported that EFL students interacting with AI chatbots developed higher levels of critical thinking and intrinsic motivation, not only in reading but also in argumentative writing contexts. Such evidence suggests that AI tools may play a similar scaffolding role across diverse language skills, supporting both cognitive and affective learning outcomes.

Students' high ratings of AI's support for critical thinking and motivation are consistent with previous findings by Walter (2024) and van den Berg and du Plessis (2023), who observed that AI tools can stimulate learner engagement and intellectual curiosity when integrated into well-designed tasks. However, this study also reveals something not often emphasized in earlier work: students did not engage with AI passively. Instead, they demonstrated active skepticism, verification behaviors, and self-monitoring. This cautious stance aligns with Walter (2024) and Huang and Wilson (2021), who stressed the need to equip learners with critical digital literacy in AI-mediated environments.

Importantly, the findings here partially contrast with studies such as Walter (2024) and Karimi and Khawaja (2023), which described AI as enhancing student confidence but also increasing overreliance and uncritical acceptance. In the present study, students frequently cross-checked AI responses with original texts, questioned tone or reasoning, and expressed doubts about accuracy. These behaviors suggest a more reflective and strategic approach to AI use than what has been reported in some prior studies.

Also, in this study, students frequently used ChatGPT not to receive final answers but to test ideas, challenge perspectives, and refine their thinking. These behaviors reflect the notion of AI as a dialogic partner, as proposed by Karimi and Khawaja (2023), in which the learner remains active, critical, and reflective during interaction.

A key implication of this study lies in how students positioned AI as a scaffold rather than a replacement for their own reasoning. As described by van den Berg and du Plessis (2023), AI can serve as a support for constructing knowledge, but not as an unquestioned source. Participants in this study used AI to refine interpretations, generate alternative viewpoints, and clarify complex ideas, but they consistently maintained independent judgment. These findings are also consistent with the arguments made by Kasirzadeh and Gabriel (2022), who suggested that AI's greatest value lies in its ability to amplify rather than replace human cognition.

The observed shift in student behavior from clarification-seeking to critical questioning over time highlights how instructional design, when paired with AI tools, can foster metacognitive growth. This aligns with findings from Wang and Fan (2025), who emphasize the importance of integrating appropriate educational frameworks when using ChatGPT to develop students' higher-order thinking skills. However, as noted by Fakour & Imani (2025) and Wang & Fan (2025), without explicit training in how to critically engage with AI, there remains a risk of shallow interaction or unreflective acceptance.

In this study, many students reported questioning ChatGPT's reasoning, requesting alternative perspectives, and verifying AI-generated information with original texts. These behaviors reflect not only critical literacy but also emerging digital agency. Similarly, Irgin (2023) showed that engaging EFL learners in digital storytelling fostered critical literacy and multi-perspective thinking, suggesting that digital tools can support deeper critical engagement even beyond AI contexts. Sun et al. (2024) also observed that learners exposed to prompt-based scaffolding developed deeper engagement strategies and showed more deliberate use of AI tools compared to unprompted learners. This suggests that carefully structured AI tasks may help learners move beyond passive reliance and cultivate intentional, reflective interaction.

To promote critical reading in EFL settings, educators should use AI not only to support comprehension but to guide students toward deeper analysis. Task design should include structured questioning, bias detection, and reflective comparison to foster higher-order thinking. Teachers are encouraged to provide scaffolding and repeated engagement, while also integrating digital literacy instruction that helps learners assess tone, reliability, and ethical issues in AI-generated content (Huang & Wilson, 2021; Kasirzadeh & Gabriel, 2022; Liu, 2019; Pangh, 2018; Walter, 2024; Yu, 2015).

An important implication arising from this study is the need for teacher training in AI prompt engineering and digital literacy. As AI tools become integrated into language classrooms, teachers must be equipped not only to use these technologies but also to guide students in crafting effective

prompts, interpreting AI-generated outputs critically, and addressing potential biases. Training in digital literacy will empower educators to foster students' critical awareness, ensuring that learners engage with AI tools as reflective and discerning users rather than passive recipients of information. Future professional development programs should incorporate practical strategies for integrating AI into pedagogical practice while maintaining a focus on ethical and critical literacy objectives.

Developers of educational AI tools should prioritize features that support inquiry over passive use. Customizable response formats, adaptive explanations for EFL learners, and embedded prompts for verification and critical reflection are recommended (Ahmadi, 2018; Kaledio et al., 2024; Kasirzadeh & Gabriel, 2022; O'Sullivan & Lin, 2010). Ethical design should include transparent communication about AI limitations and encourage users to confirm information through multiple sources.

Conclusion

This study investigated the integration of ChatGPT into critical reading instruction for EFL university students, focusing on the development of five analytical sub-skills: identifying main ideas, evaluating arguments, recognizing tone and bias, generating counterarguments, and synthesizing information. By adopting a mixed-methods approach, the research examined how AI-supported tasks could enhance both students' reading performance and their perceptions of AI as a learning tool.

The results revealed measurable improvement in several targeted sub-skills, particularly in recognizing bias and tone, generating counterarguments, and identifying main ideas. Students did not use AI merely to confirm surface comprehension but increasingly leveraged it to explore perspectives, test reasoning, and clarify complex ideas. Qualitative findings, including screenshots and reflections, further demonstrated progression from passive use to critical engagement.

Throughout the intervention, students displayed growing digital and critical literacy. They questioned the objectivity of AI-generated content, verified claims, and challenged tone or reasoning when necessary. These behaviors demonstrate the development of critical digital agency, which involves using AI tools with both strategic intent and thoughtful skepticism. This highlights the instructional benefit of incorporating AI into reading tasks that require reflection and critical thinking.

The study offers practical implications for educators, curriculum designers, and developers. When thoughtfully integrated, AI tools can serve as cognitive scaffolds that promote inquiry, reflection, and independent analysis. Paiz et al. (2025) emphasize the importance of technology literacy as

a "highly emergent and evolutionary form of literacy, one that is not acquired once and then taken off the proverbial shelf when needed but one that instead continues to grow and evolve as new technologies emerge. In a sense, tech literacy represents a dynamic skill set and critical habits of mind with a shared set of end goals" (p. 17), highlighting the importance for educators to develop the skills necessary to effectively integrate AI into language education.

Future work should explore longer-term implementation, include more diverse populations, and examine how different AI systems may support or hinder critical reading development. Ultimately, equipping learners not only to use AI but also to question and evaluate it will be key to preparing them for responsible participation in AI-enhanced academic and social contexts.

Limitations

While this study offers insights into how AI tools can support critical reading in EFL contexts, several limitations should be noted. The sample was small and drawn from a single university in Thailand, which may limit generalizability. The exclusive use of ChatGPT means the findings might not apply to other AI tools. The study spanned only eight weeks, so longer-term effects remain unknown. Using the same reading passages for pre- and post-tests may have introduced memory effects. Additionally, the one-group design raises the possibility that students' prior awareness of AI biases, rather than the intervention alone, influenced their critical thinking behaviors. Distinguishing the impact of the AI-supported intervention from students' existing knowledge about AI remains challenging, as prior awareness could have independently influenced critical thinking. Nevertheless, such engagement can also be seen as partly resulting from interactions with AI tools. Lastly, the inter-rater reliability was moderate ($r = 0.40$), likely due to the complexity of scoring higher-order reading skills and limited rater training. Future research should address these issues by including larger and more diverse samples, employing control groups, and exploring longer-term outcomes to strengthen the evidence base.

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