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EFL Teachers' Partnership with AI in Cultivating Global Competencies for Deep Learning

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Abstract

This study investigates how Indonesian EFL teachers partner with Artificial Intelligence (AI) to cultivate the six Global Competencies for Deep Learning (6Cs)—Critical Thinking, Creativity, Collaboration, Communication, Citizenship, and Character—in reading comprehension instruction. Although previous studies have examined AI integration in language education, less is known about how teachers interpret and incorporate AI into reading pedagogy to support the interconnected cognitive and socio-emotional dimensions of deep learning. Grounded in Fullan et al.'s deep learning framework, the study adopts a qualitative phenomenological design to explore five teachers lived experiences of integrating AI tools into their reading classes. Data were collected through semi-structured interviews and a focus group discussion (FGD), then analyzed thematically using the 6Cs as a guiding framework. The findings indicate that teachers reported using AI to design and facilitate activities involving inquiry-based comparison, genre transformation, collaborative summarization, dialogic discussion, global issue exploration, and ethical reflection. These practices demonstrate that AI can meaningfully support both cognitive and socio-emotional dimensions of deep learning when mediated by informed teacher guidance. The study highlights teachers' pedagogical mediation in connecting AI-supported reading activities with the six global competencies. It contributes empirical evidence to the growing field of AI-assisted language education by showing how AI can operationalize the 6Cs in authentic EFL contexts, aligning with Indonesia's national curriculum. It concludes that thoughtful and ethical AI integration can foster human–machine collaboration that empowers students to become critical, creative, and globally competent readers in an AI-driven world. However, the findings reflect teachers' experiences and perceptions rather than direct measurements of changes in students' competencies.

Keywords: AI-Assisted Language Learning; Deep Learning; EFL Reading Comprehension; Global Competencies (6Cs)

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Introduction

In Indonesia, deep learning has gained increasing policy attention as part of the national effort to improve the quality of teaching and learning. The Ministry of Primary and Secondary Education strengthened this direction through Ministerial Regulation No. 13 of 2025 and the subsequent Guidelines for the Implementation of Deep Learning (Decree No. 126/P/2025), which provide policy guidance for implementing deep learning across early childhood, primary, and secondary education. This policy direction emphasizes meaningful learning experiences that encourage students to understand concepts, think critically, reflect, and apply knowledge in real-life contexts. Beyond the policy framework, the concept of deep learning also offers a broader pedagogical perspective on developing learners' cognitive, social, and emotional capacities. In this study, Fullan et al.'s (2017) Global Competencies for Deep Learning, commonly known as the six competencies or 6Cs, Character, Citizenship, Collaboration, Communication, Creativity, and Critical Thinking, are used as the conceptual framework for examining teachers' AI-supported reading practices. These competencies provide an analytical lens for understanding how reading instruction may create opportunities for learners to engage with texts critically, creatively, collaboratively, and reflectively.

At the same time, the growing presence of artificial intelligence (AI) in education introduces new opportunities for teachers to align classroom practice with this reform. AI-powered tools such as ChatGPT, Claude, Gemini, and Perplexity are increasingly accessible and adaptable for instructional purposes. Teachers are beginning to use these tools to generate engaging texts, create personalized learning paths, scaffold comprehension activities, and provide real-time feedback (Owan et al., 2023; Pesovski et al., 2024; Tapalova & Zhiyenbayeva, 2022). When harnessed appropriately, AI can serve not only as a technical aid but also as a pedagogical partner that supports the creation of richer and more meaningful learning experiences (Slade et al., 2025; Tong & Lee, 2023; Tzirides et al., 2024). This convergence of national reform and technological innovation highlights the pedagogical challenge of enabling teachers to strategically employ AI in ways that advance deep learning in practice.

A useful framework for interpreting deep learning in practice is the concept of Global Competencies for Deep Learning, also referred to as the 6Cs (Fullan et al., 2018). These competencies capture both cognitive and affective dimensions of learning, stressing the importance of empathy, global awareness, teamwork, ethical values, and innovative thinking alongside academic achievement. As the core outcomes of deep learning, the 6Cs prepare students to be reflective thinkers, creative problem-solvers, and responsible global citizens (Choi, 2025; Sakamoto & Roger, 2023; Simões & Sangiamchit, 2023). Within English as a Foreign Language (EFL) education, particularly in the teaching of reading comprehension, these competencies are vital. Reading comprehension in Indonesian schools has traditionally been text-centered and exam-driven, often limiting opportunities for learners to analyze, question, or creatively reframe texts (Erdiana & Panjaitan, 2023; Sultan et al., 2023). By integrating AI, teachers can transform reading practices, encouraging students to evaluate multiple perspectives, reimagine texts in different genres, and connect reading tasks to broader social and cultural issues.

Despite the growing interest in AI-assisted language education, several aspects of its pedagogical integration remain insufficiently understood. Existing studies have highlighted the potential of AI to support language learning through personalized instruction, feedback, content generation, and learner engagement (Crompton et al., 2024; Hockly, 2023; Jiang, 2022). Research has also explored AI applications in specific

language-learning areas, including writing and vocabulary development (Agnes & Srinivasan, 2024; Kohnke et al., 2023). However, these strands of research provide limited insight into how EFL teachers make pedagogical decisions when integrating AI into reading instruction with the broader aim of supporting deep learning competencies. It remains unclear how teachers select AI-supported activities, connect those activities with specific competency dimensions, and mediate students' engagement with AI-generated information and reading materials. This issue is important because the availability of AI tools does not automatically ensure meaningful learning; their educational value also depends on teachers' instructional purposes, pedagogical judgment, and guidance.

Furthermore, although research has examined the development of 21st-century competencies and global citizenship through technology-supported learning (Celume & Maoulida, 2022; Choi, 2025; Herlinawati et al., 2024), the relationship between AI-supported reading pedagogy and the six interconnected competencies of the 6Cs framework remains underexplored. In the Indonesian EFL context, Williyan et al. (2024) have discussed teachers' creative use of AI in instructional content design, while other studies have addressed criticality and ethical considerations in AI-mediated education (Alhalangy & AbdAlgane, 2023; Mambu, 2023). Nevertheless, less attention has been given to teachers' experiences of translating AI affordances into reading activities associated with critical thinking, creativity, collaboration, communication, citizenship, and character. More specifically, little is known about how teachers interpret these competencies in their instructional contexts and how they negotiate the opportunities and limitations of AI when designing reading activities. Addressing this gap requires an inquiry into teachers' experiences and pedagogical reasoning rather than an assessment of AI effectiveness alone. Accordingly, this study explores how Indonesian EFL teachers use AI to support the six Global Competencies for Deep Learning (6Cs) in reading comprehension instruction. It focuses on teachers' reported practices, experiences, and interpretations of AI as a pedagogical resource in competency-oriented reading instruction. Based on this context, the present study addresses the following research question:

- How do Indonesian EFL teachers use AI to cultivate the Global Competencies for Deep Learning (6Cs) in teaching reading comprehension?

The significance of this study lies in its contribution to both policy and practice. At the national level, it provides timely insights into how teachers interpret and enact the deep learning approach through the integration of AI, thereby illustrating practical strategies that can support Indonesia’s educational reform. At the international level, it expands current scholarship on AI in language education by highlighting how teachers use AI not only to enhance comprehension but also to foster broader competencies that equip learners to thrive in a rapidly changing, interconnected world.

Literature Review

1. Global Competencies for Deep Learning in Reading Comprehension

The global competencies for deep learning, commonly known as the 6Cs, represent a comprehensive framework of skills and attributes that learners need to succeed in a rapidly changing and interconnected world. These competencies extend beyond academic success to prepare students as active global citizens capable of making meaningful contributions to society. The six competencies (Character, Citizenship, Collaboration, Communication, Creativity, and Critical Thinking) are designed to foster both cognitive and socio-emotional growth (Fullan et al., 2018). In the context of English as a Foreign Language (EFL), particularly in teaching reading comprehension, the 6Cs

provide a lens for designing learning experiences that not only develop textual understanding but also cultivate broader dispositions and skills that connect reading to life beyond the classroom.

In this study, the six competencies are not treated merely as broad educational ideals but as analytical dimensions through which teachers reported pedagogical practices are examined. Each competency is interpreted in relation to the instructional purposes and reading activities described by the participants. Critical Thinking refers to practices that encourage students to evaluate arguments, question information, identify bias, and examine the credibility of textual or AI-generated content. Creativity, in contrast, concerns opportunities for students to generate, transform, or represent ideas through activities such as rewriting texts, developing alternative endings, or producing new interpretations. Collaboration is reflected in teachers' accounts of activities that involve shared text analysis, group interpretation, and joint meaning-making, whereas Communication concerns opportunities for students to articulate and exchange their interpretations through oral or written expression. Citizenship is associated with reading activities that engage students with global issues, cultural diversity, and social responsibilities. Character, meanwhile, concerns ethical reflection, empathy, personal responsibility, and consideration of moral values arising from reading materials or AI-mediated interactions. These distinctions provide an operational basis for examining how teachers interpret and incorporate the six competencies into AI-supported reading instruction. Importantly, the competencies are used to categorize teachers' reported experiences and pedagogical practices rather than to establish measurable changes in students' competency development.

Each competency has important implications for reading instruction. Character can be fostered through texts that invite empathy, moral reflection, and resilience, such as narratives with ethical dilemmas or stories of perseverance (Bauer & Hermann, 2024; Purwaningsih, 2024). Citizenship emerges when students engage with global issues and diverse cultural perspectives through reading materials, allowing them to build intercultural understanding and civic awareness (Ferguson, 2024; Grad & van der Zande, 2022; Svarstad & Risager, 2024). Collaboration is promoted when learners work together to analyze, interpret, or critique texts, relying on teamwork and social-emotional intelligence to negotiate meaning (Thornhill-Miller et al., 2023). Communication is integral to reading comprehension, as students must articulate interpretations, discuss themes, and express textual insights effectively in oral or written form (Pandey et al., 2022; Saxena et al., 2022). Creativity comes into play when students are encouraged to reimagine or transform texts, through rewriting endings, shifting genres, or designing new representations of meaning (Desmet & Sternberg, 2024; Pantaleo, 2024). Finally, Critical Thinking is deeply embedded in reading comprehension, as learners must evaluate arguments, question perspectives, identify bias, and connect textual ideas to broader contexts (Paige et al., 2024). These competencies collectively shift reading from a passive act of decoding to an active, meaningful process of inquiry and reflection.

The 6Cs also stand out from traditional 21st-century skills frameworks in several ways. They are comprehensive, cutting across disciplines and integrating socio-emotional, cultural, and entrepreneurial dimensions of learning (Sakamoto & Roger, 2023; Simões & Sangiamchit, 2023). They are also precise, offering clear descriptions and developmental progressions that guide teachers in structuring reading activities to gradually deepen competencies. Importantly, they are measurable, as deep learning progressions provide tools to assess how students grow in their ability to engage critically, creatively, and collaboratively with texts over time (Argondizzo & Mansfield,

2022). This specificity allows teachers of reading comprehension to monitor students' progress not only in literal understanding but also in their ability to apply insights, challenge perspectives, and connect texts to authentic life contexts.

In practice, reading comprehension tasks aligned with the 6Cs are characterized by authenticity, rigor, and intrinsic motivation. Instead of focusing narrowly on vocabulary or literal recall, teachers can design reading activities that encourage students to engage with complex ideas, work with peers to construct interpretations, and use their voices to respond meaningfully to texts (Kuhn & Stahl, 2022; Troyer, 2023). Such practices also foster a sense of identity and agency, helping students see themselves not just as readers but as ethical and active participants in their communities. Moreover, the emphasis on well-being and equity ensures that all students, including those traditionally underserved, can access and benefit from deep learning through reading (Fullan et al., 2018). The key attributes of each competency in relation to reading comprehension are summarized in Graphic 1.

Graphic 1. Global Competencies for Deep Learning (6Cs) in Reading Comprehension



In summary, the 6Cs provide both the definition and the goal of deep learning in reading comprehension. They encourage a shift from surface-level recall to deeper engagement with texts, where students question, create, and connect ideas across cultural and global contexts (Ruano-Borbalan, 2023). By integrating the 6Cs into reading pedagogy, teachers can create meaningful and transformative literacy experiences that prepare students not only for academic success but also for active participation in the wider world.

2. Global Competencies for Deep Learning in Reading Comprehension

A growing body of research has examined the integration of 21st-century competencies and Artificial Intelligence (AI) in English language education. Studies on

the 4Cs (critical thinking, creativity, collaboration, and communication) show these competencies are central to modern pedagogy (Ahmed, 2022; Saimon et al., 2023; Thornhill-Miller et al., 2023). Research from Tanzania, Greece, and Japan demonstrates that project-based and inquiry-based learning, as well as international collaboration, effectively promote students' critical and creative engagement (Kousloglou et al., 2023; Sakamoto & Roger, 2023; Simões & Sangiamchit, 2023). However, most focus on general education rather than EFL reading comprehension. Recent work extends the 4Cs to the 6Cs of Deep Learning, adding citizenship and character to highlight ethical and civic dimensions (Fullan et al., 2018). While teachers acknowledge their importance, integration remains limited (Herlinawati et al., 2024). Other studies (Celume & Maoulida, 2022; Choi, 2025) show global citizenship and empathy can develop through online collaboration, but rarely within reading pedagogy.

At the same time, AI integration in ELT has gained attention for personalizing learning, offering instant feedback, and enhancing engagement (Jiang, 2022; Hockly, 2023; Crompton et al., 2024). Research shows ChatGPT can enhance writing complexity (Kohnke et al., 2023) and foster informal learning and critical reading (Thongsan & Anderson, 2025), though focus remains on technical outcomes rather than human competencies like empathy and ethics.

In Indonesia, Williyan et al. (2024) found teachers use AI creatively in content design, but not specifically to foster the 6Cs. Other studies (Mambu, 2023; Alhalangy & AbdAlgane, 2023) examined criticality and ethics, yet evidence on AI-mediated 6Cs in EFL reading remains scarce.

Addressing these gaps, this study explores Indonesian EFL teachers' lived experiences in using AI to promote the 6Cs in reading comprehension. It positions AI not merely as a technological tool but as a pedagogical partner that supports teachers in nurturing students' cognitive, social, and moral dimensions of deep learning.

Research Methods

1. Research Design and Participants

This study adopted a qualitative interpretive phenomenological orientation to explore how Indonesian EFL teachers experienced and made meaning of integrating artificial intelligence (AI) into reading comprehension instruction. Rather than evaluating the effectiveness of AI tools, the study focused on teachers' experiences, interpretations, and pedagogical reasoning regarding the use of AI to support the Global Competencies for Deep Learning (6Cs). A phenomenological orientation was considered appropriate because it allowed the study to examine how teachers understood the phenomenon of AI integration within their instructional contexts and how they interpreted its implications for competency-oriented reading pedagogy. Participants were purposively selected based on criteria ensuring relevance to the research focus, including substantial teaching experience, active use of AI tools in reading instruction, and familiarity with the deep learning framework, as detailed in Table 1.

Table 1. Participant Selection Criteria

Criterion	Status
Teaching Experience	Minimum of 3 years teaching English as a Foreign Language (EFL)
Educational Level Taught	Currently teaching at junior high school or senior high school
Experience with AI Tools	Active use of AI tools (e.g., ChatGPT, Claude, Gemini, Perplexity) in teaching reading comprehension

Familiarity with Deep Learning	Prior knowledge of or engagement with the Global Competencies for Deep Learning (6Cs) framework
Course Focus	Currently teaching reading comprehension as part of their EFL curriculum
Willingness to Participate	Voluntary participation with informed consent

Based on these criteria, a total of five Indonesian EFL teachers were recruited, representing diverse teaching contexts at the junior and senior high school levels. The sample size was determined in relation to the focused research aim and the specific characteristics required of participants. All participants had relevant teaching experience, were actively involved in using AI tools for reading comprehension instruction and were familiar with the 6Cs framework. This relatively specific participant group provided accounts directly relevant to the phenomenon under investigation. In addition, the use of in-depth semi-structured interviews and a subsequent focus group discussion enabled the collection of detailed accounts and opportunities for further clarification. The adequacy of the sample was therefore considered in terms of the relevance, depth, and richness of the information obtained rather than numerical representativeness. Their variation in teaching backgrounds provided a range of perspectives on how AI is appropriated in reading comprehension instruction to support the development of the 6Cs. To protect confidentiality, participants are referred to by codes such as T1, T2, T3, and so forth in the findings.

2. Methods of Data Collection and Analysis

Data were collected through two qualitative methods: semi-structured interviews and a focus group discussion (FGD). The semi-structured interviews encouraged participants to share detailed reflections on their experiences with AI integration in reading instruction. The interview guide focused on teachers' perceptions of AI, classroom practices, and how AI supports the development of the 6Cs. The flexible format allowed follow-up questions to explore emerging themes. Each 90-minute interview was conducted online or face-to-face, audio-recorded with consent, and transcribed verbatim. The main areas of inquiry are summarized in Table 2.

Table 2. Interview Protocol

Focus Area	Sample Questions
General Experience with AI	How have you used AI tools (e.g., ChatGPT, Claude, Gemini, Perplexity) in your teaching? What benefits or challenges have you experienced?
AI in Teaching Reading Comprehension	Can you share specific examples of how you have used AI to support reading comprehension activities in your classroom?
Critical Thinking	In what ways do you think AI helps students analyze, evaluate, or question texts?
Creativity	How have you used AI to encourage students to generate new ideas, reimagine texts, or engage in creative tasks while reading?
Collaboration	How do you integrate AI into group or collaborative reading activities?
Communication	How does AI support students in expressing their understanding of texts, whether orally or in writing?
Citizenship	Can you describe how AI helps students connect reading materials with cultural, social, or global issues?
Character	In what ways has AI been used to foster empathy, values, or ethical reflection in reading lessons?

In addition to the individual interviews, an FGD protocol was developed to guide the group discussion (Table 2). The FGD served to validate and elaborate on the themes that emerged from the interviews, allowing participants to exchange perspectives and refine their shared understanding of AI integration in reading comprehension. The guiding questions encouraged reflection, consensus-building, and deeper exploration of how AI supports the 6Cs in practice.

Table 3. Focus Group Discussion Protocol

Focus Area	Sample Prompts/Questions
Validation of Interview Findings	Do you agree with the key themes identified from the interviews about how AI supports the 6Cs? Are there any points that need clarification or adjustment?
Shared Classroom Experiences	Can you share additional examples or experiences that illustrate how AI assists in cultivating these competencies during reading lessons?
Pedagogical Reflections	How do you see AI changing your role as a teacher or your students' engagement with reading?
Challenges and Ethical Considerations	What challenges or ethical concerns have you encountered when integrating AI into reading activities? How do you address them?
Future Practices	Based on your experiences, what strategies would you recommend for effectively using AI to support deep learning in reading comprehension?

Data from both the interviews and the FGD were analyzed using Braun and Clarke's (2021) six-phase thematic analysis. A deductive analytical orientation was adopted, with the six Global Competencies for Deep Learning (6Cs) serving as the initial analytical framework. This approach was used to examine how teachers' reported experiences and pedagogical practices related to each competency. The phenomenological orientation informed the overall interpretive focus of the study by keeping attention on how participants experienced and made meaning of AI integration in their teaching contexts, while thematic analysis provided a systematic procedure for organizing and interpreting the interview and focus group data. The six competencies were treated as guiding analytical categories rather than predetermined findings. During coding, relevant segments of the transcripts were examined in relation to the 6Cs, while attention was also given to contextual meanings, overlapping categories, and accounts that did not fit neatly within the framework. This approach allowed the analysis to remain theoretically informed while retaining sensitivity to participants' experiences and perspectives.

A deductive approach was applied, using the six competencies (Character, Citizenship, Collaboration, Communication, Creativity, and Critical Thinking) as the analytical framework. The detailed procedures are summarized in Table 4.

Table 4. Steps of Thematic Analysis in This Study

Step	Application in This Study
Familiarization with the data	Reading and re-reading interview transcripts to immerse in teachers' experiences with AI.
Generating initial codes	Coding segments of text that reflected how AI was used in teaching reading comprehension.
Searching for themes	Grouping codes into broader categories aligned with the 6Cs framework.

Reviewing themes	Checking consistency of coded data within each competency and refining overlaps.
Defining and naming themes	Clarifying how each competency (e.g., Critical Thinking, Creativity) was reflected in practice.
Producing the report	Selecting representative excerpts and writing findings organized by the 6Cs.

As shown in the table, the analysis followed a systematic process beginning with careful familiarization with the transcripts, continuing through coding and theme generation, and concluding with the production of a report that highlights the teachers' experiences. The final themes were organized around the six global competencies, ensuring that the theoretical framework guided the interpretation while participants' voices remained central in illustrating each competency.

3. Trustworthiness

Several strategies were considered to strengthen the trustworthiness of the study. Credibility was addressed using two complementary data collection methods, namely semi-structured interviews and a focus group discussion, which provided opportunities to compare and elaborate participants' accounts. Dependability was supported by documenting the data collection and thematic analysis procedures. Confirmability was strengthened by grounding interpretations in participants' statements and presenting illustrative excerpts in the findings. Transferability was addressed through descriptions of the participants' professional backgrounds, teaching contexts, and experiences with AI-supported reading instruction, enabling readers to assess the relevance of the findings to comparable educational settings.

Results and Discussion

Result

This section presents the findings on how Indonesian EFL teachers integrate AI to cultivate the Global Competencies for Deep Learning (6Cs) in teaching reading comprehension. The results are organized thematically according to the six competencies, beginning with critical thinking and concluding with character. In cultivating critical thinking, the five teachers demonstrated varied yet complementary ways of positioning AI as a cognitive partner in reading instruction, as shown in Table 5.

Table 5. Teachers' Use of AI for Critical Thinking

Participants	Interview Excerpts
T1	I use Perplexity to summarize controversial articles. Students compare the original and AI versions to identify inaccuracies, bias, or missing details.
T2	I upload opinion articles to ChatGPT or Claude to highlight biased words. Students confirm or challenge the AI's findings and add their own, sharpening critical reading.
T3	Students prepare arguments from a text, while I use ChatGPT or Perplexity to generate extra evidence or counterarguments. They then fact-check and evaluate the material.
T4	Students create questions about a controversial text, then use ChatGPT or Claude to generate counterarguments. They practice inquiry and evaluate multiple perspectives.
T5	In problem-based reading, students analyze issues like water scarcity. I use ChatGPT to simulate expert interviews, helping them compare textual and AI-generated insights.

T1 used Perplexity-generated summaries of controversial articles to help students detect omissions and bias, thereby nurturing evaluative judgment and awareness of how

meaning can be distorted through simplification. T2 deepened this practice by employing ChatGPT and Claude to identify loaded language in opinion texts, prompting students to interrogate how linguistic choices shape perspectives and to develop sensitivity to rhetorical manipulation. T3 leveraged AI to generate supporting and opposing evidence for classroom debates, which students then scrutinized for accuracy and credibility, strengthening their argumentation and reasoning skills. Similarly, T4 combined student inquiry with AI-assisted counterarguments, guiding learners to examine diverse viewpoints and to refine their analytical stance through comparative evaluation. Meanwhile, T5 integrated AI into problem-based learning by simulating expert interviews on real-world issues, encouraging students to assess differing sources and synthesize insights into informed conclusions. These practices illustrate how AI was used not as a shortcut to answers but as a stimulus for inquiry, prompting students to question information, weigh evidence, and engage critically with both text and technology. Through these pedagogical strategies, teachers cultivated a deeper form of literacy in which reading became an act of reasoning and discernment aligned with the global competency of critical thinking.

Across the five participants, a common pattern emerged in the use of AI to support critical thinking: teachers encouraged students to examine, compare, and evaluate AI-generated information against the original reading texts. However, their approaches varied. Some teachers emphasized identifying inaccuracies and omissions, while others focused on examining arguments, counterarguments, and real-world problems. These differences suggest that teachers approached critical thinking through varied reading activities, although the extent to which students developed this competency was not directly measured in the present study.

Table 6. Teachers' Use of AI for Creativity

Participants	Interview Excerpts
T1	I use Claude to generate three alternative story endings. Students compare them with the original and create their own to enhance creativity and comprehension.
T2	With ChatGPT or Gemini, I have AI turn a passage into various genres, like a news report, fairy tale, or dialogue, then students make their own creative versions.
T3	Students rewrite parts of a story, supported by AI-generated vocabulary lists from ChatGPT or Claude to enrich language and expression.
T4	Students retell stories through posters, podcasts, or storyboards. I use AI to generate visuals or audio prompts that inspire creative representation.
T5	I gamify reading by asking students to design puzzles or quests from a text. ChatGPT provides sample riddles or clues, which students adapt creatively.

The teachers fostered creativity by using AI as both an inspirational tool and a scaffold that enabled students to reimagine and transform texts in varied and imaginative ways (Table 5). T1 used Claude to produce multiple alternative endings for a story, encouraging students to evaluate variations in meaning before crafting their own versions. This process stimulated both creative thinking and deeper comprehension of narrative structure. T2 expanded this idea by prompting ChatGPT and Gemini to recast a passage into different genres, such as a news report, fairy tale, or dialogue. Students analyzed how genre shifts altered tone and perspective, then composed their own

creative reinterpretations, demonstrating both flexibility and understanding. T3 integrated AI-generated vocabulary suggestions to enrich students' rewriting tasks, allowing them to maintain ownership of their ideas while expanding their linguistic resources and expressive range. Similarly, T4 supported multimodal literacy by having students retell stories through visual or audio media such as posters, podcasts, or storyboards, with AI providing prompts or visuals that sparked new forms of representation. T5 transformed reading into playful engagement by gamifying comprehension activities; students designed interactive reading quests or riddles inspired by AI-generated examples, merging creativity with analytical reading. With the help of these methods, students were able to go beyond literal comprehension and into imaginative interpretation and creativity, demonstrating how AI served as a creative partner. These assignments transformed reading into an innovative activity that allowed students to practice creativity, which is a global ability that includes uniqueness, experimentation, and personal voice.

Table 7. Teachers' Use of AI for Collaboration

Participants	Interview Excerpts
T1	Using Copilot, I generate summaries of text sections. Groups verify their parts and then combine them to rebuild the full story collaboratively.
T2	I use DeepSeek to create comprehension questions, some accurate, some flawed. Groups discuss, correct, and answer them together to build teamwork.
T3	Students co-write a summary, then compare it with an AI-generated version from ChatGPT or Perplexity to refine both their work and collaboration.
T4	For group projects, AI suggests outlines or subtopics, which students adapt and refine together, balancing AI guidance with shared ownership.
T5	I use online annotation tools where students comment collaboratively, supported by AI prompts or definitions that guide joint discussion.

The teachers deliberately employed AI to foster teamwork, shared inquiry, and group meaning-making in reading exercises in order to foster collaboration (Table 7). T1 used Copilot to generate summaries of different sections of a text, assigning each group a part to verify and refine before combining their work into a cohesive whole. This process required interdependence and coordination, emphasizing the social dimension of comprehension. T2 enhanced collaborative analysis by creating AI-generated comprehension questions, some intentionally inaccurate, so that groups had to discuss, correct, and justify their answers together. This encouraged dialogue, negotiation, and collective responsibility for understanding. T3 implemented a comparative approach, asking students to co-write a summary and then evaluate it against an AI-produced version from ChatGPT or Perplexity. Through this comparison, students refined both their summary and their teamwork skills, learning to value accuracy and consensus-building. Similarly, T4 engaged students in group projects based on thematic inquiry, using AI to suggest outlines or subtopics that teams adapted collaboratively, allowing AI to act as an organizational scaffold while students retained ownership of ideas. T5 promoted interaction through online annotation platforms where AI supplied prompts and definitions that guided joint interpretation and discussion. These methods demonstrate how AI can act as a collaborative mediator, assisting students in sharing

cognitive tasks, contributing to meaningful conversations, and co-constructing meaning. Teachers who carefully incorporated AI into their lessons made reading a collaborative activity that promoted interpersonal contact, accountability, and understanding, all of which are essential components of the global competency of collaboration.

Table 8. Teachers' Use of AI for Communication

Participants	Interview Excerpts
T1	I use ChatGPT, Claude, or Gemini to turn reading passages into dialogue scripts. Students perform and reflect on how well the dialogue conveys key ideas.
T2	Using ChatGPT, I generate two opposing interpretations of a text. Students choose a side, prepare evidence, and debate to practice persuasive communication.
T3	Students present main ideas orally, supported by AI prompts like "The author suggests that…" to help them speak fluently and focus on meaning.
T4	In a flipped classroom, I use ChatGPT to make comprehension quizzes uploaded to Wayground, ensuring students come prepared for smooth discussions.
T5	For debates, I use ChatGPT or Perplexity to create sample outlines or rebuttals that students adapt into their own words to strengthen argument clarity.

In enhancing communication, the teachers used AI to create interactive, expressive, and dialogic learning experiences that strengthened students' ability to convey understanding through spoken and written language (Table 7). T1 transformed reading passages into dialogue scripts using tools like ChatGPT, Claude, or Gemini, enabling students to perform and reflect on how effectively their dialogue captured the main ideas of the text. This approach encouraged active interpretation, paraphrasing, and oral fluency. T2 extended this practice by asking AI to generate two opposing interpretations of a text, prompting students to take a stance and engage in debates supported by textual evidence. This activity nurtured persuasive communication and critical expression. T3 scaffolded oral presentations with AI-generated prompts that guided students in articulating key ideas and examples, helping less confident speakers communicate more coherently while staying focused on textual meaning. Similarly, T4 used AI to design comprehension quizzes for a flipped classroom model, ensuring students arrived prepared for in-class discussions that were richer and more cohesive. T5 also integrated AI support for debate activities by generating outlines and rebuttals that students refined in their own words, improving structure and rhetorical clarity. These practices show how AI functioned as a communication enabler, providing scaffolds, models, and stimuli that supported students in expressing ideas clearly, confidently, and persuasively. Through AI-assisted interaction, reading activities evolved into communicative events where students practiced reasoning, articulation, and dialogue, core aspects of the global competency of communication.

Table 9. Teachers' Use of AI for Citizenship

Participants	Interview Excerpts
T1	Using Gemini, I ask how issues like climate change are reported in different countries. Students compare summaries to build comprehension and intercultural awareness.

T2	I ask Claude to rewrite a story from another cultural viewpoint, such as Japan or Indonesia, so students can see how context shapes meaning.
T3	Students discuss local social issues, then use ChatGPT or Perplexity for global data or statistics, broadening perspective and global awareness.
T4	In reading circles on global topics, I use ChatGPT or Perplexity to show how other countries report them, helping students connect local and global views.
T5	After reading about environmental issues, students propose local actions, then see global responses via ChatGPT or Perplexity to understand shared responsibility.

Through the use of AI, the educators promoted citizenship by assisting students in making the connection between reading comprehension and social responsibility, intercultural understanding, and global awareness (Table 9). T1 employed Gemini to explore how issues such as climate change are reported in different countries, allowing students to compare perspectives and recognize how cultural contexts influence representation and meaning. T2 deepened this approach by using Claude to rewrite a story from another cultural viewpoint, prompting students to reflect on how values, traditions, and social norms shape narrative interpretation. T3 guided students to discuss local relevance of social issues and then expanded the discussion with AI-generated background information and statistics from other countries using ChatGPT or Perplexity, encouraging global comparison and contextual awareness. Similarly, T4 designed reading circles around global topics like migration or climate change, blending local reflection with AI-provided international viewpoints so students could situate their understanding within a wider civic discourse. T5 moved from awareness to action by asking students to identify local initiatives related to environmental issues and then using AI to show parallel actions worldwide, helping learners see themselves as part of a global community. By extending students' horizons, connecting local experiences to global issues, and encouraging empathy and responsibility for others, these behaviors collectively show how AI aided in the development of citizenship. Through these exercises, reading developed become a tool for fostering civic involvement and intercultural sensitivity, which is strongly related to the global competency of citizenship.

Table 10. Teachers' Use of AI for Character

Participants	Interview Excerpts
T1	I use ChatGPT or Claude to create diary prompts from a character's perspective, like a refugee's fears and hopes, helping students build empathy and ethical awareness.
T2	Using ChatGPT or Claude, I generate ethical dilemmas from stories where characters face moral choices. Students discuss or journal to reflect on empathy and values.
T3	Students journal about a character's moral choice, then respond to AI prompts like "How would you act differently?" to deepen empathy and ethical reflection.
T4	I gamify ethical dilemmas using ChatGPT to create scenarios and outcomes. Students debate the consequences, reflecting on empathy and moral reasoning.
T5	After reading fables or short stories, students identify moral lessons and compare them with AI-generated ones to reflect more deeply on values.

In nurturing character, the teachers used AI to design reflective and ethically grounded reading activities that encouraged students to explore values, empathy, and moral reasoning (Table 10). T1 used ChatGPT and Claude to create diary-style prompts written from a character's perspective, such as a refugee expressing fears and hopes. By responding to these prompts, students practiced perspective-taking and developed compassion through imaginative engagement with human experiences. T2 extended this by asking AI to generate ethical dilemmas related to the stories being read, prompting students to discuss or journal about difficult moral choices. This activity allowed learners to connect textual understanding with personal values and empathy. T3 built upon reflective practice by using AI-generated follow-up prompts to deepen moral inquiry, helping students analyze characters' decisions while considering their own ethical stance. Similarly, T4 brought moral reflection into an interactive space by gamifying ethical dilemmas; with ChatGPT generating alternative scenarios and consequences, students debated choices collaboratively, enhancing their awareness of values and the implications of decision-making. T5 reinforced moral understanding by asking students to identify lessons from fables or short stories and then compare them with AI-generated interpretations, encouraging broader reflection on moral meaning and ethical diversity. These approaches show how AI can serve as a moral imagination partner, supporting teachers in cultivating empathy, ethical sensitivity, and integrity through reading. Through these activities, students not only understood texts more deeply but also learned to reflect on their own values and behaviors, embodying the global competency of character.

Discussion

This study explored how Indonesian EFL teachers partnered with Artificial Intelligence (AI) to cultivate Fullan et al.'s (2018) six global competencies for deep learning (Critical Thinking, Creativity, Collaboration, Communication, Citizenship, and Character) in reading comprehension instruction. The findings demonstrate that teachers did not treat AI as a replacement for human judgment but rather as a pedagogical partner that scaffolded inquiry, expression, and reflection (Slade et al., 2025; Tong & Lee, 2023; Tzirides et al., 2024). Through their intentional use of tools such as ChatGPT, Claude, Gemini, Perplexity, and Copilot, teachers extended the pedagogical boundaries of reading from simple text comprehension to higher levels of interpretation, production, and value formation.

The findings indicate that the participating teachers used AI as a pedagogical resource to design reading activities that encouraged students to engage critically with textual information. Rather than treating AI-generated responses as authoritative sources, teachers described activities in which students were invited to identify inaccuracies, examine omissions, compare interpretations, and evaluate arguments against the original reading texts. These practices suggest that AI can provide additional materials and opportunities for critical engagement with reading. However, the findings represent teachers reported instructional practices and pedagogical intentions; they do not establish whether students' critical-thinking competencies improved because of these activities.

Across the six competencies, teachers strategically employed AI to enhance both cognitive and socio-emotional dimensions of reading. In Critical Thinking, AI acted as a stimulus for analytical reasoning. Teachers used AI-generated summaries, counterarguments, and bias analyses to prompt students to question information credibility and engage in evaluative comparison, fostering deeper literacy awareness. This aligns with Paige et al. (2024) and Ruano-Borbalan (2023), who emphasize that

reading comprehension must move beyond literal recall to evaluative and interpretive reasoning. These practices also echo Thongsan and Anderson (2025), who found that AI-supported inquiry promotes students' capacity for critical reading and reflective reasoning in EFL contexts. In Creativity, AI served as a creative collaborator that inspired students to transform texts through rewriting, reimagining genres, multimodal production, and gamified reading tasks. These activities reflect Desmet and Sternberg's (2024) view of transformational creativity as the ability to reimagine meaning through novel representations. Similarly, Pantaleo (2024) shows that creative literacy tasks cultivate both comprehension and originality. The teachers in this study mirrored these insights by using AI to extend imagination while maintaining learners' authorship, demonstrating how creativity and comprehension can co-evolve.

In Collaboration, AI functioned as a mediating tool that encouraged group interaction and shared accountability. Teachers used AI to create tasks requiring collective verification, co-construction of meaning, and joint reflection, reinforcing teamwork and mutual learning. This finding corresponds with Thornhill-Miller et al. (2023), who identify collaboration as a cornerstone of 21st-century skills, and with Fullan et al. (2018), who emphasize that deep learning thrives when students engage in co-agency and shared problem-solving. The use of AI to mediate group dynamics also supports Simões & Sangiamchit, 2023), who highlight online collaboration as a pathway to developing global competencies in EFL contexts. In Communication, AI provided linguistic scaffolds, debate prompts, and dialogue frameworks that supported fluency, clarity, and argumentation, helping students articulate ideas with confidence. This result resonates with Pandey et al. (2022) and Saxena et al. (2022), who assert that communication in reading comprehension must involve both linguistic accuracy and expressive depth. Moreover, AI's role as a dialogic scaffold Kohnke et al. (2023), who reported that ChatGPT can effectively enhance language production and discourse quality in EFL learning.

In Citizenship, AI widened learners' perspectives beyond local contexts. Teachers used AI to provide cross-cultural viewpoints and global data, cultivating intercultural awareness and civic responsibility. This aligns with Choi (2025) and Svarstad and Risager (2024), who argue that global citizenship in language education can be advanced through intercultural comparison and reflection on global issues. Similarly, Ferguson (2024) and Grad and van der Zande (2022) show that reading about international topics promotes empathy and civic engagement. By integrating AI-generated global perspectives, teachers in this study fostered a sense of belonging to a shared global community, an outcome consistent with Fullan et al.'s (2018) competency of citizenship. Finally, in Character, AI-supported reflection through moral dilemmas, diary prompts, and empathy-building tasks, enabling students to explore values, ethical reasoning, and self-awareness. These findings echo Bauer and Hermann's (2024) notion of technomoral resilience, suggesting that moral and emotional growth can coexist with technological mediation. Similarly, Purwaningsih (2024) emphasizes that moral reasoning and metacognition are integral to character education. The teachers' use of AI to promote ethical reflection parallels the approach of Celume and Maoulida (2022), who showed that online learning environments can foster empathy and value-based reasoning when thoughtfully facilitated.

These findings reveal that AI facilitated not only cognitive engagement but also personal and social growth, aligning with Fullan et al.'s (2018) conceptualization of deep learning as a process that integrates knowledge construction with human qualities such as empathy, creativity, and citizenship. Teachers acted as mediators who balanced

technological affordances with pedagogical judgment, ensuring that AI use remained purposeful and human-centered. The results of this study resonate with and extend previous research on AI-assisted language learning and deep learning pedagogy. Prior studies have highlighted AI's potential to provide feedback, personalization, and adaptive learning experiences in language education (Jiang, 2022; Owan et al., 2023; Pesovski et al., 2024). However, much of that research focused primarily on linguistic accuracy and writing skills. The current study broadens the discussion by showing that AI can also promote holistic competencies, including ethical reflection, global awareness, and collaborative inquiry, through reading comprehension.

The findings support Kosmas et al. (2025), Tammets and Ley (2023), who argue that effective AI integration requires teachers to position AI as a co-participant in meaning-making rather than as a mere information provider. The Indonesian teachers in this study demonstrated this stance by using AI outputs as springboards for critical discussion, not as final answers. This aligns with Ifenthaler et al.'s (2024) concept of AI as a partner in learning, emphasizing the importance of human–AI complementarity in educational contexts. Furthermore, the study extends the work of Fullan et al. (2018) on deep learning competencies by providing empirical evidence of how the 6Cs framework can be operationalized through AI-enhanced pedagogy. While previous studies often addressed one or two competencies, this study demonstrates an integrated approach in which all six dimensions coexisted within AI-supported reading activities. The findings also echo Iacolino et al. (2023), who emphasize the role of teacher emotional intelligence and moral guidance in technology-mediated environments. Teachers in this study acted not as passive implementers of AI tools but as agents of ethical mediatiosn, ensuring that technological use contributed to students' moral and civic formation.

At the same time, this study offers new insights into the contextual realities of AI use in Indonesian EFL classrooms. It confirms Shi et al.'s (2024) observation that teachers' pedagogical beliefs determine the quality of AI integration. Participants' selective and reflective use of AI underscores the importance of teacher agency in shaping meaningful technology use. In line with Payadnya et al. (2025), who call for culturally responsive AI pedagogy, this research shows how Indonesian teachers adapted AI tools to align with local values and national education goals. The present findings contribute to a growing understanding that AI can enhance deep learning not only by facilitating knowledge access but by enriching human competencies. By leveraging AI as a pedagogical partner, teachers transformed reading instruction into a multidimensional learning experience that integrated reasoning, empathy, creativity, and global-mindedness. This evidence reinforces the argument that AI's educational value depends on human guidance and that deep learning flourishes when technology and pedagogy operate in synergy.

An important finding is that the teachers did not position AI merely as a tool for providing reading answers. Instead, they described using AI-generated information as material for questioning, comparison, and evaluation. This suggests that the pedagogical value of AI in reading comprehension may depend less on the technology itself than on how teachers structure students' engagement with its outputs. When students are encouraged to verify AI-generated information against the original text, AI becomes a resource for initiating critical examination rather than simply facilitating access to information. Nevertheless, this interpretation concerns the instructional opportunities reported by teachers and should not be interpreted as evidence of actual improvement in students' critical-thinking abilities.

Conclusion

This study examined how Indonesian EFL teachers partnered with Artificial Intelligence (AI) to cultivate the six Global Competencies for Deep Learning (6Cs), Critical Thinking, Creativity, Collaboration, Communication, Citizenship, and Character, in reading comprehension instruction. The findings reveal that teachers used AI as a pedagogical partner to stimulate analytical thinking, inspire creative expression, facilitate teamwork, enhance communication, broaden intercultural awareness, and nurture empathy and moral reflection, showing that AI can meaningfully support both cognitive and socio-emotional dimensions of learning when guided by informed teacher mediation. The study highlights how Indonesian EFL teachers reported integrating AI into reading comprehension instruction through activities intended to support the six Global Competencies for Deep Learning. The findings illustrate teachers' pedagogical efforts to create opportunities for critical thinking, creativity, collaboration, communication, citizenship, and character development. However, because the study draws on teachers' accounts rather than direct assessments of student learning, it cannot establish the extent to which these practices resulted in measurable improvements in students' competencies. This study contributes to existing literature by providing empirical evidence of how AI operationalizes the 6Cs framework in authentic EFL contexts, highlighting teachers' agency in aligning technology with Indonesia's curriculum. However, the research is limited by its small sample size, reliance on self-reported data, and focus on reading comprehension alone. Future studies should involve larger and more diverse participants, include classroom observations, and explore how AI fosters multiple language skills and learner autonomy over time. Overall, the study concludes that when integrated thoughtfully and ethically, AI can serve as a transformative partner in English language education, promoting deep learning and preparing students to become critical, creative, and globally competent learners in an AI-driven era.

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