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ARTIFICIAL INTELLIGENCE FOR METACOGNITIVE KNOWLEDGE ENHANCEMENT: EFL LEARNERS' PERCEPTIONS IN AN INDONESIAN UNIVERSITY

Benito Dira[1]*, Paulus Kuswandono[2]
[1,2]Sanata Dharma University
(odi.dira@gmail.com)

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ABSTRACT

This study examines the understanding of English as a Foreign Language by master's degree students about incorporating AI-driven applications into learning to boost their metacognitive knowledge at Driyarkara University (Pseudonym). The objectives explore the EFL learners' understanding of digital applications for enhancing metacognition and their experiences utilizing the tools for enhancing metacognitive knowledge. Purposive-comprehensive sampling was utilized in mixed-method research. Twelve students from the first semester of the English Education Master Program (EEMP) were the research participants for the survey. Close-ended and open-ended responses were analyzed to discover the various impacts of AI-powered tools, such as Google Gemini and Chat GPT, which would be classified in the coding process. The unstructured interview transcripts were deciphered to detect EFL learners' experiences using AI-powered tools to enhance metacognitive knowledge. The findings revealed that AI-powered tools could give learners insightful feedback, a personalized learning style, and more self-assessment opportunities. Enhancing metacognitive knowledge was needed to establish an effective way of thinking and construct critical thinking outcomes. This study also suggested that AI-powered tools provided EFL learners more flexibility to gather materials and search for further references.
Key Words: artificial intelligence tools, EFL, metacognition, metacognitive knowledge enhancement

ABSTRAK

Studi ini meneliti pemahaman Bahasa Inggris sebagai Bahasa Asing (EFL) oleh mahasiswa magister tentang penggabungan alat Kecerdasan Buatan (AI) atau aplikasi berbasis AI ke dalam pembelajaran untuk meningkatkan pengetahuan metakognitif mereka di Universitas Driyarkara (nama samaran), Indonesia. Penelitian ini mengeksplorasi subjek dengan menerapkan dua pertanyaan penelitian: (1) Apa yang dipahami pembelajar EFL tentang pemanfaatan aplikasi AI untuk meningkatkan pengetahuan metakognitif? (2) Bagaimana pengalaman pembelajar EFL dalam memanfaatkan AI terkait dengan peningkatan pengetahuan metakognitif? Pengambilan sampel yang komprehensif dan bertujuan digunakan. Sebanyak 12 mahasiswa Program Magister Pendidikan Bahasa Inggris (EEMP) dari semester pertama menjadi partisipan penelitian. Respons tertutup dan terbuka dianalisis untuk menemukan berbagai dampak aplikasi AI, layaknya Google Gemini dan ChatGPT, yang akan diklasifikasikan di dalam proses pengkodean. Transkripsi wawancara tak terstruktur diuraikan untuk mendeteksi pengalaman pembelajar EFL dalam menggunakan alat bertenaga AI untuk meningkatkan metakognisi. Temuan tersebut mengungkapkan bahwa aplikasi AI dapat memberi pembelajar umpan balik yang mendalam, gaya belajar yang dipersonalisasi, dan lebih banyak kesempatan penilaian diri. Peningkatan pengetahuan metakognitif diperlukan untuk membangun cara berpikir yang efektif dan membangun hasil berpikir kritis. Apikasi AI memberi lebih banyak fleksibilitas untuk mengumpulkan materi dan mencari referensi lebih lanjut bagi pembelajar bahasa Inggris sebagai bahasa kedua (EFL).
Kata Kunci: *alat kecerdasan buatan, Bahasa Inggris sebagai Sebuah bahasa asing, metakognisi, peningkatan pengetahuan metakognitif*

*Corresponding author
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INTRODUCTION

At present, humans' ostensibly groundbreaking improvements in artificial intelligence are reasons that carry fear and hope. Optimism arrives from intellectuality, the comprehensive procedure by which people overcome challenges (Chomsky et al., 2023). Meanwhile, individuals are concerned because they believe that the most well-known and contemporary varieties of artificial intelligence (AI), OpenAI's ChatGPT and Google's Gemini, for example, are automated learning programs. They collect massive volumes of data, hunt for correlations, and grow more proficient at producing statistically plausible results (Lee et al., 2022). These advanced programs have been deemed as the pioneers in the field of Artificial Intelligence.

Sumakul et al. (2022) explain that it has long been predicted that artificial brains will outperform the brains of humans not merely in terms of analyzing speed and memory capacity but also in terms of cognitive comprehension, creative inventiveness, and every other distinctly human attribute. Technological innovations have created new shortcomings and, at the same time, unexplored capacities for both learners and educators (Baidoo-Anu & Owusu Ansah, 2023; Montenegro-Rueda et al., 2023; Yu, 2024). As Yu and Guo (2023) clarified, generative artificial intelligence also demonstrates new concepts to educators, which can influence, create problems, or result in more hurdles with the existing teaching process.

This study has narrowed its topic to exploring the learning of English as a Foreign Language (EFL), specifically the metacognitive knowledge of master's degree students. Flavell (1979) elucidates metacognitive awareness as knowledge of an individual's cognitive mechanism and the capability to regulate or operate these cognitive functions. Research data shows that metacognitive awareness is required for higher levels of intelligence (Hertzog and Robinson, 2005). On the grounds of this, the researchers intended to investigate AI and metacognitive awareness. Several master's degree students will be examined as the subjects of this study as those individuals are categorized as learners in a higher-level education.

Apart from this, AI-powered tools or applications (apps) can provide comments about sentence structures in students' work without the assistance of a teacher. In the same vein, Stockwell (2016) argues that several applications are accessible for other EFL learning, including oral, writing, vocabulary mastery, and grammar. Studying becomes more fun, easier, and practical for learners as the programs can be accessed through any electronic device. Persson and Nouri (2018) described that it also facilitates genuine learning atmospheres and self-regulated learning environments.

Several recent studies have explored the usage of AI technologies within the world's ever-changing circumstances (Ward & Butler, 2019; Pokrivcakova, 2019; Nazaretky et al., 2022; Burkhard, 2022; Holmes & Tuomi, 2022; Bozkurt, 2023). Yet, not many studies have been done to examine the impact of AI-powered tools in the cognitive comprehension area. To clarify, across many instances of student-oriented research and development about AI in education by Holmes and Tuomi (2022), the primary purpose for incorporating AI has been that it may generate learning boosts in particular knowledge areas independent of human teachers. By contrast, the capacity to collaborate effectively with AI is key, and increasing academic skills, particularly metacognition, arises as an innovative kind of digital literacy. The difference between humans and AI might need to be investigated, with the complexities stemming from the distinctions between human creativity and algorithmic generation.

As Nazaretsky's research (2022) suggested, AI might be perceived as a versatile companion for learners and educators. Yet, artificial intelligence's giving similar detailed yet individualized comments to each student would be troubling for an English teacher. Another study initiated by Pokrivcakova (2019) claimed that English as a Foreign Language students also play a crucial part in ensuring the learning process is fruitful. The viewpoints from educators or teachers play a significant role in weighing up the integration of technology into education since it can impact the quality of learners' process of learning (Cope & Ward, 2002; Ding et al., 2019; Ertmer, 2005; Ottenbreit-Leftwich

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et al., 2018).

On the one hand, other studies have focused mainly on K-12 teachers' trust and attitudes against the utilization and implementation of AI-powered educational technology, as well as the underlying principle for efficient preparation of foreign language educators to incorporate AI-powered tools into their teaching (Bozkurt, 2023). However, although AI can also be useful for learners to enhance their writing capabilities (Burkhard, 2022), little research has been conducted on enhancing metacognitive knowledge with the rapid growth of AI-powered technologies. Ward and Butler (2019) argued that the potential value of metacognitive knowledge can enhance college freshmen's memory in a higher academic environment. Given that AI-powered technologies are growing significantly in academic settings, this factor evoked the researchers' interest in investigating metacognitive knowledge as a crucial cognitive comprehension of an authentic human's capability.

Perception, one of the three key elements in this study besides AI and metacognition, pertains to what the body can perceive, which refers to the knowledge that the body can distinguish from its surroundings (Aque, 2007). To clarify, being aware or conscious of a thing or phenomenon is generally referred to as perception. The abovementioned process constitutes a limited experience since it involves using the senses to understand facts and perceive information. EFL or English as a Foreign Language learners learn and study English, not as a primary or secondary language. Additionally, EFL learners used to depict non-native English speakers learning English in a country where English is not broadly spoken or utilized as a means of teaching. Therefore, EFL learners were the focus of the study as they could become the cornerstone to understanding the integration between AI-driven tools and metacognitive knowledge enhancement.

The effective and proper ways to utilize AI-driven applications in education remain uncharted territory to be examined (Luckin et al., 2016; Zawacki-Richter et al., 2019; Burkhard, 2022). Not to mention, for many years, scholars who studied computer science in education have investigated the usage of Artificial Intelligence to improve educational or learning activities. Following the COVID-19 outbreak's transition from offline to fully online learning, education researchers have prioritized creating several AI-powered tools in education, including artificially intelligent assistants for teaching educational content design, computerized evaluations and comments, and automated assessment systems (Dignum, 2018; Pantelimon et al., 2021; Zawacki-Richter et al., 2019). Artificial intelligence has been probed by multiple fields of study, including philosophy, anthropology, education, psychology, linguistics, and many more.

Based on one collection of explanations, artificial intelligence is explained as machines, computers, or computer systems that imitate brain functions traditionally attributed to the human mind, such as acquiring knowledge and resolving issues (Russell & Norvig, 2010; Stone et al., 2016; Campbell-Howes, 2019). Meanwhile, other scholars define artificial intelligence with different meanings. Baker et al. (2019) describe AI as machines that execute brain instructions, such as learning and problem-solving, that frequently coincide with human brains. According to Pokrivcarkova (2019), utilizing artificial intelligence aids in the development of deeper explanations of natural languages, contributes to improved processed language databases, and, as a consequence, enhances the understanding of the mental functions that take place in human minds while communicating, and so on.

Apart from that, AI-driven applications in education allow for more tailored, adaptable, and interactive teaching-learning activities. For teachers who teach foreign languages and learners, AI-powered applications facilitate various educational tools to simplify their jobs. AI in foreign language teaching and learning offers students quick and highly personalized guidance, a crucial building block for individualized learning, as it meets one of the key components of modern pedagogy (Baker et al., 2019). Although artificial intelligence is suitable for solving language and academic integrity issues, pragmatic and cognitive capabilities often require a helping hand of human thinking to deliver the final polish.

However, along with the latest trends in AI, generative AI, a derivation of artificial intelligence, has demonstrated enormous potential for altering sectors. Generative AI might possess the capacity to

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comprehend human language fully, one of the most intricate and advanced technological inventions ever developed, and can use human insight to uncover connections that may be imperceptible to humans (Bozkurt, 2023). Several examples of generative AI-driven applications are Google Gemini, ChatGPT, Gamma App, Claude AI, Decktopus, and many more. On the other hand, Marr (2023) explains that traditional AI, usually known as narrow or weak AI, prioritized intelligently completing a particular assignment. It implies that the machines are designed to respond to specific instructions. Some examples are voice-activated assistants like Siri or Alexa, Elicit.org, Plaito, Gradescope, etc. Yet, in this study, the researchers only picked Google Gemini and OpenAI's ChatGPT as the prime examples of AI-powered tools in this context due to their vast emerging influence in any field of expertise, including education.

Initially, the process of metacognitive knowledge is explained for the first time by Flavell (1979). It is a process in which various factors and aspects collaborate and interact with each other to influence the outcome of one's thinking process. Schraw (1998) claims that metacognitive awareness consists of two key elements. Those components are knowledge about cognition and cognition regulation. An individual's comprehension of person, task, and strategy factors is referred to as cognitive knowledge. The overall planning and monitoring of an individual's unique cognitive activity is called cognition regulation. Nonetheless, Kuhn (2000) argues that the fundamental principles constituting metacognitive awareness start to emerge within childhood.

Notwithstanding the fundamental principles, a comprehensive meta-analysis by Hertzog and Hultsch (2000) claims that if metacognitive awareness is established, it continues to be generally robust over development and into the elderly years. Meanwhile, according to Chick (2013), metacognition is simply thinking beyond one's thinking. It refers to the procedures used to plan, monitor, and assess one's comprehension and achievement. Metacognition entails being critical of one's cognitive processes and oneself as a learner and thinker (Meltcafe & Shimamura, 1994; Tourva et al., 2018). In addition, metacognitive knowledge and intelligence intertwine in an intricate way that remains unknown (Sharifzadeh & Sadighi, 2023). Critical thinking skills are one of the core elements in activating an individual's metacognitive knowledge. Ward and Butler (2019) assert that the capacity to think critically is defined by metacognitive knowledge and awareness functions, such as observing and comprehending how one's mind works.

Learning, creativity, and information production are frequently said to be the backbone of the post-industrial economy (Holmes & Tuomi, 2022; Molenaar, 2022). AI preserves a high potential to revitalize, redefine, and reconceptualize many departments in a country, including the education department. Likewise, Miao and Holmes (2021) assert that education administrators and teachers are deemed necessary to have an unambiguous view of the possibilities of AI in education and, ultimately, to integrate this cutting-edge technology into the learning practice. On the grounds of this, the study would focus on the collections of understanding from EFL learners about AI following metacognitive knowledge. This research also sought to probe how utilizing AI-powered tools may conduce effects to enhance EFL learners' metacognitive knowledge. In this regard, the researchers formulated two questions as the guiding principles: What do EFL learners understand about AI-powered tools utilization for enhancing metacognitive knowledge? (RQ1.) How are the experiences of EFL learners in utilizing AI-powered tools linked with the enhancement of metacognitive knowledge? (RQ2.) Based on the above research questions, the research objectives are, first, to investigate EFL learners' understanding of AI-powered applications for developing metacognitive knowledge and second, to understand how the experiences of EFL learners in utilizing AI tools are linked with enhancing metacognitive knowledge.

METHODS

Research design

In this study, the researchers applied a mixed method research (quantitative followed by qualitative analysis) by incorporating two techniques, which might prove more beneficial than applying only one way since it is more inclined to generate an in-depth understanding of the phenomenon being studied that cannot be completely analyzed using only qualitative or quantitative

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approaches (Creswell, 2003). The quantitative analysis in this study encompassed a 5-point Likert scale: disagree, agree, neutral, strongly agree, and strongly disagree. Meanwhile, the qualitative analysis in this research utilized a distinct paradigm of explanation and advocated for a different objective of investigation. As Ary et al. (2010, p. 443) indicate, qualitative research is concerned with the significance of context. Qualitative researchers are interested in how individuals perceive or interpret the meaning of their experiences. The goal of qualitative research is to comprehend the purpose. This study did not attempt to foresee what would occur in the future but rather to comprehend a unique and specific setting.

The research also supported the data-gathering technique by implementing a triangulation method (Polit & Beck, 2012). Patton (1999), as cited in Carter et al. (2014), suggests that in qualitative research, triangulation implies the integration of various methodologies or data collection techniques to establish a thorough knowledge of occurrences. For this current study, the researchers selected quantitative and qualitative analyses to synthesize the data findings and further reassert the research's credibility. As previously stated, the quantitative analysis derived from the close-ended questionnaire (See Table 2) was conducted to collect participants' understanding. In contrast to close-ended questions, the qualitative analysis rooted in the open-ended questionnaire was applied to scrutinize participants' understanding further. We also conducted an unstructured interview to delve into how EFL learners utilize AI-driven technologies in the area of metacognition.

Research site and participants

This study was carried out at Driyarkara University, particularly in the master's program of English Language Education. Regarding the research participants, the individuals were the English Language Education Master Program (EEMP) students from batch 2023. In particular, there were 12 participants in this study. All 12 EEMP students from the first semester volunteered to participate and remained anonymous. Regarding the sampling method, the researchers opted for purposive, judgmental, or selective sampling.

A key element of a sample is that it should always include the instances most likely to give the most data for research (Gray, 2004). Nonetheless, Ary et al. (2010, p. 156) note that the purposive sampling method selects sample items from the population that are regarded as representative or common. Thus, the premise was that errors in judgment in selection would cancel each other out. To clarify, this research would be initiated by carrying out a survey.

Data collection and analysis

This research gathered responses from the close-ended questionnaires to recognize to what extent the learners understand AI-powered tools and the concept of metacognitive knowledge. By scrutinizing the close-ended responses, we received evidence of learners' comprehension of AI-driven apps and metacognition concepts. Dosetto (2023) argues that open-ended questions cannot be answered simply using short answers without additional explanations. The open-ended responses have also helped the researchers discover proof of their experiences using the tools.

The in-depth interview (IDI) is one of the most powerful methods for analyzing people and digging into research subjects thoroughness (Fontana & Grey, 2000). After administering and interpreting the questionnaires, the unstructured interviews were organized as they yielded a wealth of information regarding personal life events and viewpoints. Interviews facilitate spontaneity, flexibility, and personalized reactivity (Carter et al., 2014). Data collection and analysis procedures were clearly explained with a reference to the role and competency of the researchers (See Figure 1).

Table 1 The Framework of the Questionnaire

Type of Questionnaires	Components	Total of Items
Open-ended and Closed-Ended	General information	4
Closed-ended	The understanding of AI-powered tools to enhance metacognitive	12

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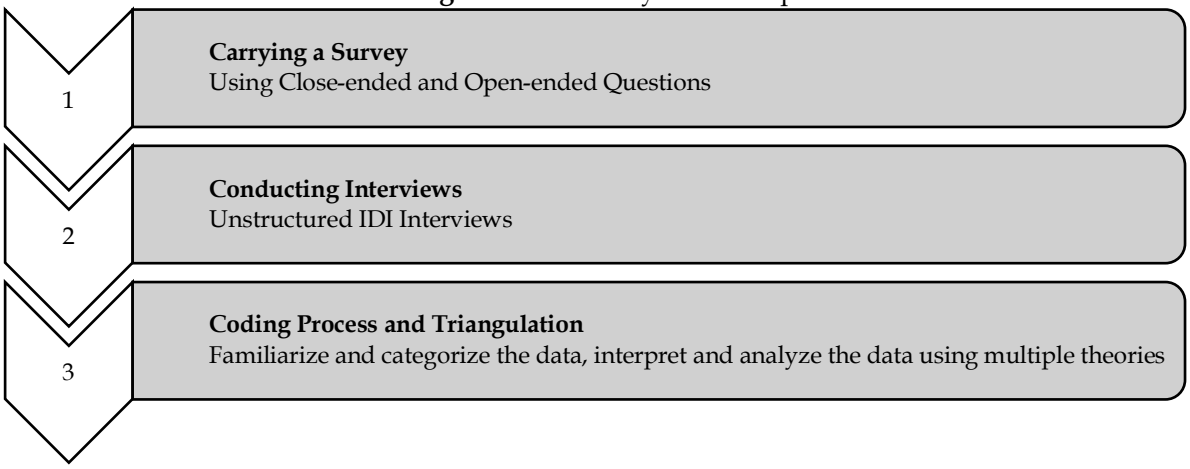
	knowledge	
Open-ended	The experiences related to the utilization of AI-powered tools for enhancing metacognitive knowledge	4

12 close-ended and the researchers created four open-ended questions. One of the lecturers at Driyarkara University evaluated the validity of the questionnaire. The researchers began interviewing the participants when the data was classified into several categories. The type of interview was an unstructured, in-depth interview. It is a form of an interview that consists of spontaneous questions. Some questions emerge from certain circumstances (Ary et al., 2010, p. 438). Although several questions would be predetermined, the majority of the questions would be improvised. The researchers picked the interview mentioned above as it could help them obtain a large portion of data thoroughly rather quickly.

Figure 1 Data Analysis Technique



After the researchers deciphered the respondents' answers to the close-ended and open-ended questionnaires, an in-depth interview was conducted to gather further insights from the participants. The next process was data reduction and data transcribing. The order of the interviewees was based on individuals who had filled out the Google form questionnaire. Also, as Qureshi and Ünlü (2020) claim, data reduction stems from a coding process. Coding encompasses three stages: open coding, axial coding, and selective coding. In the coding process, four aspects represent the process of each coding stage: Statements, initial codes, classifications, and themes.

The initial code or the open coding signified each statement's specific, lengthy categories. Classification or the axial coding indicated broader aspects. The selective coding represented established general themes. This process analyzes the data deeply, discovers some similarities or connections from the data, and organizes the data to fit into certain categories or themes. As elaborated by Ary et al. (2010), p. 481), qualitative data analysis encompasses familiarization and data sorting to enable quick data retrieval. Also, the researchers applied descriptive statistics to analyze the numerical data from the closed-ended questionnaire. Hence, the researchers utilized the questionnaire and interview transcripts results to discuss the findings and present the conclusion.

FINDINGS AND DISCUSSION

Findings

Within this section, the researchers discussed the two research questions formulated in the previous part. Based on the analysis of the data results, the findings were divided into two parts. In addition to that, the findings were also followed by elaboration and discussion. The first part encompassed the valuable benefits and insights the EFL learners will attain from understanding the AI-powered tools in the context of metacognitive knowledge enhancement, and the second part entailed the experiences and utilizations of AI-powered tools for metacognitive enhancement in English Language Learning.

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In this first section of the findings, the researcher created a table to overview the results of the closed-ended questionnaire, which had 12 items of questions. The findings will be followed by explanations of the theories elucidated in the previous section.

Table 2 The Responses of the Closed-Ended Questionnaire

No.	*Items of Questions	Responses (%)				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	AI-powered tools can be an effective means to improve my metacognitive awareness in English Language learning.	8.33%	0%	0%	83.33%	8.33%
2.	AI-powered tools can help me identify my strengths and weaknesses in English Language learning.	0%	8.33%	25%	58.33%	8.33%
3.	AI-powered tools can help me develop learning strategies to enhance my English language skills more effectively.	0%	0%	16.67%	66.67%	16.67%
4.	AI-powered tools can help me effectively monitor my progress in learning English.	0%	8.33%	41.67%	50%	0%
5.	AI-powered tools can make my learning process of the English Language more enjoyable and interesting.	0%	0%	0%	50%	50%
6.	I feel confident and comfortable using AI-powered tools to enhance my metacognitive knowledge in learning the English Language.	0%	8.33%	25%	50%	16.67%
7.	I am sure that AI-powered tools can be a valuable resource to enhance my metacognitive knowledge in learning the English Language.	0%	8.33%	41.67%	50%	0%
8.	I am willing to enroll in the English Language learning courses that are applying AI-powered tools within the courses.	8.33%	0%	25%	50%	16.67%
9.	I recommend using AI-powered tools for my friends undertaking English Language learning programs.	0%	8.33%	16.67%	58.33%	16.67%
10	AI-powered tools can bring positive impacts on enhancing my metacognitive knowledge in the English Language learning process.	0%	0%	50%	50%	0%
11.	AI-powered tools can negatively impact enhancing my metacognitive knowledge in the English language learning process.	8.33%	8.33%	50%	33.33%	0%
12.	When I learned how to use AI-powered tools for the first time in the context of English Language learning, I experienced some difficulties.	0%	50%	16.67%	33.33%	0%

*The questions were adopted from research conducted by Chan and Zhou (2023).

Overall, the findings indicated that the research participants were optimistic about using AI-powered tools for English language acquisition, particularly metacognitive enhancement. Many participants stated that AI-driven tools could enhance metacognitive knowledge, assess strengths and weaknesses, create learning strategies, and make learning more interactive. Additionally, there was a wide willingness to participate in and encourage the AI-powered tools courses to enhance metacognitive knowledge in learning the English Language. Yet, there were several uncertainties concerning the likely issues associated with integrating learning with AI-powered tools.

To illustrate, 83.33% of respondents felt AI-powered tools can enhance their metacognitive knowledge in English Language learning. This denotes a crucial standpoint that AI-powered tools can aid EFL learners in becoming increasingly conscious of their thinking processes and how they acquire the language. Many respondents were also convinced that AI-powered tools can improve effective

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learning strategies to improve their English language abilities (66.67%). It can be implied from the finding that AI-powered tools can offer tailored input and suggestions to help learners improve their learning strategies. Further, Baker et al.'s (2019) notion correlates with the said finding. To emphasize, the utilization of AI in English Language education enables learners with adaptable and highly personalized guidance, which is a key element for individualized learning as it meets one of the key components of modern principles of language learning. Furthermore, several respondents claimed that AI-powered tools do not affect their confidence and comfortability in the context of metacognitive knowledge enhancement, with 50% saying they agree. From this finding, technologies can be valuable for learning metacognitive knowledge as they do not create intimidating feelings.

The finding above also asserts an interest in English language learning courses integrated with AI-powered tools, with half of the participants (50%) agreeing. Half of the respondents also stated that the technologies positively improve metacognitive knowledge in English language learning. Some respondents (58.33%) believed they would suggest utilizing AI-powered tools for others enrolling in English Language Education studies. Thus, these findings mean that those who have experienced positive impacts utilizing AI-driven tools are likelier to recommend the usage to others. Nonetheless, 33.33% of respondents agreed that AI-powered tools may negatively influence their metacognitive understanding when learning English. The findings suggest that there might be a worry that AI-powered tools harm metacognitive knowledge enhancement in learning the English language. Apart from this, 50% of respondents noticed several issues when learning to use AI-powered tools for English language learning.

According to the interview transcripts and open-ended responses analyzed in the coding process, three key points were acquired: AI-powered tools and metacognition implementation, cognitive and practical usages of AI-powered tools, and the concern about literacy. We quote several responses from the interviewees with pseudonyms.

> "*AI tools are useful to remind and to teach me about metacognitive knowledge; however, it can make learners rely on them.*" (S01)

The interviewee argued that AI-driven tools might possess a slight opportunity for English learners intending to seek aid in managing their learning processes. Others also stated further that a true collaboration between machines and humans could be established due to AI-driven tools' capability to make completing tasks more efficient under specific time constraints.

> "*Specific examples of using AI-powered tools to enhance English language learning include interactive chatbots that provide real-time language practice, adaptive learning platforms that adapt content to individual needs, and tools that provide instant feedback on grammar and language usage.*" (S02)

Simultaneously, some interviewees also elucidated that AI-powered tools had the potential to be linked with higher metacognition skills by providing immediate responses to the prompted questions. Further, these immediate answers also aided the interviewees in simplifying complex daily life tasks. Despite the largely unexplored area of AI-driven tools' usage in education, several interviewees believed these technologies could personalize students' learning.

Discussion

Regarding EFL learners' perceptions of increasing metacognitive knowledge using AI, the findings demonstrate that most participants experienced the capability of AI-driven tools in recognizing their weaknesses and strengths as EFL learners, which enhanced their metacognition. These findings can be linked to how AI-based technologies or AI-powered tools can imitate several functions of human capabilities (Zawacki-Richter et al., 2019), implying that AI-powered tools may benefit self-assessment and evaluation. Pokricarkova (2019) also argues that AI-powered tools can facilitate learners not just how the process of acquiring the language is managed to occur in studying a language but also in managing the process of acquiring the language itself.

In this context, the English Language, acquiring a new language involves assessing and evaluating oneself to analyze the learning strategies to be better. The data elaboration also corroborates the statement expressed by Campbell-Howess (2019) that AI-powered tools may make a huge contribution to the science community due to their emergence as the most influential developing

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technology in educational technology. The findings also demonstrate that holistic training and better support, such as critical digital literacy (Holmes & Tuomi, 2022; Bozkurt, 2023), are required for inexperienced EFL learners to enhance metacognitive knowledge in English Language learning.

Thus, for holistic training and better support, Holmes and Tuomi (2022) argue that the growth of AI in the academic atmosphere can be viewed more positively as a collaborative evolution of human and machine learning. This corroborates the notion that the prospect of AI in education should be considered through the lens of AI-supported modification of human cognitive skills and learning. Drawing from these points, holistic training means not just knowing the steps to use AI in education but also succeeding in grasping the paradigm that AI's main functions lie in the very involvement of human brains. It is essential to set clear and true beliefs that AI-powered tools exist due to human cognitive capacities.

Thus, it would be right to equip oneself with the correct set of notions while training how to integrate AI-powered tools for enhancing metacognitive knowledge. Better support comes from a better understanding as well. Nazaretsky et al. (2022) claim that individuals should have fundamental data literacy to efficiently utilize AI-powered learning analytics, critically examine the outcomes derived from big data analysis, and develop data-driven decisions. Hence, teachers are held accountable for recognizing inexperienced EFL learners in technological literacy and boosting those students with the necessary information to support their learning and enhance their metacognition effectively.

One of the respondents discovered a notable finding. She mentioned that helpful AI tools, such as ChatGPT, aided her in controlling her cognitive aspects, particularly because it could be an effective technology for completing tasks in a limited time (Kusuma, Interviewee 4). This finding connects with Chick (2013), who stated that metacognition means becoming critical of our thinking while clarifying the outcome. Along with that, the emergence of AI tools evoked people's intellectuality. Burkhard (2022) elaborates that the effective procedures for using AI-driven tools in education remain uncharted territory to be investigated. Notwithstanding an uncharted territory, AI-powered, with its versatility as an educational tool, can personalize instructional content for each student's needs (Luckin et al., 2016; Dignum, 2018; Pantelimon et al., 2021). These technologies assess students' capability to scale strengths and weaknesses and individualize learning materials accordingly.

Most interviewees clarified that AI tools had helped them as chatbots to answer intricate and unexplored problems and novel resources for academic practitioners to simplify their college or job responsibilities. Their responses are correlated in a certain sense with what has been discovered by Holmes and Tuomi (2022). Although the findings from the respondents did not explicitly mention the potential AI has to improve metacognitive understanding, this study may provide more profound and more scrutinized shreds of evidence that AI tools in education possess an actual capacity to enhance humans' cognitive capacities (Ward & Butler, 2019), particularly metacognition. AI may transform students into more efficient, self-aware learners by providing an individualized learning atmosphere, data-driven lesson plans, scaffolded techniques, and more reflection and collaboration opportunities.

It is undoubtedly approved by Yu (2024) and Yu and Guo (2023) that AI-powered tools or generative AI can aid people in complex problems due to its ability to imitate human brain processes. Adapting to a particular learning platform means learners must be critical in utilizing AI-driven apps (Baidoo-Anu & Owusu Ansah, 2023). It is closely associated with Flavell's (1979) theory of metacognitive knowledge. Being critical of one's thinking outcome entails the process of thinking beyond thinking. These findings intertwine with Schraw's theory (1998). He said metacognitive awareness involves understanding the task, strategy, and planning of making or doing something. Interest and curiosity mean one has the strategy and plan to do the task.

CONCLUSIONS AND SUGGESTION

Considering what has been discovered through the findings, within the scope of educational settings, the emergence of AI can be interpreted more optimistically as an integrated development of the human brain and artificial machines. Also, the EFL learners perceived the emergence of AI-

*Corresponding author
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powered tools in education as an interesting yet vague occurrence. Indeed, the usefulness of AI provides many benefits to learners and even teachers. All of the participants fully grasped the knowledge of AI-powered tools. However, they still doubted if AI-powered apps could truly enhance a specific area of the human brain's capabilities: metacognitive knowledge.

The participants have also utilized several AI-powered tools, mostly ChatGPT and Google Gemini. In using AI-driven tools to enhance metacognitive knowledge, only a few students stated that AI-powered tools might improve English learning and enhance metacognition. Most participants used AI technologies to help in academic assignments, trivial tasks, or job requirements. Altogether, the above analyses can reiterate that participants possess sufficient cognizance of the technological usage and the vast potential of AI-driven apps (RQ1). All participants' experiences of using AI-driven apps primarily revolve around matters of daily academic or mundane tasks (RQ2).

The limitation of this study emerges from the time constraint and the sample size. The study findings would have been much broader and more in-depth if the time allocation for the research had been more extended. Next, as the samples were only small, future research studies can investigate more significant samples/populations by focusing on one specific class or group of the community to enhance their metacognitive knowledge using generative AI. In that case, the results can be more tailored to the actual problem in the English learning environment, for example, by providing strategies for holistic training and better metacognitive scaffolding using AI-powered tools.

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