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UNDERSTANDING SAUDI MALE EFL UNDERGRADUATE STUDENTS' METACOGNITIVE AWARENESS IN UTILIZING CHATGPT FOR ENGLISH COURSE ASSIGNMENTS

COMPREENDENDO A CONSCIÊNCIA METACOGNITIVA DE ESTUDANTES UNIVERSITÁRIOS SAUDITAS DO SEXO MASCULINO DE INGLÊS COMO LÍNGUA ESTRANGEIRA NO USO DO CHATGPT PARA TAREFAS DE CURSOS DE INGLÊS

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Abstract: This study investigated Saudi male EFL undergraduate students' metacognitive awareness in using ChatGPT for English course assignments. It employed a mixed-methods design with 210 male undergraduate EFL students from a Saudi university, alongside 15 semi-structured interviews. Quantitative data were collected through an 18-item metacognitive awareness scale covering planning, monitoring, and evaluating, while qualitative data explored students' thinking, decision-making, and self-regulation during ChatGPT-assisted tasks. The findings showed considerable variation in students' metacognitive awareness. Some students used ChatGPT passively by copying or accepting its outputs with limited reflection, whereas others used it strategically as a support tool for understanding, planning, drafting, editing, and evaluating assignments. The study highlights the importance of guiding students toward reflective and self-regulated use of ChatGPT in academic contexts.

Keywords: generative artificial intelligence; ChatGPT; metacognitive awareness; self-regulated learning; Saudi EFL students; English course assignments

Resumo: Este estudo investigou a consciência metacognitiva de estudantes universitários sauditas do sexo masculino de inglês como língua estrangeira (EFL) no uso do ChatGPT para tarefas de cursos de inglês. Foi utilizado um desenho de métodos mistos com 210 estudantes universitários do sexo masculino de EFL de uma universidade saudita, além de 15 entrevistas semiestruturadas. Os dados quantitativos foram coletados por meio de uma escala de consciência metacognitiva com 18 itens, abrangendo planejamento, monitoramento e avaliação, enquanto os dados qualitativos exploraram o pensamento, a tomada de decisão e a autorregulação dos estudantes durante tarefas assistidas pelo ChatGPT. Os resultados mostraram variação considerável na consciência metacognitiva dos estudantes. Alguns utilizaram o ChatGPT de forma passiva, copiando ou aceitando suas respostas com reflexão limitada, enquanto outros o utilizaram estrategicamente como ferramenta de apoio para compreender, planejar, redigir, editar e avaliar tarefas. O estudo destaca a importância de orientar os estudantes para o uso reflexivo e autorregulado do ChatGPT em contextos acadêmicos.

Palavras-chave: inteligência artificial generativa; ChatGPT; consciência metacognitiva; aprendizagem autorregulada; estudantes sauditas de EFL; tarefas de cursos de inglês

1. Introduction

Metacognitive awareness (MA) plays an important role in helping EFL students regulate their learning in undergraduate English programs, where learners need to manage academic tasks with increasing independence. MA refers to learners' conscious awareness and control of their thinking processes as they plan, monitor, regulate, and evaluate their learning (Flavell, 1979). In second and foreign language learning, metacognition and self-regulation are widely viewed as important factors that support academic achievement and reflect students' commitment to language development (Teng & Zhang, 2022). This becomes particularly relevant when learning tasks involve interaction with emerging technologies.

Recent digital developments have enabled GenAI tools such as ChatGPT to play an increasingly influential role in undergraduate learning environments. ChatGPT, as a large language model, can generate humanlike responses that may support students in brainstorming ideas, explaining concepts, summarizing information, and completing academic tasks (OpenAI, 2023). Its use has also shaped how EFL students address challenges in completing English course assignments (Kohnke et al., 2023; Wang & Xue, 2024).

Previous AI-related studies in language education have mainly investigated the impact of AI tools on writing development, feedback, and feedback uptake (Teng, 2025). However, ChatGPT use is not limited to writing. Students may use it for a wider range of academic work, including summarizing, preparing presentations, generating ideas, and clarifying course content. Therefore, metacognition is closely linked to self-regulated learning, which involves planning, monitoring, judging credibility and evaluating how learners approach tasks cognitively and behaviorally (Zimmerman, 2000; Huang & Mizumoto, 2024). In language learning, ChatGPT may differently influence students' choice of strategies, understanding of task requirements, and confidence in using English (Godwin-Jones, 2022; Huang & Mizumoto, 2024). Therefore, the central issue is not only whether ChatGPT is helpful or harmful, but also how students regulate their use of it during learning. When students use ChatGPT without sufficient awareness, they may become overly dependent on its responses or use it in ways that reduce independent thinking (Akgun & Greenhow, 2022; García-Peñalvo, 2023).

Undergraduate students in EFL settings often find English courses challenging because of gaps in both language ability and academic competence. ChatGPT can therefore become a useful tool for supporting students as they work through language-related difficulties. However, if students do not manage their use of the tool

carefully, they may misuse its responses or become overdependent on it. This creates a need to investigate how students plan, monitor, and evaluate their engagement with ChatGPT while completing course assignments.

The findings of this study contribute to understanding how ChatGPT influences Saudi EFL learners' metacognitive engagement, particularly in the context of the study. The findings may also inform efforts to design AI-supported learning environments that promote reflective, critical, and self-regulated use of these tools.

2. Research Problem and Gap

Despite the rapid adoption of GenAI tools such as ChatGPT by students, there remains limited understanding of how undergraduate EFL students manage their learning processes while using these tools for academic tasks. Previous research has extensively examined AI tools in relation to language learning and academic writing development (Godwin-Jones, 2022; Huang & Mizumoto, 2024; Kohnke et al., 2023). However, most studies have focused primarily on writing improvement, feedback provision, or general perceptions of usefulness. As a result, the cognitive and regulatory processes underlying students' actual use of ChatGPT in broader academic contexts remain underexplored.

In particular, metacognitive awareness, including planning, monitoring, and evaluating one's learning, has been identified as a key factor in effective learning and self-regulation (Flavell, 1979; Zimmerman, 2000). However, how students activate these metacognitive processes when using ChatGPT to complete English course assignments remains insufficiently understood. Existing research often approaches AI use as a technical or pedagogical matter rather than as a cognitive process linked to learner regulation (Teng, 2025; Yao et al., 2024).

This study focuses on male Saudi EFL undergraduate students' metacognitive awareness in a Saudi university when using ChatGPT for English course assignments. While previous studies have mainly examined ChatGPT in relation to writing improvement, feedback, or general perceptions of AI usefulness, this study examines how students plan, monitor, evaluate, and regulate their interaction with ChatGPT during different types of academic tasks. It also extends existing research by connecting metacognitive awareness, self-regulated learning, and AI-assisted assignment completion within the Saudi EFL context. In doing so, the study provides a more detailed understanding of how learners use ChatGPT not only as a writing tool, but also as a cognitive and academic support tool across broader English course assignments.

3. Research Questions and Objectives

The study attempted to answer the following research questions:

1. How do male Saudi EFL undergraduate students demonstrate metacognitive awareness when using ChatGPT for English course assignments?

2. What levels of metacognitive awareness do Saudi male EFL undergraduate students exhibit when using ChatGPT to complete English course assignments?

3. How do Saudi male EFL undergraduate students plan, monitor, and evaluate their use of ChatGPT during assignment completion?

4. What strategies do Saudi male EFL undergraduate students employ when using ChatGPT for different types of English course assignments?

5. What challenges and concerns do Saudi male EFL undergraduate students experience when using ChatGPT to complete English course assignments?

6. How do Saudi male EFL undergraduate students perceive the role of ChatGPT in supporting or replacing their independent learning processes?

4. Literature Review

4.1 Metacognitive Awareness in Learning

Learning becomes more effective when students are aware of how they think and when they are able to guide that thinking while completing demanding tasks. This is the central idea behind metacognitive awareness. Rather than referring only to knowledge, MA involves students' ability to think about their own learning, decide how to approach a task, observe their progress, and judge the effectiveness of their performance (Flavell, 1979). Later work in educational psychology and applied linguistics has emphasized the strategic nature of learning, in which learners adapt their actions according to the demands of the task (Schraw & Dennison, 1994; Zimmerman, 2000).

EFL students often work within demanding learning environments in which language use is only one part of the challenge. They also need to understand assignment instructions, process course materials, respond to academic requirements, and manage their learning with increasing independence. In such contexts, metacognitive awareness becomes central to effective learning because it helps students think critically about the purpose of a task and judge the appropriateness of AI-generated output in relation to the course or assignment context (Teng & Zhang, 2022).

In university English courses, students become more independent and have greater control over their learning and assignments. This responsibility makes self-regulated learning especially relevant. From a self-regulated learning perspective, students need to control how they approach an assignment, how much they depend on a tool, how they respond to the answers it provides, and how they decide whether those answers are useful or accurate (Zimmerman, 2000). In this context, metacognitive awareness helps students remain active decision-makers rather than passive users of AI-generated content (Teng, 2025).

In EFL learning, metacognitive awareness helps students understand language tasks, select suitable strategies, and improve their performance (Vandergrift & Goh, 2012). With the use of generative AI tools, this awareness becomes more demanding. Students must not only regulate their own comprehension and strategy use, but also decide when ChatGPT is useful, whether its responses fit the assignment, and how to use them without reducing their own learning. Thus, AI-supported EFL learning requires students to engage critically with both the task and the assistance provided by AI.

Although metacognitive awareness is central to effective learning, its role in AI-supported language learning has not been fully examined. Previous research has discussed self-regulation in digital learning more broadly, but it has paid less attention to what happens when students use ChatGPT to complete academic assignments. This is important because AI use differs across tasks; summarizing a text, preparing a presentation, answering comprehension questions, and writing a report may require different forms of planning, monitoring, and evaluation. The issue is particularly significant in EFL contexts, where students may turn to ChatGPT not only for academic support but also to overcome language difficulties. For this reason, there is a need to examine how metacognitive awareness shapes students' use of AI across different English course assignments.

4.2 Self-Regulated Learning and Digital Learning Environments

Self-regulated learning (SRL) views learners as active participants in their own learning. It offers a useful framework for understanding how learners plan their work, maintain motivation, monitor their progress, choose suitable strategies, and reflect on their performance. Zimmerman (2000) describes this process as a cycle that moves through three main stages: forethought, in which learners set goals and prepare; performance, in which they apply strategies and monitor themselves; and

self-reflection, in which they evaluate what worked and what needs improvement. In this sense, SRL is closely connected to metacognition, but it provides a broader perspective because it also includes motivation and behavior in explaining how students manage academic tasks.

In language learning contexts, some tasks are completed outside the classroom, where teacher control is limited and students work independently. Self-regulated learning therefore becomes an important factor in successful EFL learning and academic task management. Self-regulated learners usually decide how to approach a task, select appropriate strategies, check their understanding while working, and evaluate their performance afterward. As Teng and Zhang (2022) note, these skills make SRL an important predictor of success in EFL contexts, especially when learners are required to work independently.

Before the expansion of digital technologies, learners in traditional settings usually received directions from teachers and worked with selected materials to complete academic tasks. In technology-mediated contexts, however, self-regulated learning becomes more complex. Learners need to search for information, compare different sources, and judge the quality of online content. As a result, they need digital self-regulated learning skills that help them avoid misusing online tools and instead use them in a purposeful, critical, and organized way (Broadbent & Poon, 2015).

The emergence of generative artificial intelligence has reshaped self-regulated learning by changing the kinds of decisions learners must make during academic work. With tools such as ChatGPT, students can receive instant explanations, suggestions, corrections, and drafts that may directly influence how they understand and complete a task. This creates a new learning situation in which students must regulate not only their own thinking and effort, but also their use of AI support. They need to judge when assistance is needed, whether a generated response is accurate and relevant, and how it should be used without replacing their own learning process. Therefore, GenAI makes self-monitoring and evaluation more central to SRL, as learners must continuously assess both their own understanding and the value of AI-generated output.

AI-supported learning environments create both opportunities and risks for self-regulated learning. When used purposefully, tools such as ChatGPT can help learners organize their ideas, clarify difficult concepts, and receive guidance while working on academic tasks (Kohnke et al., 2023; Huang & Mizumoto, 2024). However, the same tools can also weaken self-regulation when learners overdepend on them. When learners treat AI-generated responses as final answers and use them without

checking, questioning, or adapting them, they may become less active in the learning process. Akgun and Greenhow (2022) argue that overreliance on AI tools may negatively influence students' learning independence. SRL is therefore a useful lens for examining how EFL students manage language learning and engage with ChatGPT as a supportive learning resource rather than as a replacement for their own effort.

The role of SRL in EFL contexts remains underexplored, particularly in relation to students' use of ChatGPT for English academic tasks. Less attention has been given to the actual decisions students make while using AI tools. This study provides insight into this gap by examining how EFL students regulate their learning with ChatGPT across different task types.

4.3 Generative AI (ChatGPT) in EFL Learning Contexts

For many EFL learners, completing English tasks is not only about knowing the answer. They also need to express their ideas in organized and appropriate academic language. This requirement can make even simple academic tasks more difficult. In this context, ChatGPT can be helpful because it provides immediate responses and support (Huang & Mizumoto, 2024). Its use is no longer limited to correcting language; it has become part of how students understand tasks, develop ideas, organize content, and complete academic work.

However, ChatGPT does not improve learning by itself. The way students use it makes a difference to their learning. Because it can produce a full answer within seconds, some learners may avoid thinking through the task, developing their own ideas, or revising the response. This can make their role in learning more passive.

The issue of reliability creates another challenge in EFL contexts. ChatGPT may sometimes produce information that is inaccurate, biased, or inappropriate to the specific context because its responses are generated from patterns in data rather than from human judgment (Stening, 2023). Therefore, its value in academic learning depends on whether students can question its answers, judge their quality, and use them carefully and responsibly.

From this perspective, the main question is not whether EFL students use AI, but how they control and manage their use of it while working on academic tasks. ChatGPT can be helpful when students treat it as learning support, but it becomes problematic when it replaces their own thinking, judgment, and decision-making (Kostka & Toncelli, 2023). Previous studies have mostly discussed ChatGPT as a tool for writing support, feedback, or general learning assistance. However, less

is known about how EFL students use it in different English course assignments, especially when each task requires different levels of planning, monitoring, and evaluation. Therefore, this study addresses this gap by exploring how Saudi male EFL undergraduate students engage with ChatGPT as an academic support tool and how this engagement reflects their metacognitive awareness and self-regulatory processes.

4.4 Research Gap and Conceptual Framework Synthesis

Previous research has provided important insights into metacognitive awareness, self-regulated learning in digital environments, and the use of generative AI in undergraduate contexts (Flavell, 1979; Zimmerman, 2000; Broadbent & Poon, 2015; Kohnke et al., 2023; Wang & Xue, 2024). However, these areas have often been examined separately rather than as connected processes within students' actual academic work. Limited attention has been given to how metacognition, self-regulation, and AI use interact during assignment completion.

Previous research has mainly examined ChatGPT as a tool for academic writing and feedback rather than as part of a broader learning process across different English course assignments (Huang & Mizumoto, 2024; Teng, 2025). This limits understanding of how EFL students use ChatGPT in tasks such as summaries, reports, presentations, and comprehension activities, which may require different forms of planning, monitoring, and evaluation. Although self-regulated learning emphasizes learners' control over their cognitive processes (Zimmerman, 2000), little is known about how students regulate their interaction with ChatGPT during authentic assignment completion. This study therefore connects metacognitive awareness and self-regulated learning to examine ChatGPT as a cognitive support tool that shapes how Saudi male EFL undergraduate students complete academic tasks.

5. Methodology

5.1 Research Design

This study employed a mixed-methods research design to examine Saudi male EFL undergraduate students' metacognitive awareness when using ChatGPT for English course assignments. The mixed-methods approach was selected because the study aimed to measure students' levels of metacognitive awareness quantita-

tively and to gain deeper qualitative insight into their actual practices, strategies, and perceptions. The quantitative phase was conducted through a questionnaire measuring planning, monitoring, and evaluation in ChatGPT-assisted assignment completion. The qualitative phase was conducted through semi-structured interviews to explain and expand the questionnaire findings. The integration of quantitative and qualitative data provided a more comprehensive understanding of how students regulated their use of ChatGPT in academic tasks.

5.2 Sampling Method and Participants

The participants were selected using purposive sampling. This sampling method was appropriate because the study specifically targeted undergraduate EFL students who had experience using ChatGPT for English course assignments. A total of 210 male undergraduate students participated in the questionnaire phase. All participants were enrolled in the English Department at a Saudi university. Their ages ranged from 19 to 26 years, and they were studying at different academic levels, from the second to the fourth year. This variation allowed the study to examine students with different levels of academic experience and exposure to English course assignments.

For the qualitative phase, 15 students were selected from the questionnaire participants for semi-structured interviews. The interview participants were chosen to provide deeper explanations of their experiences, strategies, and challenges when using ChatGPT. Since all participants were male students from a Saudi university, the findings should be interpreted within this specific institutional and gender-based context and should not be generalized to all Saudi EFL undergraduate students.

5.3 Questionnaire

The questionnaire was designed to measure students' metacognitive awareness when using ChatGPT for English course assignments. It was adapted from established metacognitive awareness and self-regulated learning frameworks (Schraw & Dennison, 1994; Zimmerman, 2000) and modified to fit the context of AI-assisted EFL learning. The questionnaire focused on three main dimensions: planning, monitoring, and evaluating. The planning dimension examined how students set goals and decide when and why to use ChatGPT. The monitoring dimension examined how students check, follow, and control their interaction with ChatGPT while completing assignments. The evaluating dimension examined how students judge the

accuracy, usefulness, relevance, and appropriateness of ChatGPT-generated content after receiving responses.

The questionnaire consisted of 18 items distributed across three dimensions: planning, monitoring, and evaluating. Each dimension included six items. Responses were measured using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Higher scores indicated higher levels of metacognitive awareness in using ChatGPT for English course assignments. Sample items included "Before using ChatGPT, I decide what kind of help I need for my assignment" for planning, "While using ChatGPT, I check whether its responses match the assignment requirements" for monitoring, and "After receiving ChatGPT's response, I evaluate whether the information is accurate and useful" for evaluating.

5.3.1 Questionnaire Validation

The reliability of the questionnaire was examined using Cronbach's alpha. The overall reliability coefficient was .88, indicating good internal consistency. The reliability coefficients for the three dimensions were also acceptable: planning (.82), monitoring (.79), and evaluating (.84). These values indicate that the questionnaire had adequate internal consistency for measuring students' metacognitive awareness in ChatGPT-assisted assignment completion.

Construct validity was examined through exploratory factor analysis. Before conducting factor analysis, the suitability of the data was assessed using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity. The KMO value was .86, indicating that the sample was suitable for factor analysis. Bartlett's test of sphericity was statistically significant, $\chi^2(153) = 1426.35$, $p < .001$, confirming that the correlation matrix was appropriate for factor extraction.

The exploratory factor analysis produced a three-factor structure corresponding to the theoretical dimensions of planning, monitoring, and evaluating. The three factors explained 64.82% of the total variance. The factor loadings ranged from .58 to .84, exceeding the acceptable threshold of .40. The first factor, evaluating, explained 28.94% of the variance; the second factor, planning, explained 20.61%; and the third factor, monitoring, explained 15.27%. Overall, the factor analysis results indicated that the questionnaire items were generally consistent with the three proposed dimensions: planning, monitoring, and evaluating.

Table 1. Questionnaire Dimensions and Reliability Coefficients

Dimension	No. of items	Sample item	Cronbach's alpha
Planning	6	Before using ChatGPT, I decide what kind of help I need for my assignment.	.82
Monitoring	6	While using ChatGPT, I check whether its responses match the assignment requirements.	.79
Evaluating	6	After receiving ChatGPT's response, I evaluate whether the information is accurate and useful.	.84
Overall scale	18	—	.88

Table 2. Factor Analysis Results

Test/Result	Value
KMO	.86
Bartlett's test χ^2	1426.35
df	153
p-value	$< .001$
Number of factors extracted	3
Total variance explained	64.82%
Factor loading range	.58–.84

5.4 Interview Procedures

Semi-structured interviews were conducted with 15 selected participants to obtain deeper qualitative insight into students' use of ChatGPT in real assignment situations. The interviews focused on how students used ChatGPT for different English course assignments, how they planned their use of the tool, how they monitored and revised AI-generated responses, and how they evaluated the usefulness and reliability of the outputs. The interviews also explored students' concerns about dependency, academic integrity, and the boundaries between acceptable support and inappropriate use.

Before the interviews, participants were informed about the purpose of the study and their right to withdraw at any time. Their consent was obtained before recording. To protect confidentiality, pseudonyms were used, and no identifying information was included in the analysis. The interviews were transcribed and analyzed thematically. The analysis involved coding the responses, identifying recurring patterns, and organizing the findings into themes related to planning, monitoring, evaluating, dependency, ethical awareness, and task-specific use of ChatGPT.

The key interview themes included how students used ChatGPT during different assignment types, how they decided when to trust or reject AI-generated content, how they verified or modified ChatGPT outputs, their perceived benefits and limitations of ChatGPT use, and their ethical concerns and academic integrity awareness.

5.5 Ethical Considerations

Ethical considerations were addressed throughout the data collection process. Students were informed that participation was voluntary and that their identities would not be disclosed at any stage of the study. To protect confidentiality, pseudonyms were assigned in the interview data. Once the questionnaire results had been analyzed, 15 students were invited to provide deeper insights through semi-structured interviews. The interviews were arranged either in person or online according to participants' convenience. Before recording, participants' consent was obtained, and the recordings were used only for transcription and analysis.

5.6 Data Analysis and Integration

The quantitative and qualitative data were analyzed separately and then integrated to provide a broader interpretation of the findings. Questionnaire responses were analyzed statistically to identify students' overall levels of metacognitive awareness and the mean scores of the three dimensions: planning, monitoring, and evaluating. Interview data were analyzed thematically to explain how students described their actual use of ChatGPT during assignment completion.

After the quantitative and qualitative data were analyzed separately, the findings were integrated during interpretation. The questionnaire results were used to identify the general levels and patterns of students' metacognitive awareness, while the interview findings were used to explain, support, and expand the statistical results. This integration allowed the study to connect numerical trends with students' reported experiences and practices when using ChatGPT for English course assignments.

6. Findings and Results

The results of the study were interpreted in relation to metacognition and self-regulated learning. The quantitative findings describe students' levels of metacognitive awareness, while the qualitative findings explain how students reported using ChatGPT in actual assignment situations.

6.1 Distribution of Metacognitive Awareness Levels

The quantitative findings were based on questionnaire responses collected from 210 male undergraduate EFL students. Descriptive statistics were used to examine students' levels of metacognitive awareness when using ChatGPT for English course assignments. The questionnaire was scored on a five-point Likert scale, where higher scores indicated higher levels of metacognitive awareness.

To classify students' metacognitive awareness levels, scores from 1.00 to 2.33 were classified as low, scores from 2.34 to 3.66 were classified as moderate, and scores from 3.67 to 5.00 were classified as high. These cut-off points were based on dividing the five-point Likert scale into three equal intervals.

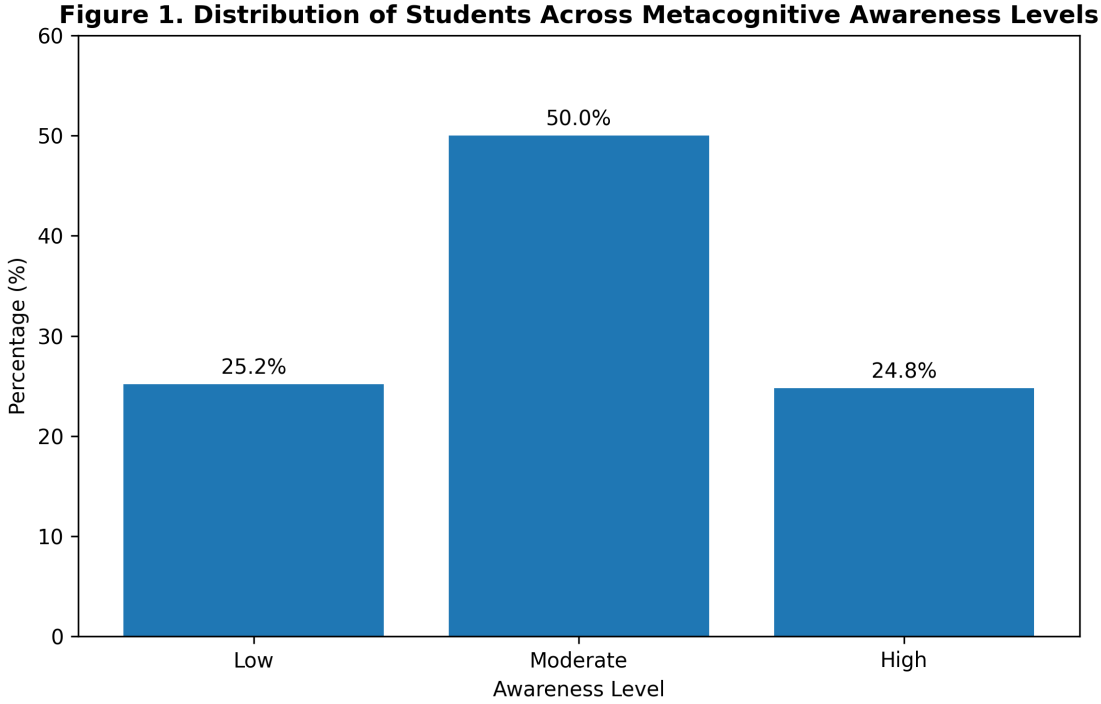
Based on these criteria, 25.2% of the students demonstrated low metacognitive awareness, 50.0% demonstrated moderate metacognitive awareness, and 24.8% demonstrated high metacognitive awareness. This distribution shows that half of the participants were moderate users of ChatGPT, while the remaining students were

divided between low-regulation and high-regulation patterns of use.

Table 3. Distribution of Students by Metacognitive Awareness Level

Awareness level	Score range	Frequency	Percentage
Low	1.00–2.33	53	25.2%
Moderate	2.34–3.66	105	50.0%
High	3.67–5.00	52	24.8%
Total	—	210	100%

Figure 1. Distribution of Students Across Metacognitive Awareness Levels



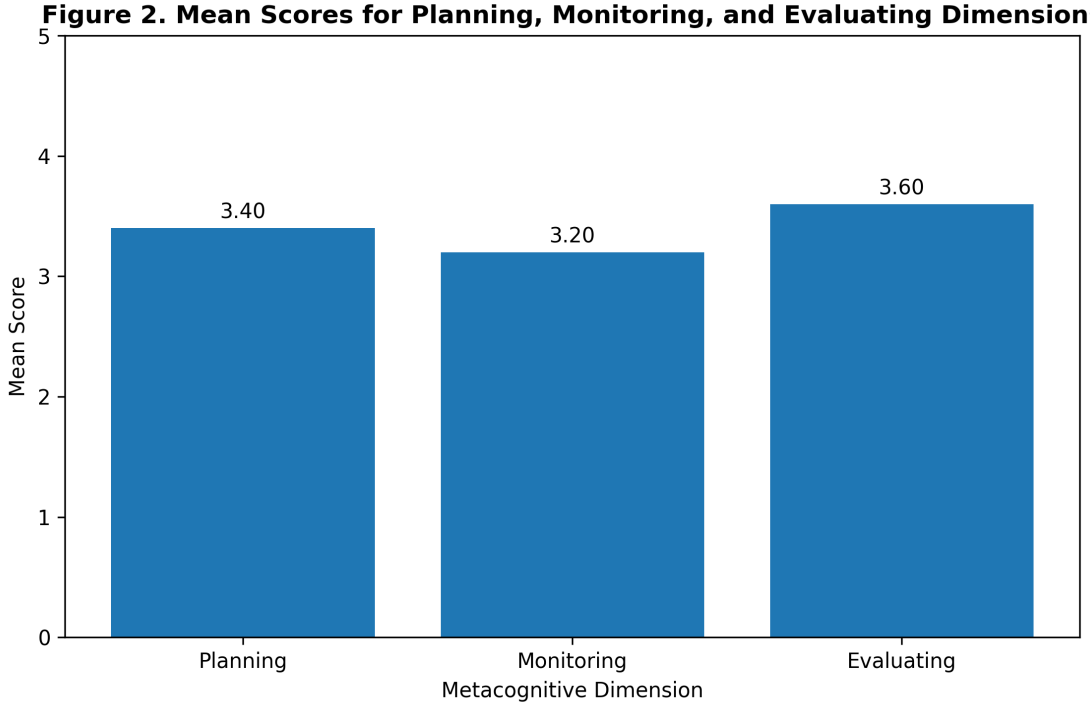
6.2 Mean Scores of Metacognitive Dimensions

The overall mean score of metacognitive awareness was 3.40 (SD = 0.64), indicating a moderate level of awareness among the participants. Among the three dimensions, evaluating recorded the highest mean score (M = 3.60, SD = 0.68), followed by planning (M = 3.40, SD = 0.71). Monitoring recorded the lowest mean score (M = 3.20, SD = 0.76), indicating that students were less consistent in checking and regulating ChatGPT responses during assignment completion.

Table 4. Descriptive Statistics for Metacognitive Awareness Dimensions

Dimension	N	Mean	SD	Minimum	Maximum	Level
Planning	210	3.40	0.71	1.83	5.00	Moderate
Monitoring	210	3.20	0.76	1.67	4.83	Moderate
Evaluating	210	3.60	0.68	2.00	5.00	Moderate
Overall metacognitive awareness	210	3.40	0.64	1.78	4.94	Moderate

Figure 2. Mean Scores for Planning, Monitoring, and Evaluating Dimensions



6.3 Strategy Use in ChatGPT-Assisted Assignments

Students reported several patterns of ChatGPT use during English course assignment completion. These strategies ranged from direct copying to more independent integration of AI-generated responses with students' own knowledge.

Table 5. Strategy Use in ChatGPT-Assisted Assignments

Strategy type	Level	Description
Direct copying	High at the initial stage	Some students copied AI outputs without modification.
Prompt refinement	Moderate	Students improved prompts to obtain clearer or more relevant responses.
Content adaptation	Moderate	Students modified AI-generated content to fit assignment requirements.
Critical evaluation	Low to moderate	Some students verified the accuracy and relevance of ChatGPT responses.
Independent integration	Varied from low to high	Advanced users integrated AI outputs with their own knowledge and assignment goals.

6.4 Qualitative Analysis

The qualitative data were analyzed using thematic analysis. After the interviews were transcribed, the researcher read the transcripts several times to become familiar with the data. Initial codes were generated by identifying repeated ideas related to students' use of ChatGPT, including planning before use, checking responses, modifying prompts, evaluating outputs, dependency, task type, and ethical concerns. Similar codes were then grouped into broader categories. These categories were reviewed and refined until five main themes were developed: AI as a learning shortcut, language support dependency, metacognitive awareness variability, ethical ambiguity, and task-type sensitivity.

The first theme, AI as a learning shortcut, showed that some students used ChatGPT mainly to save time and complete assignments more quickly. Several participants described ChatGPT as a tool that helped them produce answers with

less effort. For example, one participant stated, “When I have many assignments, I use ChatGPT because it gives me the answer quickly and helps me finish faster” (Participant 3). Another student explained, “Sometimes I do not know how to start, so I ask ChatGPT and then I use the answer as a base for my assignment” (Participant 7). These responses suggest that ChatGPT was sometimes used as a shortcut, especially when students were under time pressure or uncertain about how to begin a task.

The second theme, language support dependency, reflected students’ reliance on ChatGPT for vocabulary, grammar, sentence structure, and idea generation. Many students viewed ChatGPT as a language support tool that helped them overcome difficulties in English. One participant said, “I use ChatGPT to correct my grammar and improve my sentences because sometimes I know the idea but I cannot express it well in English” (Participant 5). Another participant noted, “It helps me find better words and organize my ideas before I submit the assignment” (Participant 11). These quotations show that ChatGPT was especially useful for students who faced linguistic challenges in completing English course assignments.

The third theme, metacognitive awareness variability, showed clear differences in how students planned, monitored, and evaluated their use of ChatGPT. Some students demonstrated active regulation by checking and revising AI-generated responses, while others accepted the output with little reflection. One high-awareness participant explained, “I do not copy the answer directly. I read it, check if it matches the assignment, and then rewrite it in my own way” (Participant 2). In contrast, another participant admitted, “If the answer looks good, I usually use it without checking many details” (Participant 9). This variation supports the quantitative finding that students differed in their levels of metacognitive awareness.

The fourth theme, ethical ambiguity, revealed that students were uncertain about the acceptable boundaries of ChatGPT use in academic assignments. Some participants were unsure whether using ChatGPT for ideas, correction, or rewriting would be considered acceptable. One participant stated, “I do not know exactly what is allowed. Is it cheating if I use ChatGPT only to improve my writing?” (Participant 6). Another student said, “Teachers do not always explain how we can use AI, so students use it in different ways” (Participant 13). These responses indicate that unclear institutional or classroom guidelines may influence how responsibly students use ChatGPT.

The fifth theme, task-type sensitivity, showed that students’ use of ChatGPT changed depending on the type of assignment. Participants reported using ChatGPT differently for essays, summaries, presentations, and comprehension tasks. One

participant explained, “For presentations, I use ChatGPT to organize the points, but for essays I need more help with writing and grammar” (Participant 4). Another participant said, “In summaries, I compare ChatGPT’s summary with the original text because sometimes it misses important points” (Participant 10). These responses suggest that students’ metacognitive regulation was influenced by the nature of the academic task.

Overall, the qualitative findings supported the quantitative results by showing that students did not use ChatGPT in one uniform way. Instead, their use varied according to their language needs, assignment type, ethical awareness, and level of metacognitive regulation. The interview data showed that some students used ChatGPT passively as a shortcut, while others used it more strategically by planning their prompts, monitoring the quality of responses, and evaluating the relevance of AI-generated content before using it in their assignments.

6.5 Integration of Quantitative and Qualitative Findings

The integration of the quantitative and qualitative findings provided a more complete understanding of Saudi male EFL undergraduate students’ metacognitive awareness when using ChatGPT for English course assignments. The questionnaire results showed that students’ overall metacognitive awareness was moderate, with variation across low, moderate, and high awareness levels. The interview findings helped explain this variation by showing how students actually used ChatGPT in different assignment situations.

The quantitative results showed that 25.2% of the students demonstrated low metacognitive awareness, 50.0% demonstrated moderate awareness, and 24.8% demonstrated high awareness. The qualitative findings complemented this distribution by showing different patterns of ChatGPT use. Students with lower awareness tended to describe ChatGPT as a shortcut for completing assignments quickly, often accepting its responses with limited checking or revision. In contrast, students with higher awareness described more strategic practices, such as planning their prompts, comparing AI-generated responses with assignment requirements, revising the output, and using ChatGPT as a support tool rather than a replacement for their own work.

The mean scores of the three metacognitive dimensions also aligned with the interview findings. Evaluating recorded the highest mean score, suggesting that students judged ChatGPT’s usefulness after receiving its output. This was supported by interview responses in which students described reviewing, editing, or adapting ChatGPT-generated content before submission. Planning appeared at a moderate

level, which was reflected in students' reports that they sometimes used ChatGPT to organize ideas, prepare outlines, or decide how to begin an assignment. Monitoring recorded the lowest mean score, and this was supported by qualitative evidence showing that some students did not consistently check the accuracy, relevance, or appropriateness of ChatGPT responses while working on the task.

The qualitative themes also extended the questionnaire results by explaining why students' metacognitive awareness varied. For example, the theme of language support dependency showed that some students relied heavily on ChatGPT because of difficulties with vocabulary, grammar, and sentence structure. This helped explain why some students used the tool passively, especially when they lacked confidence in their English ability. The theme of ethical ambiguity also explained why students' regulation was inconsistent, as some participants were unsure about the acceptable limits of ChatGPT use in academic assignments. Similarly, task-type sensitivity showed that students did not use ChatGPT in the same way across all assignments; their level of planning, monitoring, and evaluation changed depending on whether the task involved writing, summarizing, preparing presentations, or answering comprehension questions.

Together, the findings of the quantitative and qualitative phases suggest that students' use of ChatGPT is not simply a matter of access to AI technology, but is shaped by their ability to plan, monitor, evaluate, and ethically regulate their interaction with AI-generated content during English course assignment completion.

7. Discussion

The findings of this study provided insights into how 210 Saudi male EFL undergraduate students at a Saudi university reported using ChatGPT while completing English course assignments. Within this sample, students demonstrated different levels of metacognitive awareness in their use of ChatGPT. The questionnaire results showed that students' overall metacognitive awareness was moderate, while the interview findings explained how this awareness appeared in their actual assignment practices.

The results suggested that ChatGPT use among the participants was not uniform. Some students used ChatGPT mainly as a quick source of answers or language support, while others used it more strategically to plan, revise, check, and improve their assignments. This variation indicates that ChatGPT itself does not determine whether students engage in reflective or passive learning. Rather, the way students use the tool depends on their ability to plan their use, monitor the quality

of AI-generated responses, and evaluate whether the outputs are suitable for the assignment requirements.

Among the three metacognitive dimensions, evaluating recorded the highest mean score. This suggests that the participants judged ChatGPT's usefulness after receiving its responses. In practical terms, some students appeared able to review, adapt, or edit AI-generated content before using it in their assignments. However, monitoring recorded the lowest mean score, which suggests that students were less consistent in checking the accuracy, relevance, or appropriateness of ChatGPT responses while they were still working on the task. This points to a possible gap between post-task evaluation and real-time monitoring during AI-assisted assignment completion.

The interview findings helped explain this pattern. Some participants described ChatGPT as a tool for saving time, generating ideas, improving grammar, and organizing responses. For these students, ChatGPT functioned as a form of academic and linguistic support. However, other participants described practices that suggested dependency, such as accepting responses with limited checking or using ChatGPT as a shortcut when assignments were difficult or time was limited. These findings suggest that ChatGPT may support EFL assignment completion when students remain active decision-makers, but it may weaken independent engagement when students rely on its output without sufficient reflection.

The findings also showed that metacognitive awareness is important in AI-assisted EFL learning because students must make decisions not only about the assignment itself, but also about the quality and use of AI-generated content. For EFL students, this is especially relevant because language difficulties may increase their reliance on ChatGPT for vocabulary, grammar, sentence structure, and idea development. Therefore, students need guidance on how to use ChatGPT as a support tool rather than as a replacement for their own thinking and learning.

Another important finding concerns ethical ambiguity. The interview data suggested that some students were unsure about the acceptable boundaries of ChatGPT use in assignments. This uncertainty may affect how carefully students regulate their use of the tool. When students do not know whether using ChatGPT for brainstorming, grammar correction, rewriting, or full-answer generation is acceptable, their use of the tool may become inconsistent. This suggests that instructors and institutions should provide clearer guidance on responsible and ethical AI use in course assignments.

These findings of this study should be interpreted within the limitations of its context. The participants were male EFL undergraduate students from a

Saudi university, and the data were based on questionnaire responses and interviews. Therefore, the findings should not be generalized to all Saudi EFL students, female students, students from other universities, or learners in other educational contexts. Instead, the study offers context-specific evidence about how this group of Saudi male EFL undergraduates reported using ChatGPT and regulating their interaction with it during English course assignment completion.

8. Conclusion

This study focused on Saudi male EFL undergraduate students' metacognitive awareness in using ChatGPT for English course assignments at a Saudi university. Based on questionnaire and interview data, the findings showed that students in this sample varied in how they planned, monitored, and evaluated their use of ChatGPT. Overall, students demonstrated a moderate level of metacognitive awareness, with evaluating showing the highest mean score and monitoring showing the lowest mean score.

The findings suggest that ChatGPT was used by the participants in different ways. Some participants used it passively as a shortcut for completing assignments, while others used it more strategically as a support tool for planning, drafting, revising, and evaluating their work. This indicates that the educational value of ChatGPT depends not only on access to the tool, but also on students' ability to regulate their use of it. In the context of EFL assignment completion, metacognitive awareness appears to be important because students need to judge the accuracy, relevance, and appropriateness of AI-generated responses before using them in academic work.

However, the conclusions of this study are limited to the actual sample and context. The study involved 210 Saudi male EFL undergraduate students from a Saudi university, with interviews conducted with 15 students. Therefore, the findings cannot be generalized to all Saudi EFL learners or to other educational settings. Future research should include female students, multiple universities, larger and more diverse samples, and possibly longitudinal or experimental designs to examine how students' metacognitive awareness develops over time when using ChatGPT for academic assignments.

9. Implications of the Study

9.1 Theoretical Implications

This study contributes to current discussions on AI-mediated learning by showing how metacognition and self-regulated learning can be understood in relation to students' use of ChatGPT. Rather than treating ChatGPT as a separate external tool, the study positions it as part of the learning process itself, influencing how students plan, monitor, and evaluate their academic work during assignment completion.

9.2 Pedagogical Implications

Educators should explicitly incorporate training on the responsible and strategic use of ChatGPT in English course assignments. Such training should include effective prompt design, critical evaluation of AI-generated content, planning and monitoring AI use, and ethical decision-making in assignment completion.

9.3 Institutional Implications

Universities should update their academic policies to include clear guidelines for students when using emerging digital technologies in academic work. These policies should be reviewed and updated regularly as digital technologies continue to develop.

10. Limitations of the Study

The findings of this study should be interpreted with several limitations. First, the quantitative data were based on students' self-reported responses, which may not fully reflect their actual use of ChatGPT or their real metacognitive behavior. Second, the study was limited to 210 male undergraduate EFL students from a Saudi university. Therefore, the findings should not be generalized to all Saudi EFL students, female students, students from other universities, or learners in other educational contexts. Future studies could address these limitations by including students from multiple institutions and using longitudinal or experimental designs to examine how metacognitive awareness develops over time.

11. Recommendations for Future Research

Future studies should investigate the longitudinal development of AI-related metacognitive skills, compare students from different disciplines beyond English courses, and explore experimental interventions designed to improve AI literacy and metacognitive regulation. Future research should also include female students and participants from multiple universities to provide broader and more representative evidence.

References

Abdelhalim, S. M. (2024). Artificial intelligence and metacognitive awareness in higher education learning environments. Journal of Educational Technology Research, 18(2), 77–95.

Akgun, S., & Greenhow, C. (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. Learning, Media and Technology, 47(3), 1–15.

Allen, D., & Mizumoto, A. (2024). AI-assisted feedback in second language writing classrooms. Computer Assisted Language Learning, 37(2), 205–223.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101.

Broadbent, J., & Poon, W. L. (2015). Self-regulated learning strategies and academic achievement in online higher education learning environments: A systematic review. Internet and Higher Education, 27, 1–13.

Creswell, J. W., & Plano Clark, V. L. (2018). Designing and conducting mixed methods research (3rd ed.). Sage.

Er, E., Kopcha, T. J., Orey, M., Dustman, W., & Neely, P. (2021). Feedback practices in online learning environments. Educational Technology Research and Development, 69(4), 2171–2193.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. American Psychologist, 34(10), 906–911.

García-Peñalvo, F. J. (2023). The perception of artificial intelligence in academic contexts. Education in the Knowledge Society, 24, 1–7.

Godwin-Jones, R. (2022). Emerging technologies: Intelligent language tutoring and AI. Language Learning & Technology, 26(1), 4–14.

Hao, Y., Lee, K. S., Chen, S. T., & Sim, S. C. (2024). Artificial intelligence and language education. Educational Technology & Society, 27(1), 55–69.

Huang, H. W. (2023). ChatGPT for language learning: Potentials and limitations. TESOL Journal, 14(3), 1–10.

Huang, H. W., & Mizumoto, A. (2024). Generative AI and second language learning. Computer Assisted Language Learning, 37(4), 445–462.

Huang, H. W., & Teng, F. (2025). Metacognitive awareness and AI-supported language learning. System, 128, 103122.

Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. RELC Journal, 54(2), 537–550.

Kostka, I., & Toncelli, R. (2023). Human-in-the-loop AI in language education. TESOL Quarterly, 57(4), 1402–1414.

Mizumoto, A., & Eguchi, M. (2023). AI writing evaluation tools in EFL contexts. ReCALL, 35(2), 188–204.

Mizumoto, A., Allen, D., & Eguchi, M. (2024). Artificial intelligence and automated writing evaluation. Language Learning & Technology, 28(1), 23–40.

OpenAI. (2023). GPT-4 technical report. OpenAI.

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475.

Stening, A. (2023). ChatGPT as a stochastic parrot: Implications for education. AI & Society, 38(4), 1191–1198.

Teng, F. (2023a). ChatGPT and academic integrity in language education. ELT Journal, 77(4), 421–430.

Teng, F. (2024a). Artificial intelligence and feedback in EFL writing. System, 121, 103056.

Teng, F. (2024b). A systematic review of ChatGPT in language learning. Computer Assisted Language Learning, 37(5), 611–633.

Teng, F. (2025). Metacognitive awareness in AI-assisted language learning. Language Teaching Research, 29(1), 31–49.

Teng, F., & Ma, Y. (2024). Feedback and metacognition in academic writing. Assessing Writing, 59, 100781.

Teng, L., & Zhang, L. J. (2022). Empowering learners through self-regulated learning in language education. Routledge.

Toncelli, R., & Kostka, I. (2024). Faculty perceptions of generative AI in higher education. Journal of Educational Computing Research, 62(1), 88–107.

Vandergrift, L., & Goh, C. (2012). Teaching and learning second language listening: Metacognition in action. Routledge.

Wang, Y., & Xue, S. (2024). Generative AI and digital education transformation. Educational Technology Research and Development, 72(1), 55–73.

Yang, X., Li, P., & Zhao, H. (2024). AI-enhanced learning in university language education. Interactive Learning Environments, 32(2), 144–159.

Yao, J., Zhang, Y., & Liu, H. (2024). Metacognitive regulation in AI-assisted writing environments. System, 122, 103084.

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. Pintrich, & M. Zeidner (Eds.), Handbook of self-regulation (pp. 13–39). Academic Press.

Zou, D., Huang, Y., & Xie, H. (2023). Artificial intelligence in language education: A review. Educational Technology & Society, 26(3), 1–16.

Lee, S. M. (2024). University students' perceptions of ChatGPT in EFL learning. TESL-EJ, 28(1), 1–18.

Alharbi, M. (2024). AI-assisted learning among Saudi EFL students. Journal of Language Teaching and Research, 15(2), 331–344.

Alqahtani, N. (2023). Digital literacy and AI awareness in Saudi higher education. International Journal of Emerging Technologies in Learning, 18(11), 94–109.

Almusharraf, N., & Bailey, D. (2024). Generative AI in Saudi university classrooms. Education Sciences, 14(3), 255.

Farrokhnia, M., Banihashem, S. K., Noroozi, O., & Wals, A. (2024). A SWOT analysis of ChatGPT in education. Computers & Education: Artificial Intelligence, 5, 100179.

Kasneci, E., Sessler, K., Küchemann, S., et al. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. Learning and Individual Differences, 103, 102274.

Lo, C. K. (2023). What is the impact of ChatGPT on education? A rapid review of the literature. Education Sciences, 13(4), 410.

Rahimi, M., & Fathi, J. (2024). AI-mediated self-regulated learning in EFL contexts. System, 124, 103101.

Zhai, X. (2023). ChatGPT user experience in higher education. Smart Learning Environments, 10(1), 1–16.

Tlili, A., Shehata, B., Adarkwah, M. A., et al. (2023). What if the devil is my

guardian angel? ChatGPT as a case study of using chatbots in education. Smart Learning Environments, 10(1), 15.

Baidoo-Anu, D., & Owusu Ansah, L. (2023). Education in the era of generative artificial intelligence. Educational Technology Research and Development, 71(5), 1–17.

Dwivedi, Y. K., et al. (2023). So what if ChatGPT wrote it? Multidisciplinary perspectives on opportunities, challenges and implications of generative AI for research, practice and policy. International Journal of Information Management, 71, 102642.