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# Cultivation of metacognitive skill development through generative AI system use among university students: A focus on self-regulation and reflective thinking

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## *ABSTRACT*

Metacognition development is important among students as it increases awareness and regulates cognitive processes. As generative artificial intelligence (GAI) gradually gains ground, it is expected to enhance metacognition among students as well. The study aimed to explore the metacognitive skills of self-awareness, planning, and reflective thinking among university students through GAI tools. The study followed a semi-structured interview of 10 university students recruited through purposive sampling. The interview was then analyzed through thematic analysis to understand the research aim. First, some reflective practices such as journaling, SWOT analysis, and peer feedback were critical for enhancing self-awareness and deeper learning. Second, GAI tools provided significant scaffolding for breaking down complex ideas, summarizing diverse perspectives, planning, and managing cognitive load while enhancing understanding. However, challenges such as inaccuracies and the risk of over-reliance necessitate careful verification and balance in using these resources. Third, a hybrid paradigm that blends GAI with traditional metacognitive strategies emerged as a practical and ethical framework for promoting metacognition. The study concluded that although GAI enhances metacognitive skill development, effective integration requires ethical and mindful application alongside traditional learning methods. Despite limitations due to research design and small sample size, this study has practical implications for developing training programs for students on responsible GAI use. Future research should focus on the long-term implications of such an integrative approach and its suitability across different educational and cultural backgrounds.

**Contribution/Originality:** The study investigated how generative AI tools enhance university students' metacognitive abilities through qualitative observations. Unlike previous research on cognitive improvement, it proposed an ethical, balanced model integrating AI with traditional methods to address gaps in current metacognitive development in higher education.

## 1. INTRODUCTION

### *1.1. Background*

Metacognition refers to the awareness and regulation of an individual's cognitive processes. It is described as "thinking about thinking," encompassing self-regulation, reflective thinking, and planning (Stanton, Sebesta, & Dunlosky, 2021). Reflective thinking helps students analyze their performance and modify strategies, while planning involves setting objectives and finding methods to achieve them. On the other hand, self-regulation includes

monitoring and regulating emotions, thoughts, and behavior for goal achievement. These skills together form the foundation of academic success, deepen learning, and foster resiliency in overcoming obstacles.

In the context of changing education, the introduction of technology, especially generative AI (GAI) systems, has provided unprecedented opportunities to enhance these skills. The use of generative AI systems is increasingly becoming a part of educational settings to facilitate personalized learning, creativity, and real-time feedback. AI tools can scaffold metacognitive processes by prompting users to reflect on their work, providing constructive feedback, and suggesting strategies for improvement (Chang, Lin, Hajian, & Wang, 2023). Advanced algorithms are used to generate human-like responses that can assist learners in brainstorming, essay drafting, and problem-solving. For example, GAI systems can guide students in self-regulation by recommending time management practices or tracking progress on tasks. AI tools aid in planning by enabling learners to outline what should be done to achieve desired goals. Similarly, reflective thinking is promoted when students respond to AI-generated prompts that challenge them to assess their understanding or explain their reasoning.

However, the rapid adoption of such technologies has raised questions about their role in facilitating metacognition without undermining the independence of learners. Critics counter that overuse of AI would prevent the establishment of intrinsic metacognitive skills (Zhai, Wibowo, & Li, 2024). In the context of university students, they are usually early adopters of new technologies such as generative AI systems. Therefore, university students are an important population to examine in terms of metacognitive development. Most students who begin university are poorly prepared metacognitively (McGuire, McGuire, & Angelo, 2023). For instance, coursework can be rigorous, requiring reflective thinking and strategic planning, while decisions about how to allocate time toward academic work, part-time employment, and social engagement demand a great deal of self-regulation. Thus, studying the experiences of students can offer educators insight into the effectiveness of AI tools to enhance self-awareness, planning, and reflective practices.

Moreover, there is an underdevelopment of practical strategies for its integration into college curricula. Courses remain more centered around content because most of them do not readily incorporate skill-building (Chen, Chen, & Lin, 2020). Most research studies on AI have been concerned with cognitive advantages, such as knowledge retention, rather than potential benefits in the development of self-regulation and reflective thinking, which are important components of metacognition (Li, 2024; Zhou, Teng, & Al-Samarraie, 2024). There is also a lack of frameworks for incorporating AI in ways that balance facilitation with developing independent skills. It is therefore essential to fill the gaps to ensure that technology augments rather than replaces human cognition.

Thereby, the study aimed to explore how metacognitive skills such as self-regulation, reflective thinking, and planning can be enhanced in university students. Thus, it entailed the following research questions:

RO1: To determine the best metacognitive techniques for increasing levels of self-awareness, planning, and reflective thinking.

RO2: To evaluate how technology (such as digital platforms or GAI) can facilitate the use of metacognitive strategies without taking over.

RO3: To provide a paradigm for enhancing metacognition that is universally applicable and relies on technology.

This research is significant as it addresses the critical need for improving metacognitive skills among university students, which are instrumental for both academic and lifelong success. In considering the inclusion of generative AI systems, it explores how technology can facilitate rather than replace metacognitive development. The research also identifies universally applicable, non-technology-dependent strategies to provide a balanced approach within diverse educational contexts. Its findings will serve as valuable guidance for teachers, policymakers, and students to better understand how to develop metacognition in the digital learning era by bridging gaps that have previously existed between educational practices and research.

## 2. LITERATURE REVIEW

### *2.1. Influence of Metacognition on Skill Development*

Metacognitive skills improve academic outcomes because they empower students to take full control of the learning process. A study conducted among forty students at Kermanshah University of Medical Sciences in 2013-2014 found that students' ability to solve problems is improved through metacognitive teaching, which is necessary to enhance academic achievement (Safari & Meskini, 2016). The study revealed that metacognitive skills improve problem-solving skills, particularly with difficult topics such as mathematics and science. However, the sample size was small, which might have affected the generalizability of the study. However, Naseri, Shojaee, and Effati (2017) found that metacognitive training consistently enhances problem-solving, critical thinking, and deep-level learning. The quasi-experimental study included twenty individuals in two groups; therefore, the study design was robust. It demonstrated that the training program enhances students' academic performance and engagement across various disciplines.

Additionally, similar results were obtained through pre-tests and post-tests among thirty individuals at the University of Applied Sciences during the 2020-2021 academic year (Farazandeh, Younesi, & Tarverdi, 2022). It further added that self-regulatory practices foster both academic self-concept and lasting success within any school environment. Traditionally, metacognitive development can be effectively fostered among students through classroom-based approaches. An investigation, where SRL assistance was designed, delivered, and tested as part of the first semester of a four-year, graduate-entry MBBS program, showed that goal setting provides time for planning and progress monitoring (Thomas, Bennett, & Lockyer, 2016). Thus, students' needs to examine both their learning strategies and outcomes, aiding the instructor in better dissemination of teachings. However, these methods are only effective if teachers are competent in metacognitive strategies and can design targeted instructional interventions. Therefore, self-awareness, planning, and reflective thinking are some of the components of metacognition.

A review identified structure, assessment, and relational factors as the main contributing factors in reflective studies (Gathu, 2022). In this context, relational elements that support long-term reflective practice include coaching, role modeling, and incentives. The majority of students find it challenging to be aware of themselves and to think reflectively due to a lack of guidance and excessive rote learning in traditional educational models. Furthermore, an investigation by Byrd, Rastogi, and Elliot (2020) highlighted that students with different educational backgrounds require individualized approaches to overcome their barriers to self-regulation and reflective practice. This underscores the need to introduce explicit metacognitive strategies into higher education curricula and to prepare educators with the appropriate skills to support diverse learners.

### *2.2. Fostering Metacognitive Skills Through Technology*

Recent advances in digital platforms have changed the scene of metacognitive skill development by offering individualized support. Khotimah, Rusijono, and Mariono (2024) conducted pre-test and post-test assessments among participants, clarifying the connection between meta-learning and metacognition and validating the efficacy of meta-learning techniques. With the use of artificial intelligence (AI), meta-learning helps students understand their learning processes, which enhances their ability to plan, monitor, and regulate their cognitive processes. This includes generating tailored prompts, automated feedback, and adaptive resource recommendations to foster deeper engagement and reflective thinking.

Furthermore, these applications allow for the possibility of self-assessment, which has been identified as an important tool for enhancing metacognition. Rum and Ismail (2017) added that AI-based environments enable students to establish goals, track their learning progress, and adjust strategies when necessary, thereby enhancing academic results. However, there is likely a decrease in independent critical thinking among learners due to excessive reliance on AI systems for technological recommendations. Therefore, it is necessary to find a better balance between AI support for learners and providing autonomy for self-learning, ensuring fair distribution.

### *2.3. Research Gap*

Though metacognition is considered an essential skill, its explicit implementation in curricula is still uncommon. Although GAI has shown promise in providing personalized feedback and reflective prompts, its long-term effects on developing metacognitive skills are unknown (Khotimah, Rusijono, & Mariono, 2024). Currently, most curricula focus only on cognitive products such as knowledge and memory retention, rather than on the development of metacognitive skills such as planning and self-regulation (Kaur & Saini, 2020). With the importance of inculcating metacognition in higher studies, it is essential to explore how metacognitive skills such as self-regulation, reflective thinking, and planning can be enhanced in university students (Rum & Ismail, 2017). Thus, the study aims to fill the gap by seeking the best metacognitive techniques for raising levels of self-awareness, planning, and reflective thought. Subsequently, it aims to provide a paradigm for enhancing metacognition that is universally applicable and does not rely on any technology.

### *2.4. Theoretical Foundations*

According to Flavell (1979), metacognition includes two essential components: knowledge of cognition and regulation of cognition. These components provide the foundation for effective self-regulation and reflective thinking, enabling learners to control their cognitive strategies for optimal outcomes. Flavell's model emphasizes knowledge and regulation of cognition, illustrating how self-regulation and reflective thinking can enhance awareness and planning to foster insight (RQ1). Additionally, the theories underpinning the current study include Zimmerman's Self-Regulated Learning Framework and Vygotsky's Sociocultural Theory, which aid in investigating the research questions.

Self-Regulated Learning Framework by Zimmerman and Moylan (2009) places metacognition at the center of learning cycles, which include forethought, performance, and self-reflection. Zimmerman's Self-Regulated Learning Framework enables the exploration of how technology such as generative AI can scaffold self-monitoring without substituting learner agency (RQ2). This cycle of repetition allows the learner to set goals, monitor progress, and modify strategies; therefore, it is crucial for academic success. Furthermore, Sociocultural Theory relates metacognition to reflective thinking, which is developed through social interaction and scaffolded learning environments (Kharroubi & ElMediouni, 2024). Similarly, Pintrich's model builds on this by including metacognitive strategies in motivation and behavior, with a focus on their contribution to academic engagement (Schunk, 2005). The sociocultural model, based on Pintrich and Vygotsky's Sociocultural Theory, would assist in addressing the influence of cultural and contextual factors, demonstrating how frameworks should be developed to be universally applicable and ensuring that technologies do not overshadow traditional methods (RQ3). Therefore, these theories offer a theoretical perspective for investigating strategies to enhance metacognitive skills in diverse and continuously evolving educational contexts.

## 3. METHODOLOGY

### *3.1. Research Design*

The study utilizes a qualitative approach to examine the subtle development of metacognitive skills when using generative AI systems. Qualitative research is highly suitable for exploring the depth and complexity of personal experiences (Creswell & Creswell, 2017). Here, semi-structured interviews were the primary method of data collection. This is particularly applicable in this study, which focuses on educational contexts where phenomena are socially and personally constructed. This method provided a balance between structure and adaptability, enabling the facilitation of conversations while granting participants the opportunity to explain their experiences (Patton, 2002). Such an approach is crucial when considering the interaction between GAI systems and students' self-regulatory behaviors, since unexpected dimensions of their experiences might emerge in open-ended discussions. Moreover, semi-structured interviews are useful for gathering detailed, reflective accounts that are at the heart of metacognitive

processes. The main questionnaire for this study was loosely based on (Liu, Zhang, & Biebricher, 2024; Yao, Sun, Zhu, & Zhu, 2025). Thus, semi-structured approaches allowed key themes of metacognitive development while also leaving room for emergent insights.

### *3.2. Participants*

The study sample included 10 university students from various departments. It ensured that a broad range of perspectives was covered. For instance, STEM students may be using GAI differently than students in the humanities, thereby showing a different impact on their reflective and self-regulatory practices. The participants were selected using purposive sampling. In this study, this sampling method was suitable, as it was important to include students who use any kind of GAI (Palinkas et al., 2015). Therefore, the included participants must have active enrollment in a university program, knowledge of GAI systems, and a readiness to participate in thoughtful conversations; these are all requirements for inclusion. The recruitment of participants was conducted through advertisements on social media. This purposive sampling ensured a diverse sample, supporting more detailed thematic analyses and enhancing the transferability of study findings. To address privacy and ethical concerns, the names of participants and institutions were not disclosed. In the study, participants are therefore referred to as P1, P2, and so on. This methodology was designed to provide a comprehensive understanding of how GAI systems can influence the development of metacognitive skills in university students.

### *3.3. Data Collection*

Data was gathered from individualized, semi-structured interviews conducted with each participant. The interviews were held via online meetings, with durations typically extending to thirty minutes. Appendix 1 presents the interview questions developed for this study. Participants were provided with detailed information about the study's purpose, procedures, and confidentiality measures. Additionally, participants were informed of their right to withdraw at any time without penalty. The main questions of the interview are listed in Appendix 1. The interviews were transcribed for further analysis. Appendix 3 presents the transcribed interviews from the participants. Finally, for ethical considerations, the identities of participants were not disclosed. Each participant was referred to as Participant 1, 2, 3, and so on.

### *3.4. Data Analysis*

The interviews were analyzed through thematic analysis. This method was selected for its systematic yet flexible approach to analyzing qualitative data, thus allowing for the distillation of rich insights into coherent themes (Braun & Clarke, 2012). It involved the following steps:

- Repeatedly reading the transcripts to familiarize oneself with the data.
- Development of initial codes from significant statements.
- Grouping codes into potential themes.
- Reviewing themes to ensure alignment with the data.
- Naming and defining themes.
- Preparing a comprehensive report of findings.

Thus, the diverse perspectives of the participants and rigorous analytical techniques were used in the study to understand the possibilities of GAI as a method for promoting reflective thinking and self-regulation in higher education.

## 4. FINDINGS

Each interview was analyzed for key patterns. Subsequently, three major themes based on the research questions emerged: namely, the best metacognitive techniques, the role of GAI in facilitating metacognition, and the paradigm for enhancing metacognition. Table 1 in Appendix 2 presents the thematic development in the study.

Theme 1: Best Metacognitive Techniques

The theme was identified through keywords such as "self-awareness," "planning," and "goal setting." An in-depth investigation of additional sub-themes is discussed below:

Sub-theme 1: Reflective Practices

The responses highlight that reflective practices are common among the participants.

P1 stated, '*I become self-aware by making notes of what I am reading and this helps me reflect as well*'.

This implies that journals are helpful for students to synthesize what they have learned. Additionally, they aid in critically examining learned material and subsequently connecting new knowledge with prior learning.

Similarly, Participant 9 also reported that,

*Writing reflective essays following the completion of significant projects or tests is a strategy that I have discovered works well.*

Students indicated that reflective practices are more useful as they allow tracking how much one learns and help deepen understanding of the material. Although highly significant, reflective practice cannot occur unless it is undertaken with substantial understanding. For example, despite Participant 9's response, they did not specify how reflections led to adjustments in their study. Additionally, Participant 2 applied SWOT analysis after assignments and tests for self-reflection. This approach helped participants identify their strengths and weaknesses, as well as opportunities for improvement. Peer feedback and discussion were also reported as valuable reflective practices. The social dimension of reflective practices enables participants to engage with diverse perspectives and challenge assumptions.

Sub-theme 2: Goal Setting

Planning and goal-setting layout as two strategies for developing metacognitive skills.

Participant 1 responded, "…*Before interacting with GAI, I normally lay out my tasks or inquiries…*

It implied predefining goals by laying out directions. Thus, participants also indicated the development of task outlines as an actionable planning strategy.

Participant 7 stated, *"...I clearly define the problem I am working on..."*

At the same time, mind mapping received positive feedback regarding the visual method of organizing thoughts, as Participant 2 stated.

*…I frequently use mind mapping to organize my study notes and business strategies since it makes it easier for me to see how concepts relate to one another.*

It implied that such methods supported understanding relationships.

Sub-theme 3: Error Analysis and Iterative Learning

Error analysis and iterative learning were also found to be practiced among students, which provided a way to enhance metacognition.

Participant 3 responded, "*I examine where I went wrong and make a note of whether it was a thoughtless mistake or a conceptual misunderstanding.*"

This implies that for students, self-awareness is enhanced as mistakes lead to reflection, which creates opportunities for improvement. When students repeat mistakes through error revisitation iteratively, they will improve the concept and will not repeat that again. However, without guided reflection, error analysis can turn into frustration instead of progress. Thus, such methods aid in transforming mistakes into powerful learning tools.

Theme 2: The Role of GAI in Facilitating Metacognition

The interview transcripts were further analyzed to understand how the use of GAI can facilitate metacognition. The key patterns were identified based on the way the technology was used. Subsequently, four sub-themes were identified, as discussed below:

Sub-theme 1: Use for comprehension

GAI tools are effective scaffolds for breaking down complex ideas and organizing them.

Participant 3 reported, "*Generally, I ask for step-by-step explanations for deriving coefficients to gain a deeper understanding.*"

Again, Participant 4 reported, *"I frequently utilize GAI to make complicated theories easier to understand, such as how cognitive biases affect judgment."*

Participant 6 stated, "*I have clarified linguistic theories and examined linguistic patterns using generative AI techniques.*"

The outputs of GAI are structured to help with comprehension, especially when the fields involved are STEM or data-intensive in nature. However, as stated earlier, it may hinder critical thinking due to overdependence.

Furthermore, according to Participant 7,

GAI is a strong tool for brainstorming and problem-solving.

The participant specifically mentioned that GAI improves comprehension and organization, but its effectiveness will depend on thoughtful use. It can be concluded that, while GAI could be useful in enhancing metacognition, there should be a balanced approach when using the technology.

Sub-theme 2: Reflective Thinking, Summarizing, and Planning with GAI

Some of the participants also reported that they have been using GAI for summarizing and planning. For instance,

Participant 2 reported that I divide vast volumes of material into smaller sections using GAI.

Similarly, Participant 5 reported, *"GAI assisted me in developing preliminary design concepts for a residential complex… by suggesting several spatial arrangements and façade designs."*

These highlighted the effectiveness in reducing cognitive overload during study sessions.

Moreover, Participant 8 stated,

*…I asked ChatGPT to summarize key debates on carbon pricing.*

This implies that the capacity for structural organization enhances clarity and efficiency in task planning. Similarly, it highlights that GAI is capable of helping to summarize varied perspectives used for critical thinking. Thus, it would aid students in paying attention to essential information and thinking critically.

Sub-theme 3: Challenges Faced

Following the analysis, certain challenges were identified when using GAI as a tool for metacognition. For instance,

Participant 1 added, *"… once it was established that Gram-negative bacteria always lack peptidoglycan, which I knew to be false."*

Similar responses were added by Participant 7 as well, *"GAI sometimes produces incorrect or inadequate code. For instance, it first left out important parameters when I requested a PID controller implementation."*

These highlights indicate that while using GAI tools, errors can mislead learners if not critically evaluated. Therefore, these errors require careful cross-validation. Consequently, for effective cultivation of metacognition using GAI, it is essential to combine domain knowledge with critical thinking.

Furthermore, although GAI provides powerful support for learning, its challenges highlight the importance of mindful application.

Participant 9 responded, '*Overuse may impair one's ability to think critically and conduct independent research.*'

A similar pattern was identified from the response of Participant 6, "*I also avoid over-relying on GAI for assignments; I basically use it as a supplementary tool that requires critical, original thinking*"

Identifying these challenges, it is essential to incorporate GAI into an organized learning environment that promotes critical thinking and self-directed problem-solving. Thus, as also highlighted by a participant, it should be used as a supplementary method rather than as a replacement.

Theme 3: Paradigm for Enhancing Metacognition and Inculcating GAI

Finally, a theme was identified for proposing ways to enhance metacognition with the inclusion of GAI. The repeated use of GAI tools with traditional learning strategies in the responses was interpreted as a message for achieving the right balance in skill development. This was identified through patterns typically sought by participants for their growth. Subsequently, two subthemes were identified, as discussed below.

Sub-theme 1: Utilization of GAI for Metacognition

GAI could be used as a form of peer feedback.

Participant 5 stated, *"Rely on peer and mentor criticism, which pushes me to reconsider and enhance my design methodology."*

Similarly, Participant 8 added, *"…I practice active reading by annotating texts and writing short summaries after each chapter."*

These points towards the need to inculcate GAI in these forms whereby they can serve as group and reflective processes.

Furthermore, it was deduced that learning outcomes with GAI had to be iterative in nature to ensure that their learning was both robust and individualized. As Participant 9 added,

*"I use GAI as a starting point for ideas but never as the final product."*

This indicates that a paradigm for GAI in higher education must include drafting or summarizing information to reflect one's own thoughts. This methodology aligns with the framework for metacognition, where students are continuously supported in refining their problem-solving approaches. This could also be supported by the response from Participant 10.

*"I make sure I've reviewed my lecture notes first so I can critically evaluate the AI's response."*

While the flexibility of GAI towards learner preferences was one of its primary strengths, verification of its output was warranted. Thus, GAI could be an accessible tool for improving metacognitive skills across disciplines, provided it is well integrated with traditional strategies.

Sub-theme 2: Ethical Use of GAI

Ethical use of GAI is very important in education, which has also emerged from the responses of the participants.

Participant 2 stated, *"I make a careful effort to utilize GAI in an ethical manner and refrain from depending too much on it for analytical tasks that require my judgment."*

Participant 6 stated, *"I also avoid over-relying on GAI for assignments; I basically use it as a supplementary tool that requires critical, original thinking."*

This responsible use aligns with the principles of self-regulated learning, which emphasize active engagement and critical reflection. This balance allows GAI to enhance learning without undermining originality or critical thinking skills. Therefore, the paradigm for GAI use must be balanced.

## 5. DISCUSSIONS

The findings provided in-depth insights into the use of GAI among university students. The use of reflective practices such as journaling, SWOT analysis, and peer feedback was identified as common practices for enhancing metacognition. The current study added that reflective practices enable learners to evaluate their cognitive processes and areas for improvement (Colomer, Serra, Cañabate, & Bubnys, 2020). Goal setting and planning should be the primary strategies adopted for planning and prioritizing (Medina, Castleberry, & Persky, 2017). In this context, mind mapping is very useful, as it aids in relational thinking and contributes to complex problem-solving (Öllinger,

Hammon, von Grundherr, & Funke, 2015). Thus, the analysis of errors and repeated learning through reflective learning are particularly instrumental for metacognitive regulation.

Moreover, SWOT analysis is a valuable metacognitive strategy as it encourages individuals to confront their weaknesses while recognizing their strengths (Saienko & Lavrysh, 2020). It can aid in regulating learning. Furthermore, peer feedback inclusion supports the sociocultural theory, whereby social interaction is crucial for cognitive development and reflective thinking (Vygotsky & Cole, 1978). Within this context, GAI tools are capable of providing good scaffolding for comprehension, summarization, and planning. Providing step-by-step explanations through the aid of GAI can facilitate deep understanding and minimize cognitive load. Similarly, the existing study found that AI-supported summarization promotes concentration on the essence of ideas and fosters critical thinking (Dawani, 2023). Thus, GAI could be utilized as a tool for enhancing metacognition among university students, as AI continues to grow.

However, some issues, such as the inaccuracy of the GAI output related to the general disputability of credentials and the reliability of AI-generated information, could be challenging. This aligns with an existing study which states that GAI has the potential to be vastly more disruptive to higher education and society at large than previous iterations (Farrelly & Baker, 2023). Additionally, the risk of over-dependence on AI tools indicates discussions about losing critical thinking skills when learners rely excessively on AI. Based on these understandings, the paradigms for incorporating GAI in higher education should include traditional learning approaches, such as peer feedback, reflective writing, and structured planning.

GAI should be the starting point, and its outputs need to be fine-tuned into personal insights. This aligns with existing studies by Mittal, Sai, Chamola, and Sangwan (2024), who stated that GAI would encourage students to learn and achieve academic success by providing an immersive educational experience. The paradigm should also promote the iterative use of GAI in support of findings that the blend of AI tools can enhance learning outcomes and foster independent problem-solving skills (Williams, 2025). To achieve this, four key stakeholders namely, developers, administrators, teachers, and students should be taken into consideration. However, ethical considerations should be an integral part of the paradigm. These findings align with studies emphasizing the integration of ethical AI in education to support, rather than replace, critical thinking and creativity (Abulibdeh, Zaidan, & Abulibdeh, 2024). Thus, GAI should be used responsibly, not overly relied upon, and the output should be verified during its use.

## 6. CONCLUSION

This study explored the development of metacognitive skills among university students through reflective practices, planning, and the integration of generative AI tools. It was found that traditional metacognitive strategies, such as journaling, SWOT analysis, and iterative learning, are effective in developing self-awareness and reflective thinking among students. Goal setting and mind mapping were helpful in organizing tasks and associating ideas with each other. These practices remain aligned with established metacognitive frameworks, demonstrating their enduring relevance in education.

GAI tools present themselves as valuable scaffolds for comprehension, summarization, and organization, providing personalized assistance in complex tasks. At the same time, inaccuracies and the risk of overreliance on GAI emphasize the need for careful and responsible application. A balanced approach allows GAI to be used alongside other methods, ensuring that students benefit from its efficiency without losing critical and creative skills. Additionally, GAI supplementation should not replace conventional metacognitive practices. Therefore, integrative frameworks of such approaches across various educational environments must be understood over the long term. The results are practically informative for the implementation of GAI tools in learning environments. Practical implications include applying GAI to scaffold learning by breaking down complex tasks and encouraging reflection. Training programs could be designed to educate students on the ethical and critical use of GAI, whereby it could serve as a supplementary approach to enhance metacognition.

However, the limitation of this study is due to reliance on semi-structured interviews and a small sample of university students, which was also purposively selected. This could result in a lack of generalizability across wider populations or more varied educational settings. Furthermore, the study primarily depended on the self-reported experiences of students, which might be influenced by factors such as social desirability bias or recall inaccuracies. Thus, future studies can expand the sample pool to include diverse academic and cultural contexts, thereby increasing generalizability. Further research into the effectiveness of specific types of GAI tools across disciplines would provide more precise insights into optimizing their integration into learning environments.

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**Appendix 1.**

Interview Questionnaire

1. Which methods or exercises have helped you become more self-aware and reflect on your learning the most?
2. Have you ever used these generative AI tools to facilitate your study? If yes, please share your experience.
3. Please describe your understanding of GAI.
4. What are your preparations before utilizing this technology?
5. Have you made any plans prior to using the technology?
6. Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?
7. When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?
8. Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?
9. Have you identified any errors in GAI responses? If yes, what did you do?
10. What are the strengths of utilizing GAI for your work?
11. What are the weaknesses of utilizing ChatGPT for your work?
12. If you can use GAI for your studies in the future, what are you going to do to maximize the benefit of this technology?

**Appendix 2.**

**Table 1.** List of evidences and themes.

| Major themes | Subthemes | Evidences |
|---|---|---|
| Best metacognitive techniques | Reflective practices | 'I become self-aware by making notes of what I am reading and this helps me reflect as well'.<br>"Writing reflective essays following the completion of significant projects or tests is one strategy that I've discovered works well." |
| | Goal setting | "…before interacting with GAI, I normally lay out my tasks or enquiries…"<br>"…I define clearly what problem I am working on…"<br>"…I frequently use mind mapping to organize my study notes and business strategies since it makes it easier for me to see how concepts relate to one another." |
| | Error analysis and iterative learning | "…I examine where I went wrong and make a note whether it was a thoughtless mistake or a conceptual misunderstanding…" |
| Role of GAI in Facilitating Metacognition | Use for comprehension | "Generally, I ask for step-by-step explanations for deriving coefficients for deeper understanding."<br>"I frequently utilize GAI to make complicated theories easier to understand, such as how cognitive biases affect judgment." |

| Major themes | Subthemes | Evidences |
|---|---|---|
| | | "I have clarified linguistic theories and examined linguistic patterns using generative AI techniques."<br>"GAI is a strong tool for brainstorming and problem-solving." |
| | Reflective thinking, summarizing, and planning with GAI. | "…I divide vast volumes of material into smaller sections using GAI".<br>"GAI assisted me in developing preliminary design concepts for a residential complex… By suggesting several spatial arrangements and façade designs"<br>"…I asked ChatGPT to summarize key debates on carbon pricing." |
| | Challenges faced | "… Once, it was stated that Gram-negative bacteria always lack peptidoglycan, which I knew to be false."<br>"GAI sometimes produces incorrect or inadequate code. For instance, it first left out important parameters when I requested a PID controller implementation."<br>"Overuse may impair one's ability to think critically and conduct independent research."<br>"I also avoid over-relying on GAI for assignments; I basically use it as a supplementary tool that requires critical, original thinking." |
| Paradigm for enhancing metacognition, inculcating GAI | Utilization of GAI for metacognition | "… Rely on peer and mentor criticism, which pushes me to reconsider and enhance my design methodology."<br>"…I practice active reading by annotating texts and writing short summaries after each chapter."<br>"I use GAI as a starting point for ideas but never as the final product."<br>"I make sure I've reviewed my lecture notes first so I can critically evaluate the AI's response." |
| | Ethical use of GAI | "I make a careful effort to utilize GAI in an ethical manner and refrain from depending too much on it for analytical tasks that demand my judgment."<br>"I also avoid over-relying on GAI for assignments; I basically use it as a supplementary tool that requires critical, original thinking." |

## Appendix 3.

Transcripts

**Participant 1**

I: Which methods or exercises have helped you become more self-aware and reflect on your learning the most?

P1: I become self-aware by making notes of what I am reading, and this helps me reflect as well.

I: You mean, you maintain a learning journal, right?

P1: yes, yes.

I: Have you ever used these generative AI tools to facilitate your study? If yes, please share your experience.

P1: Yes, I used ChatGPT. For instance, my understanding of complex processes, such as horizontal gene transfer, was significantly improved when I used ChatGPT to break them down into simpler phases.

I: Please describe your understanding of GAI.

P1: GAI is a tool for creating summaries then explanations.

I: What are your preparations before utilizing this technology?

P1: I specify my goals in detail, such as comprehending a certain subject or coming up with a brief synopsis. I found that giving clear instructions is important while using GPT.

I: Have you made any plans prior to using the technology?

P1: Yes, before interacting with GAI, I normally lay out my tasks or enquiries. This strategy guarantees that I maintain my concentration and get the most out of my tool usage.

I: Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?
P1: Yes, of course. Generally, instead of using GAI as my main source, I utilize it as a supplement. I take care to confirm the answers using reliable scholarly sources.
I: When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?
P: I frequently request GAI to explain things in a structured way.
I: Could you provide an example?
P: Yes, I ask it to give me an overview of each type of antibiotic, then provide examples and elaborations. I use it to produce short summaries or comparisons that assist me in organizing the material.
I: Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?
P1: I participate in group conversations that push me to explain ideas out loud, which in turn promotes deeper comprehension and self-awareness.
I: Have you identified any errors in GAI responses? If yes, what did you do?
P1: Yes. I did once, actually. Once, it was stated that Gram-negative bacteria always lack peptidoglycan, which I knew to be false.
I: What are the strengths of utilizing GAI for your work?
P1: Umm… time-saving. I have been able to summarize things and study pretty quickly.
I: What are the weaknesses of utilizing ChatGPT for your work?
P1: Inaccuracy… as we have been discussing earlier.
I: If you can use GAI for your studies in the future, what will you do to maximize the benefits of this technology?
P1: I believe that by cross-referencing, I can maximize the benefits of this technology. Observing case studies and tasks in a reflective notebook has helped me identify my strengths and weaknesses.

**Participant 2**

I: Which methods or exercises have helped you become more self-aware and reflect on your learning the most?
P2: I have found that conducting a SWOT analysis of my own performance following assignments or tests is a useful strategy.
I: Have you ever used these generative AI tools to facilitate your study? If yes, please share your experience.
P2: Yes. Mainly, I have been using it to brainstorm ideas for business case studies, draft marketing strategies, and summarize management theories.
I: Please describe your understanding of GAI.
P2: This generative AI helps in Strategic framework creation, data trend analysis, and the simplification of intricate financial ideas.
I: What are your preparations before utilizing this technology?
P2: Well. To ensure I receive accurate and relevant answers, I specify my precise inquiries or duties. To critically assess the AI's output, I also prepare by reviewing basic ideas.
I: Have you made any plans prior to using the technology?
P2: no nothing like that. I just give clear instructions.
I: Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?
P2: I make a careful effort to utilize GAI in an ethical manner and refrain from depending too much on it for analytical tasks that demand my judgment.
I: When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?
P2: Basically, I divide vast volumes of material into smaller sections using GAI.
I: Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?

P2: Yes, I frequently use mind mapping to organize my study notes and business strategy since it makes it easier for me to see how concepts relate to one another.
I: Have you identified any errors in GAI responses? If yes, what did you do?
P2: I have observed that GAI occasionally provides business examples that are too general or outdated.
I: What are the strengths of utilizing GAI for your work?
P2: I have observed that GAI occasionally provides business examples that are too general or outdated.
I: What are the weaknesses of utilizing ChatGPT for your work?
P2: Well. While using it, I found that although it covers a lot of ground, it doesn't always offer in-depth analysis.
I: If you can use GAI for your studies in the future, what will you do to maximize the benefits of this technology?
P2: I believe staying updated on business and AI ethics can maximize responsible use.

**Participant *3***
I: Which methods or exercises have helped you become more self-aware and reflect on your learning the most?
P3: Well. I examine where I went wrong and make a note whether it was a thoughtless mistake or a conceptual misunderstanding, to steer clear of the same mistakes in the future.
I: Have you ever used these generative AI tools to facilitate your study? If yes, please share your experience.
P3: yes. I am majoring in mathematics so by asking it to answer problems and contrasting its method with mine, I also use it to assess my comprehension.
I: Please describe your understanding of GAI.
P3: I understand GAI as a tool for providing answers, clarifying ideas, or modeling practical uses such as probability scenarios or optimization challenges.
I: What are your preparations before utilizing this technology?
P3: I review the fundamental ideas before applying it to solve a differential equation so that I may assess the AI's results critically.
I: Have you made any plans prior to using the technology?
P3: I always plan to cross-refer the output with academic resources or textbooks is another aspect of planning.
I: Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?
P3: Yes, I do try to be mindful. I don't use it as a source, but mostly for verification or assistance.
I: When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?
P3: Generally, I ask for step-by-step explanations for deriving coefficients for a deeper understanding.
I: Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?
P3: Yes. I always note down the problem I faced so that I can follow up later. This also helps me reflect on whether I have learned it or not.
I: Have you identified any errors in GAI responses? If yes, what did you do?
P3: Yes, many times actually, especially for complicated problems. Sometimes, a different formula seems to be used. In such cases, I normally re-solve it myself!
I: What are the strengths of utilizing GAI for your work?
P3: I think the strength is to cross-verify the solutions.
I: What are the weaknesses of utilizing ChatGPT for your work?
P3: I would say occasional inaccuracy is a weakness.
I: If you can use GAI for your studies in the future, what will you do to maximize the benefits of this technology?
P3: I believe there may be further prospects; perhaps we can explore working with classmates to use GAI for group study sessions, where we jointly assess its results.

**Participant 4**

I: Which methods or exercises have helped you become more self-aware and reflect on your learning the most?

P4: Mainly, I utilize reflective discussions during tutorials to promote greater self-awareness and reflection.

I: Have you ever used these generative AI tools to facilitate your study? If yes, please share your experience.

P4: Yes, I have used Co-pilot. I used it to find the latest critiques on Freud [pause]; it saved a lot of time.

I: Please describe your understanding of GAI.

P4: Umm… GAI are designed to produce content such as writing, simulations, or artistic creations in response to human input.

I: What are your preparations before utilizing this technology?

P4: I make sure I fully comprehend the subject I wish to study.

I: Have you made any plans prior to using the technology?

P4: Yes, I always use an outline to determine where and how I can utilize GAI.

I: Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?

P4: Yes, I have been careful to avoid allowing GAI to take over my role of critical thinking.

I: When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?

P4: I frequently utilize GAI to make complicated theories easier to understand, such as how cognitive biases affect judgment. I ask it to provide me with scenarios or examples that I can use in actual circumstances.

I: Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?

P4: Yes, I examine my responses to case studies or psychological phenomena through self-reflective writing.

I: Have you identified any errors in GAI responses? If yes, what did you do?

P4: Yes, it tends to provide a general description, such as Maslow's hierarchy of needs, without considering criticisms or cultural differences.

I: What are the strengths of utilizing GAI for your work?

P4: For me, it's the scenario creation; it helps me better understand psychological theories.

I: What are the weaknesses of utilizing ChatGPT for your work?

P4: Umm… It might not take individual, contextual, or cultural variations in psychological theories into consideration in its responses.

12. If you can use GAI for your studies in the future, what will you do to maximize the benefits of this technology?

P4: Umm… I will use it for hands-on learning, such as using GAI to model case study conversations or counselling scenarios.

**Participant 5**

I: Which methods or exercises have helped you become more self-aware and reflect on your learning the most?

P5: I have been maintaining reflective design journals, which have been helping me obtain different perspectives.

I: Have you ever used these generative AI tools to facilitate your studies? If yes, please share your experiences.

P5: yes. I generated concepts for spatial layouts and investigated topics like sustainable design using AI.

I: Please describe your understanding of GAI.

P5: So... From how I have been using, I understand GAI as a tool to generate conceptual designs, simulate structural forms.

I: What are your preparations before utilizing this technology?

P5: Umm… preparations… I establish the scope of my project and compile references to guide the output.

I: Have you made any plans prior to using the technology?

P5: No, I don't make any plans; I just ensure that all my ideas are in one place.

I: Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?

P5: Of course. I utilize it to develop conceptual ideas, but I ensure that the finished designs demonstrate my originality and understanding of the project.
I: When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?
P5: GAI assisted me in developing preliminary design concepts for a residential complex… You know… by suggesting several spatial arrangements and façade designs.
I: Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?
P5: I mainly rely on peer and mentor criticism, which pushes me to reconsider and enhance my design methodology.
I: Have you identified any errors in GAI responses? If yes, what did you do?
P5: I feel it is only good for initial concepts otherwise it does not generate feasible designs.
I: What are the strengths of utilizing GAI for your work?
P5: visualization. There is DALL-E which makes visualizing easier.
I: What are the weaknesses of utilizing ChatGPT for your work?
P5: As I was saying earlier certain designs may not be realistic from a structural or financial standpoint.
I: If you can use GAI for your studies in the future, what will you do to maximize the benefits of this technology?
P5: in studies especially for architecture, I would prefer more contextually relevant designs, combine AI results with user research and site analysis.

**Participant 6**

I: Which methods or exercises have helped you become more self-aware and reflect on your learning the most?
P6: In my field, my self-awareness has greatly increased as a result of transcribing and examining real dialogues.
I: I see. Can you tell me what your field is?
P6: I am pursuing a master's degree in linguistics.
I: Have you ever used these generative AI tools to facilitate your study? If yes, please share your experience.
P6: Yes, I have clarified linguistic theories and examined linguistic patterns using generative AI techniques.
I: Please describe your understanding of GAI.
P6: Generative AI (GAI) is a system that uses input data to produce content, such speech or text.
I: What are your preparations before utilizing this technology?
P6: I always define the linguistic problem I'm exploring, such as analyzing syntactic structures or studying language change.
I: Have you made any plans prior to using the technology?
P6: Yes, I plan each project's successful usage of GAI. For example, I created instances of conversational implicatures using GAI when I was studying pragmatics.
I: Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?
P6: indeed. I also avoid over-relying on GAI for assignments, basically use it as supplementary tool that require critical, original thinking.
I: When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?
P6: I use it to give me examples of language use in particular situations, such politeness techniques in various cultures, GAI assisted me in processing linguistic material.
I: Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?
P6: I employ intricate diagrams for syntactic trees or phonetic transcriptions so it challenges me to think critically and carefully.
I: Have you identified any errors in GAI responses? If yes, what did you do?

P6: Not so much. Only once it provided an example of subject-verb agreement that didn't follow standard rules in English.
I: What are the strengths of utilizing GAI for your work?
P6: I found that GAI is most helpful in customizing answers to certain language questions or research requirements.
I: What are the weaknesses of utilizing ChatGPT for your work?
P6: I don't find so much weakness it.
I: If you can use GAI for your studies in the future, what will you do to maximize the benefits of this technology?
P6: It can be used to improve real-world applications, including GAI into computational linguistics for future initiatives like natural language processing.

**Participant 7**

I: Which methods or exercises have helped you become more self-aware and reflect on your learning the most?
P7: I am involved in robotics, so, reflecting on my learning through practical tasks has proven to be the most beneficial method.
I: Have you ever used these generative AI tools to facilitate your study? If yes, please share your experience.
P7: Yes. I mostly, clarify robotics algorithms, debugged code, and generated project ideas using ChatGPT.
I: Please describe your understanding of GAI.
P7: Well. Although GAI is a strong tool for brainstorming and problem-solving, its dependability needs to be critically assessed.
I: What are your preparations before utilizing this technology?
P7: firstly, I define clearly what problem I am working on. It might be a debugging issue of a control system or a gripper mechanism design. Then I look at relevant robotics principles and ensure that the basics are understood.
I: Have you made any plans prior to using the technology?
P7: Yes, I developed potential gripper designs and control algorithms using GAI.
I: Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?
P7: Yes, I've been careful to use GAI to enhance my abilities rather than to replace them completely.
I: When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?
P7: All these I achieve by asking it to describe each stage of a filtering procedure, I condensed the data into flowcharts for simpler comprehension.
I: Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?
P7: Yes, I often reflect on my projects using design review meetings, analyzing what went well and what didn't.
I: Have you identified any errors in GAI responses? If yes, what did you do?
P7: GAI sometimes produces incorrect or inadequate code. For instance, it first left out important parameters when I requested a PID controller implementation.
I: What are the strengths of utilizing GAI for your work?
P7: GAI successfully sheds light on a variety of robotics ideas and algorithms.
I: What are the weaknesses of utilizing ChatGPT for your work?
P7: Many times while working, I found that it does not fully comprehend a robotics challenge.
I: If you can use GAI for your studies in the future, what will you do to maximize the benefits of this technology?
P7: I think it can be included as a tutor for difficult subjects. For instance, I would have included GAI into my study regimen to ensure I have a solid theoretical and practical basis.

**Participant 8**

I: Which methods or exercises have helped you become more self-aware and reflect on your learning the most?

P8: I find reflective discussions with peers helpful because hearing different perspectives often reveals blind spots in my understanding

I: Have you ever used these generative AI tools to facilitate your studies? If yes, please share your experiences.

P8: Yes, while preparing a paper on environmental policy, I asked ChatGPT to summarize key debates on carbon pricing.

I: Please describe your understanding of GAI.

P8: GAI serves as a valuable tool for brainstorming, researching, and exploring diverse perspectives.

I: What are your preparations before utilizing this technology?

P8: I prepare by identifying my specific objectives, such as drafting a presentation or clarifying a concept.

I: Have you made any plans prior to using the technology?

P8: Yes. My plan included verifying its suggestions with trusted sources and refining the points to suit the debate's structure.

I: Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?

P8: Yes, I've been mindful of treating GAI as a solution provider so the final work reflects my own voice and analysis.

I: When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?

P8: I used it to summarize key points from my notes, breaking down lengthy concepts into manageable sections

I: Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?

P8: Yes, I practice active reading by annotating texts and writing short summaries after each chapter.

I: Have you identified any errors in GAI responses? If yes, what did you do?

P8: GAI tends to provide an oversimplified explanation of a complex economic model.

I: What are the strengths of utilizing GAI for your work?

P8: It encourages creativity by providing a range of viewpoints and methods.

I: What are the weaknesses of utilizing ChatGPT for your work?

P8: Outputs may lack the depth needed for critical academic work.

I: If you can use GAI for your studies in the future, what will you do to maximize the benefits of this technology?

P8: I would like to incorporate GAI in group projects for generating discussion points and exploring alternative perspectives.

**Participant 9**

I: Which methods or exercises have helped you become more self-aware and reflect on your learning the most?

P9: Writing reflective essays following the completion of significant projects or tests is one strategy that I've discovered works well.

I: Have you ever used these generative AI tools to facilitate your study? If yes, please share your experience.

P9: Yes, I have used tools to explore unfamiliar topics and generate explanations.

I: Please describe your understanding of GAI.

P9: GAI creates outputs that resemble human reactions by using data and machine learning.

I: What are your preparations before utilizing this technology?

P9: I prepare by identifying specific questions or areas in which I need help.

I: Have you made any plans prior to using the technology?

P9: yes. I might use it to draft an outline for a research paper and then expand on the sections myself.

I: Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?

P9: Absolutely. I use GAI as a starting point for ideas but never as the final product.

I: When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?

P9: I used it to create a structured summary of various sociological theories.

I: Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?
P9: Yes, I use mind mapping to visually organize my thoughts on a topic.
I: Have you identified any errors in GAI responses? If yes, what did you do?
P9: I've found that GAI sometimes oversimplifies or misinterprets complex topics.
I: What are the strengths of utilizing GAI for your work?
P9: GAI may customize answers to fit certain requirements or inquiries.
I: What are the weaknesses of utilizing ChatGPT for your work?
P9: Overuse may impair one's ability to think critically and conduct independent research.
I: If you can use GAI for your studies in the future, what will you do to maximize the benefits of this technology?
P9: future studies can Integrate peer-reviewed research with GAI's outputs to provide thorough and accurate work.

**Participant 10**

I: Which methods or exercises have helped you become more self-aware and reflect on your learning the most?
P10: As a university student, I find regular self-assessments and peer feedback exercises the most effective.
I: Have you ever used these generative AI tools to facilitate your study? If yes, please share your experience.
P10: Yes, I have used ChatGPT to clarify concepts and generate study questions.
I: Please describe your understanding of GAI.
P10: GAI is something that would be part of human life after sometime.
I: What are your preparations before utilizing this technology?
P10: yes. Generally, I need help understanding a concept, I make sure I've reviewed my lecture notes first so I can critically evaluate the AI's response.
I: Have you made any plans prior to using the technology?
P10: yes. My plan includes revising and expanding on the generated content.
I: Have you been mindful of effectively and appropriately utilizing GAI throughout the process? If yes, how?
P10: not as such. I just avoid including direct responses.
I: When using GAI, how did you use it to help you process, organize, elaborate, and summarize the contents?
P10: I use it for better outlines in my assignments and research,
I: Are there any methods or techniques you employ that promote self-awareness, planning, and reflective thinking without the use of technology?
P10: In most cases at the end of each week, I evaluate my progress and establish new targets.
I: Have you identified any errors in GAI responses? If yes, what did you do?
P10: No, it's pretty good.
I: What are the strengths of utilizing GAI for your work?
P10: It is always accessible and provides assistance when I need it.
I: What are the weaknesses of utilizing ChatGPT for your work?
P10: I don't see any weakness unless you talk about ethics,
I: If you can use GAI for your studies in the future, what will you do to maximize the benefits of this technology?
P10: I think it should be allowed in universities for research... of course, with rules.