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Research Article

Portraying Metacognitive Awareness Skills of Senior Year College Students: A Survey Study

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Abstract
Prior research regarding metacognitive awareness had been conducted but none of them analyzed particularly only the metacognitive awareness and the senior year of university students. Thus, this survey study aims to identify the metacognitive awareness skills of senior-year college students at the English Language Education Department. 90 students participated in filling out the questionnaire of Metacognitive Awareness Inventory (MAI) from Schraw and Dennison (1994), consisted of 52 items, divided into 8 domains: declarative knowledge, procedural knowledge, conditional knowledge, planning, information management strategies, monitoring, debugging strategies, evaluation. The data were analyzed by using a descriptive quantitative method to determine the mean score of each domain. The scores were used to interpret the highest metacognitive awareness implementation and the lowest metacognitive awareness skills. The results showed that the highest metacognitive awareness skill of senior year students was planning ($\bar{x}$ = 4.02), followed by procedural knowledge ($\bar{x}$ = 3.99), monitoring ($\bar{x}$ = 3.91), information management strategies ($\bar{x}$ = 3.88), declarative knowledge ($\bar{x}$ = 3.87), evaluation ($\bar{x}$ = 3.85), debugging strategies ($\bar{x}$ = 3.83), and the lowest domain was conditional knowledge ($\bar{x}$ = 3.81). The findings implied that senior-year students could determine goals before starting their learning process. They knew how to achieve their goals, monitored their process, managed information, obtained knowledge, analyzed their performance, and revised their process based on analysis. However, they needed to improve their skill in selecting effective strategies based on specific circumstances.

Keywords
metacognitive awareness skill; senior year college students; survey study

Introduction
On an early basis, the term metacognition was defined by Flavell (1979) as "a critical analysis of thought", "knowledge and cognition about cognitive phenomena", or simply "thinking about thinking". It indicates that metacognition is a process of one's internal thought in perceiving internal input such as

information or knowledge. As the concept developed within decades, scholars described metacognition as an ability to control cognitive processes by organizing, monitoring, and modifying them as a function of learning. To acknowledge how far the cognitive process affects learning, metacognitive awareness analyzes how individuals learn, evaluate their needs, create, and implement strategies toward learning (Hacker et al., 2009; Sawhney & Bansal, 2015). A study found that students' awareness accelerated their cognitive regulation because they knew what action they needed, why, and how to perform strategic skills in different circumstances (Jaleel & Premachandran, 2016). Meanwhile, pre-service teachers of Turkish Language Education at Hatay Mustafa Kemal University were able to create predictions, plan, monitor, and evaluate their learning method thus they fulfilled the expectation of the task (Özçakmak et al., 2021). A case in Vietnam showed that metacognitive awareness scores also led to higher academic performance (Nguyen et al., 2023).

Even further, metacognitive awareness extended its positive impact to other skills. A study showed that there was a significant correlation between metacognitive awareness and listening skills such as selecting information, making interpretations, and finding main ideas (Fu et al., 2023). Another study showed the use of metacognitive knowledge in speaking tasks influenced speaking competencies (Thawarom et al., 2022). Moreover, metacognitive awareness also has an impact on reading comprehension (Kusumawardana & Akhiriyah, 2022). In addition, metacognitive awareness helps students produce explanatory text (Ramadhanti & Yanda, 2021). Students who have high metacognitive awareness tend to demonstrate proper linguistics and text structures. Furthermore, metacognitive awareness was also linked to other variables, for instance, connecting metacognitive awareness to emotional condition and motivation (Çakır & Guven, 2019; Flanagan et al., 2020; Wang & Macintyre, 2021; M. Wang et al., 2023).

However, previous studies intertwined metacognitive awareness with other variables such as academic performance, listening skills, and speaking skills. There was limited study on metacognitive awareness as a single perspective. This study intends to map the fundamental components of metacognition which are knowledge of cognition and regulation of cognition. The setting of this study is the metacognitive awareness of senior-year students at the university level. As the senior students, they expected to own several learning strategies since they had more experiences and longer duration studying at university compared to the junior students. At this phase, they also face thesis writing and it is the most challenging process for them since they need to do lots of steps such as determining the title and the topic of the thesis, the proposal exam, the data collection, and presenting the thesis for university requirement completion (Fitria, 2022). Therefore, the researcher aims to map the metacognitive awareness toward the senior year of college students and formulates the research question as follows, "how are the mapping of metacognitive awareness for senior year students at English Language Education at Islamic University of Indonesia?"

Method

The design of this study was survey research which aimed to describe the characteristics of a specific population (Creswell, 2012). The setting of the research took place in the English Language Education Department at one of the Islamic Universities in Indonesia. The respondents were senior-year of the English Language Education Department students. Of the 90 students, there were 62 female and 28 male respondents. Some of them were writing their undergraduate thesis proposal while some others were preparing their results. They were the best candidate as respondents because they applied metacognitive skills during the process of presenting their undergraduate thesis.

The data were collected by using the Metacognitive Awareness Inventory (MAI) (Schraw & Dennison, 1994). MAI refers to individuals' cognition or cognition in general such as declarative knowledge-knowing "about" things, procedural knowledge-knowing "how" to do things, and conditional

knowledge-knowing the "why" and "when" aspects of cognition (Zhou & Brown, 2017). Meanwhile, the regulation of cognition covers a set of activities that helps students control their learning by using planning, monitoring, and evaluation (Schraw, 1998). Planning is selecting the appropriate strategy, monitoring refers to one's awareness of comprehension and task performance, and evaluation is assessing the regulatory process of one's learning. MAI consisted of 52 items, divided into 8 domains: declarative knowledge, procedural knowledge, conditional knowledge, planning, information management strategies, comprehension monitoring, debugging strategies, and evaluation. The metacognitive awareness domains were presented in true/false questions. The result of MAI can serve as an evaluation for the senior year college students regarding their cognitive performance. The findings also provide more nuance and serve as a contribution toward future studies.

Before taking the data, the MAI questionnaire was translated into Bahasa Indonesia to provide a convenient way for respondents to fill out the questionnaire. Based on the validity check, all items were valid to be used as research instruments as the Pearson correlations scores were bigger than the R-Table (0.207). Meanwhile, the reliability score was 09.41. Due to the pandemic covid-19 outbreaks, the data were collected online by using the Google Form platform. The results of the data were analyzed by using descriptive quantitative to present the highest and the lowest levels of metacognitive skills of senior-year students. The result was presented in two sections. Section 1 highlighted the overall finding, discussing all 8 domains to identify the highest and the lowest domain, and section 2 narrowed down to describe the highest and the lowest score in each domain. As the final presentation, the statistical scores were linked to previous research to find similarities and differences among relevant studies and formulate implementation to determine future recommendations.

Results

Metacognitive Awareness Skills

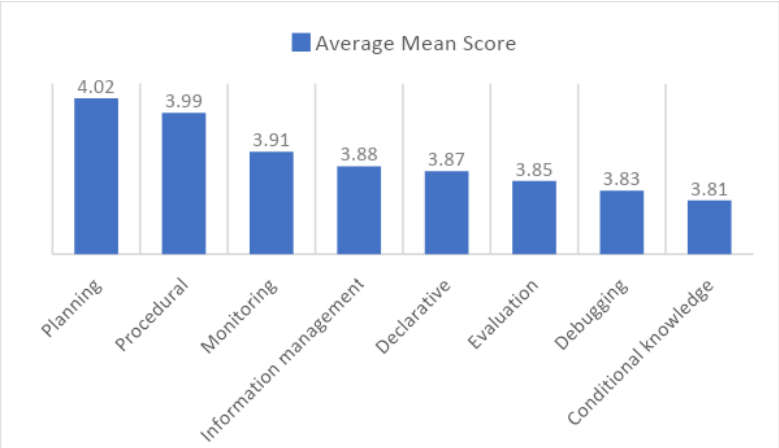

Figure 1. The overall findings of metacognitive awareness inventory domains

From Figure 1, it could be concluded that planning skills were the most frequently used skills compared to other domains. With an average mean score of around 4.02, this result indicated that the students had the upper hand in initiating plans. They could identify the problem, choose strategies, organize thoughts, and predict outcomes to respond to the task. The second rank of the MAI domain was procedural knowledge (X = 3.99), which conveyed that those students understood how to execute procedures such as learning strategies for better ways of learning. The third rank was monitoring with a 3.91 average mean score, which indicated that the senior-year students assessed their efficacy of learning strategies by testing, revising, and evaluating. Interestingly, the average mean scores between information management and declarative domain were distinct only around 0.01 (3.88 to 3.87). It implied that senior-

year of college students had the skill to process the information efficiently. At the same time, they were also aware of their skill, their intellectual resources, and their ability as learners. Another interesting finding was the next domains (evaluation, debugging, and conditional knowledge), which had a distinctive score of around 0.02 repetitively (from 3.85 to 3.83 and from 3.83 to 3.81). These scores showed that senior-year college students maintained equal skills from evaluating the efficacy of performance after the learning process to correcting comprehension and performance errors, then adapting toward new learning strategies. Even further, when comparing the highest average mean score (planning skill) to the lowest average mean score (conditional knowledge skill), it could be concluded that those senior-year college students were more dominant in initiating plans rather than adjusting to the situational demand of each learning task.

Metacognitive Awareness Domains

To easily see the domains, the statements were grouped into abbreviations and given numbers from the list of questionnaires (e.g., PLAN-26 was a planning domain taken from question number 26). Each domain had around five to eleven groups of abbreviation (e.g., PLAN-26 to PLAN-32) hence the researcher analyzed the highest and the lowest mean scores from that group of questionnaire statements.

Table 1. The mean score of Metacognitive Awareness Inventory in each domain

No.	MAI domains	The highest mean score	The lowest mean score
1.	Planning		
	PLAN-31 (I read the instructions carefully before I begin a task)	4.41	-
	PLAN-29 (I ask myself questions about the material before I begin)	-	3.55
2.	Procedural knowledge		
	PROKNO-17 (I have a specific purpose for each strategy I use)	3.88	-
	PROKNO-20 (I use the organizational structure of the text to help me learn)	-	3.73
3.	Monitoring		
	MON-7 (I ask myself questions about how well I am doing while I am learning something new)	4.06	-
	MON-6 (I find myself pausing regularly to check my comprehension)	-	3.67
4.	Information management		
	IMS-38 (I try to translate new information into my own words)	4.26	-
	IMS-37 (I draw pictures or diagrams to help me understand while learning)	-	3.18
5.	Declarative		
	DECKNO-15 (I learn more when I am interested in the topic)	4.40	-
	DECKNO-10 (I am good at organizing information)	-	3.66
6.	Evaluation		
	EVA-51 (I ask myself if I have considered all options after I solve a problem)	3.91	-
	EVA-49 (I summarize what I have learned after I finish)	-	3.64
7.	Debugging		
	DEBSTRA-46 (I stop and reread when I get confused)	4.07	-
	DEBSTRA-45 (I stop and go back over new information that is not clear)	-	3.77

8.	Conditional knowledge		
	CONKNO-21 (I learn best when I know something about the topic)	4.23	-
	CONKNO-25 (I know when each strategy I use will be most effective)	-	3.74

In the Planning domain, PLAN-31 (I read the instructions carefully before I begin a task) was the highest mean score (4.41). It implied that senior-year college students prepared the materials attentively before starting any academic assignments. On the contrary, the least impacting factor was in item PLAN-29 (I ask myself questions about the material before I begin) with a 3.55 mean score. It illustrated that senior-year college students intended to pay attention to details but hardly tested themselves on the material.

In the Procedural Knowledge, comparing PROKNO-17 (I have a specific purpose for each strategy I use) to PROKNO-20 (I use the organizational structure of the text to help me learn) implied that senior-year college students could arrange goals for each learning process, but they also rarely read the structural text to help their learning.

In the Monitoring domain, comparing MON-7 (I ask myself questions about how well I am doing while I am learning something new) with a mean score of 4.06 to MON-6 (I find myself pausing regularly to check my comprehension) with 3.67 as the mean score revealed that students were concerned toward new materials by asking their understanding. However, they did not do this on a regular basis. When they were familiar with the material, the tendency to monitor the comprehension of learning would decrease.

In the Information Management strategy domain, the highest mean score was at IMS-38 (I try to translate new information into my own words) compared to IMS-37 (I draw pictures or diagrams to help me understand while learning). It showed that converting new learning material into students' familiar words would be the most suitable skill rather than visualizing the information into pictures or charts.

In Declarative knowledge, the highest mean score was at DECKNO-15 (I learn more when I am interested in the topic) compared to the lowest mean score which was DECKNO-10 (I am good at organizing information). These findings illustrated that students would invest their attention to the topic they like, and acknowledge it rather than structure the information that they knew.

In the Evaluation domain, the highest mean score was at EVA-51 (I ask myself if I have considered all options after I solve a problem) and the lowest mean score was at EVA-49 (I summarize what I have learned after I finish). The findings above proved that students tended to evaluate the solutions that they chose, but they did not evaluate the learning material. They seemed to appraise their act of deciding on a solution rather than doing an assessment after learning.

In the Debugging strategy, the highest mean score was at DEBSTRA-46 (I stop and reread when I get confused) and the lowest mean score was at DEBSTRA-45 (I stop and go back over new information that is not clear). There was a tendency for students to repeat the material if they felt uncertain about it. However, this tendency did not appear in new material, students seldom returned and grasped the new information even if they had not understood it yet.

The last one was Conditional Knowledge which had the item CONKNO-21 (I learn best when I know something about the topic) and the item CONKNO-25 (I know when each strategy I use will be most effective) as the lowest mean score. These findings indicated that senior-year college students had not applied different learning strategies. They acknowledged the material that was familiar to them but did not follow it up with the most effective learning strategies.

Discussion

The findings of this research present data about the metacognitive awareness skills of senior-year students in English Language Education at the Islamic University of Indonesia. Planning was the most used skill among other domains. Besides planning, procedural knowledge and monitoring were the top three metacognitive awareness skills among the senior year of college students. It showed that students were capable of making specific purposes for their learning strategies and monitoring their progress. Other domains such as information management, declarative, and evaluation were equally distributed. Students managed the cognitive knowledge, understood what kind of subjects to learn, and evaluated the learning strategies. Several studies agree with the findings since college students are able to implement basic metacognitive awareness skills (Anumudu et al., 2019; Çini et al., 2023; Lavrysh et al., 2023; Siddiqui et al., 2020; Siqueira et al., 2020).

However, the findings of this study revealed that conditional knowledge was the least favorable skill for senior-year college students. This implied that they did not fully comprehend "why" and 'when" to apply various cognitive actions. They intended to use the specific strategies that they normally know compared to the new strategies. The senior year of college students needed to be adaptive to improve their learning performance. Adaptive skill relates to the level of confidence. Students who have confidence tend to conduct a better metacognition process (Cortese, 2022). Confidence level leads to diverse personal output in someone's learning. It depends on the interaction of the brain to produce metacognition. Another study supports the view by showing that the metacognition process can be influenced by initial personal judgment (Emory & Luo, 2022). Students who have initial personal beliefs can achieve learning goals independently without any additional external support. A study added that there was no direct correlation between metacognitive and learning performance (Anthonysamy, 2023). Metacognitive skills mostly focus on academic performance only. In fact, each student may demonstrate different results due to mental resilience. Students need to elaborate metacognitive skills with mental management to formulate contextual learning strategies. Mental well-being is one of the foundations prior metacognition processes. Therefore, it needs intervention to boost the metacognitive processes.

The implication of this study is an urgency to explore further research about empowering students' mental readiness prior to learning. Several studies mention the impacts of appropriate training to facilitate the metacognitive awareness process. Mindfulness training helps students with disabilities to improve their self-observation, self-regulation, and adaptation (Mitsea et al., 2022). Breathing exercises contribute to someone's power to regulate and control their physical, mental, and well-being (Drigas & Mitsea, 2022). Self-regulation was proven as one of the skills to foster digital literacy (Anthonysamy et al., 2020). Self-esteem also plays an important role in improving students' readiness in the digital era (Khampirat, 2021). Thus, it is important to investigate more about mental preparation prior to learning to support the metacognitive awareness process.

Conclusion

Based on the results, students are able to formulate a plan to complete their work. They are also capable of arranging specific procedures to create learning strategies. They complete the process by fulfilling learning resources to facilitate learning. However, they still need to improve their skills in modifying or changing learning strategies to adjust to current needs. Recognizing metacognitive awareness creates an opportunity for senior-year college students at the English Language Education Department to evaluate the process of their learning. They would recognize their strength in planning their learning process as well as their weakness in adapting to new strategies of learning.

Despite the interesting results, the research data is still limited because it only represents respondents from one institution. There is no comparison among the population in another intuition. Therefore, there is an opportunity to conduct further research on the metacognitive awareness thesis writing process. Hence, the implication would be broadened to analyze the correlation between metacognitive awareness

and psychological variables such as childhood trauma, family conditions, trust issues, gender, culture, and other social paradigms in the digital era.

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