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English Undergraduate Students and Their Metacognitive Awareness Level: Evidence from One English Education Program

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Abstract

This research investigated students' level of metacognitive awareness and its correlation with their grade point average (GPA). The data derived from 166 English department students at an Indonesian teacher training faculty who responded to the Metacognitive Awareness Inventory (MAI) instrument developed by Schraw and Dennison (1994). The statistical analysis of the data collected showed the mean MAI score for the 166 participants in this study was 41.54. It also showed metacognitive regulation has a higher mean score (28.45) than metacognitive knowledge (13.09). Pearson correlation analysis indicated that there is no significant correlation between students' metacognitive awareness and their GPA (sig. 0,46 > 0,05). It means that students with high metacognitive awareness levels can have lower GPAs, whereas those with low levels of metacognitive awareness can have higher GPAs.

Keywords

Grade point average, metacognitive awareness, metacognitive knowledge, metacognitive regulation

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Introduction

Having metacognitive skills is deemed important for students. Flavell (1979) described metacognitive awareness as the knowledge of one's own cognitive processes, and the capacity to regulate those processes. Therefore, self-awareness, monitoring, and evaluation make up the metacognitive component. Schraw (1998) suggested metacognitive awareness comprises of two main components: knowledge of cognition and regulation of cognition. An individual's comprehension of the variables relating to people, tasks, and strategies is referred to as knowledge of cognition. While the overall planning and monitoring of one's specific cognitive actions are the examples of regulation of cognition.

Students need to develop metacognition abilities in the 21st century since they can result in independent and creative individuals (Thomas, 2012; Margaret, 2002; Ya-Hui, 2012). Schraw and Dennison (1994) maintained that learning is easier when students possess the metacognitive capacity since it gives them knowledge of efficient learning strategies and allows them to regulate and monitor their learning. A number of studies have revealed that students' academic progress is significantly influenced by their metacognitive awareness (Zhao & Mo, 2016). Students that possess metacognitive skills are more aware of their learning processes (Sonowal & Kalita, 2017; Listiana et al., 2016), more deliberate and strategic in their learning, and more self-reliant (Zhao & Mo, 2016). They can also accurately assess their performance and conduct a self-evaluation during the acquisition process (Zimmerman & Matinez-Pons, 1998; Molenberghsand et al., 2016).

Another reason for students to have metacognitive skills is due to the promotion of project-based learning (PjBL) at school and university. There is a close relationship between PjBL and students' metacognitive skills. In higher education, project-based learning (PjBL) is seen as a strategy that has the potential to enhance student learning where universities attempt to provide students with both hard skills (cognitive knowledge and professional skills) and soft skills (critical thinking, communication, collaboration and entrepreneurship). Traditional education has come under fire for merely imparting the teachers' expertise to the students. Students only have a cursory understanding of the material as a result. Additionally, there may be a disconnect between what university students learn and what employers demand (Holmes, 2012). Therefore, project-based learning should be used to give university students chances to engage in genuine problem-solving and knowledge development on relevant professional contexts (Guo, 2020). In order to successfully conduct PjBL, students must be able to solve issues by applying declarative, procedural, and conditional knowledge as well as to plan, monitor, and evaluate their work. The abilities are known as metacognitive skills.

Understanding the importance of metacognition in learning process, the researchers in this study investigated the level of metacognitive awareness of English department students at an Indonesian teacher training faculty. PjBL is also encouraged to be implemented in the faculty especially since the implementation of *Kurikulum Merdeka*, the newest curriculum in Indonesia. The Minister of Education and Culture has put up *Merdeka Belajar Kampus Merdeka (MBKM)* program, which aims to encourage university students to learn a variety of knowledge and skills that will be helpful for prospective employment.

Having metacognitive awareness is crucial for the students to strive during their academic journey and for their future. Thus, this empirical research aims to examine metacognitive awareness level of English department students in an Indonesian faculty of teacher training, and if any, the relationship between metacognitive awareness level and the students' grade point average (GPA). Following research questions were constructed to achieve the aims comprehensively:

1. What is the level of metacognitive awareness of English department students in an Indonesian teacher training faculty?
2. What is the relationship between students' metacognitive awareness level and their academic achievement indicated by grade point average (GPA)?

Literature Review

Metacognition

Metacognition is the capacity of learners to be aware of and keep track of their learning process. Although cognition and metacognition are connected, they are distinct because cognitive abilities are required to carry out a task, while metacognitive skills are required to comprehend how that task was carried out (Rivers, 2001). Metacognition, to put it simply, is the ability to self-regulate one's decision making, be aware of one's own knowledge, and control that information during the problem-solving process. Metacognition was studied as knowledge about knowledge or cognition about cognition (Flavell, 1976; Panaoura, Philippou & Christou, 2003). While Rivers (2001) demonstrated that the two categories of metacognitive skills are self-assessment (the capacity to evaluate one's own cognition) and self-management (the capacity to control one's future cognitive development).

Students' understanding of themselves, their own techniques, and the situations in which those strategies are most effective correlates with their knowledge of cognition. Declarative knowledge, procedural knowledge, and conditional knowledge are the three types of metacognitive knowledge (Schraw & Dennison, 1994). These are viewed as the foundational elements of conceptual knowledge. Declarative knowledge includes our understanding of how we learn and the factors that affect it. Procedural knowledge is our understanding of the various learning and memory techniques that are most effective for us. Meanwhile, our knowledge of the circumstances under which we can use different cognitive techniques, known as conditional knowledge.

On the other side, understanding of how students organize their learning, put techniques into practice, monitor their progress, identify comprehension issues, and assess their learning pertains to regulation of cognition. Planning, information management strategies, debugging strategies, comprehension monitoring, and evaluation are the domains under metacognitive regulation (Schraw & Moshman, 1995). Planning is outlining a cognitive activity by deciding on the best tactics and cognitive resources to use. Monitoring entails being aware of how we are doing with a cognitive task and having the ability to assess how well we are doing. Last but not least, evaluation is examining the result to see if the learning

outcome corresponds to our learning goals, and if the regulating processes we employed were successful (Schraw & Moshman, 1995).

From the reviewing of the literature above, it seems that students who have well-developed metacognitive knowledge and metacognitive regulation skills, and employ these skills will achieve academic success. As a result, it is critical to be able to evaluate college students' metacognition in order to ascertain whether their knowledge and abilities are connected to academic success. Lecturers can utilize a variety of strategies to evaluate their students' metacognition and come up with ways to improve students' metacognition.

Assessing students' metacognition and its correlation to their academic achievement, several researches have been conducted to investigate students' metacognitive level and its correspondence to their academic attainment. Anumudu et al. (2019) conducted research on self-assessed metacognitive awareness of undergraduate and postgraduate students enrolled in biology or genetics course. The studies showed students' high scores on MAI and positively correlate with their test scores. The data from this study suggested that the students were aware of their cognitive capacities and even had stronger belief that they could exert control over these capacities. The study also found that metacognitive awareness tends to decline with study level.

Another study by Ward and Butler (2019) on the relationship between metacognitive awareness and college freshman students' academic achievement found a strong positive association between the two. This suggests that, when compared to pupils with lower levels of metacognitive awareness, those with higher levels tend to also thrive academically. These findings further extend the relationship between academic success and metacognitive awareness to the group of college freshman. Ward and Butler (2019) pointed out strategies for helping at-risk freshmen succeed in academic environments since the level of metacognitive awareness can be raised through teaching.

The Metacognitive Awareness Inventory (MAI) and Aitken Procrastination Inventory were also both used in Taj and Maqsood's (2020) study to examine metacognitive awareness, procrastination, and its effect on students' academic performance. The results of their analysis showed that procrastination and metacognition had a major impact on university students' academic performance. Similar studies on correlation between students' metacognitive awareness and their academic performance were conducted by Zhao and Mo (2016), Abdellah (2015) and Isgör (2016). Therefore, the current researchers endeavoured to investigate metacognitive awareness level of their students at an Indonesian university.

Methodology

Research design, site, and participants

The nature of this research is quantitative and data were gathered using a survey design. This research utilized the Metacognitive Awareness Inventory (MAI) developed by Schraw and Dennison (1994) to investigate the level of metacognitive awareness and its correlation with grade point average (GPA) of English major students in teacher training and education faculty. The reliability of the instrument was determined by the significant alpha level of the MAI, which was 0.93.

There were 166 students participated in this study. These students are actively enrolled in the English Department program of an Indonesian teacher training faculty. The following table demonstrates demographic information about their age, gender, and semester enrolled.

Table 1. *Distribution of participants' gender*

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Female	137	82.5	82.5	82.5
	Male	29	17.5	17.5	100.0
	Total	166	100.0	100.0	

From table 1, it can be learned that there are 137 female students (82,5%) and 29 male students responded to the survey delivered via google form. The table tells us that more female students are enrolled in the teacher training faculty's English department than male students. It appeared that teaching attracted more female students than male students. Their age ranged from 16 to 23 years old and enrolled in the first to ninth semester as shown in table 2.

Table 2. *Distribution of participants' age*

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	16.00	1	.6	.6	.6
	18.00	31	18.7	18.7	19.3
	19.00	38	22.9	22.9	42.2
	20.00	36	21.7	21.7	63.9
	21.00	45	27.1	27.1	91.0
	22.00	11	6.6	6.6	97.6
	23.00	4	2.4	2.4	100.0
	Total	166	100.0	100.0	

In this study, students over the age of 21 made up the majority of respondents (27%) while respondents under the age of 16 made up just 0,6% of the sample. At this age, these student groups have demonstrated an understanding of their thought processes (Dulay, Burt, & Krashen, 1982). The MAI instrument was considered appropriate for the participants' age as a result.

Table 3. *Distribution of participants' enrolled semester information*

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	2.00	67	40.4	40.4	40.4
	4.00	15	9.0	9.0	49.4
	6.00	75	45.2	45.2	94.6
	8.00	3	1.8	1.8	96.4
	10.00	6	3.6	3.6	100.0
	Total	166	100.0	100.0	

Sixth semester students made up the highest percentage of research participants (45,2%), while eighth semester students made up the lowest percentage (1,8%).

Data collection

The research instrument utilized in this study was the Metacognitive Awareness Inventory (MAI) developed by Schraw and Dennison (1994) which consisted of 52 items. The scale's items were divided into two main factors and eight sub-factors. The two key components were metacognitive knowledge and metacognitive regulation. There are three sub-levels of metacognitive knowledge: procedural knowledge (4 items), declarative knowledge (8 items), and conditional knowledge (5 items). Planning (7 things), information management (9 items), monitoring (8 items), debugging (5 items), and assessment were the five sub-factors that made up metacognitive regulation (6 items).

The MAI instrument was put in Google form and the researchers shared the Google form link to the participants via WhatsApp group of each student's academic year. The students received a brief explanation in the Google form and instructed to carefully read the statement and mark the relevant box to indicate their answer. The researchers also asked the students' gender, age, semester, and GPA in the Google form. The university in this study grades students using a standard 0.0 to 4.0 scale. Once the information was gathered, it was entered into SPSS version 26 for statistical analysis.

Statistical analysis

Students' metacognitive awareness level, metacognitive regulation level, metacognitive awareness level, and standard deviation of each level were all displayed in the descriptive statistics analysis. Pearson product-moment correlation was used to examine whether there is a relationship between students' level of metacognitive awareness and GPA.

Ethical consideration

To keep the participants' safety, privacy, and confidentiality, any specific names of the participants and locations were masked.

Findings and Discussion

Descriptive statistics analysis of the metacognitive awareness level of the participants

The following table provided descriptive statistics regarding the participants' level of metacognitive awareness.

Table 4. *Descriptive statistics of the metacognitive awareness level of the participants*

	N	Minimum	Maximum	Mean	Std. Deviation
MAI LEVEL	166	20.00	52.00	41.54	6.37
Valid N (listwise)	166				

The mean MAI score for the 166 respondents was 41.54, and the standard deviation score was 6.37. The score indicated that students in this study have relatively high metacognitive awareness level.

Table 5. *Descriptive statistics of the metacognitive regulation level of the participants*

	N	Minimum	Maximum	Mean	Std. Deviation
REGULATION	166	11.00	35.00	28.45	4.25
Valid N (listwise)	166				

Metacognitive regulation has a mean score of 28.45, and a standard deviation score of 4.25.

Table 6. *Descriptive statistics of the metacognitive knowledge level of the participants*

	N	Minimum	Maximum	Mean	Std. Deviation
KNOWLEDGE	166	6.00	17.00	13.09	2.82
Valid N (listwise)	166				

Metacognitive knowledge has a mean of 13.09 and a standard deviation of 2.82, respectively. The results revealed that students' scores on metacognitive regulation are higher than those on metacognitive knowledge. This finding corroborates research conducted by Anumudu et al. (2019) which found level of metacognitive regulation of the students in their study is higher than level of metacognitive knowledge.

Table 7. *Descriptive statistics of the metacognitive awareness level of the participants per gender*

	Gender	N	Mean	Std. Deviation	Std. Error Mean
MAI LEVEL	Female	137	41.33	6.50	.55
	Male	29	42.55	5.70	1.05

From table 7, we can see that males score 42.55 on the MAI scale on average, while females score 41.33 on average. Hence, the MAI level of male and female students does not differ significantly although the male group have a slightly higher score. It might be argued that both groups have the capacity to regulate their thought processes. The results of this study appear to go against earlier research that claimed female students scored higher on metacognitive learning strategies than male students (Coskun, 2018). Therefore, similar research may be done to clarify the problem.

Table 8. *Correlation between level of the metacognitive awareness level and GPA*

		GPA	MAI LEVEL
GPA	Pearson Correlation	1	-.057
	Sig. (2-tailed)		.462
	N	166	166
MAI LEVEL	Pearson Correlation	-.057	1
	Sig. (2-tailed)	.462	
	N	166	166

Table 8 showed the level of significance is 0,462 > 0,05 which means there is no correlation between GPA and MAI. The correlation index is -0,057 which implies negative correlation between them. Therefore, it implies that students with low metacognitive awareness level nevertheless have high GPA and vice versa. This finding of study contradicts other studies who confirmed the positive correlation between students' metacognitive awareness level and their GPA (for example, Butler, 2019; Garofalo & Lester, 1985; Young and Fry, 2008). According to Ward and Butler (2019), this is possibly because the metacognitive awareness assessment is not responsive to other variables that might be influencing a person's academic progress such as self-regulation and self-efficacy.

This finding, however, suggested that students in this particular study should benefit more from assistance with metacognitive awareness. This is due to the fact that learners' educational lives clearly demonstrate a vital role for metacognition. It is the awareness of the learner's cognitive habits. According to Rezvan, Ahmad and Abedi (2006), knowing about metacognition processes and tactics helps people learn more effectively, and even slow learners can benefit from these techniques. Lau and Chan (2003), stated that many students who are more aware of their metacognition processes struggle to finish their academic projects on time. They naturally do worse on academic tasks as a result of their failure to complete their academic work. The pupils' tardiness is to blame for this failure regardless

their high metacognitive awareness. This may also be the cause of the current study's results differing from those of earlier studies that found a strong contribution of students' metacognition to academic achievement. Thus, teaching metacognitive strategies to students may help them perform better.

Table 9. *Correlation between level of the metacognitive regulation level and GPA*

		GPA	REGULATION
GPA	Pearson Correlation	1	-.074
	Sig. (2-tailed)		.342
	N	166	166
REGULATION	Pearson Correlation	-.074	1
	Sig. (2-tailed)	.342	
	N	166	166

Table 9 showed consistency result that the level of significance is 0,342 > 0,05 which means no correlation between the two variables. The Pearson correlation value is -0,074 showed negative relationships.

Table 10. *Correlation between level of the metacognitive knowledge level and GPA*

		IPK	KNOWLEDGE
GPA	Pearson Correlation	1	-.018
	Sig. (2-tailed)		.819
	N	166	166
KNOWLEDGE	Pearson Correlation	-.018	1
	Sig. (2-tailed)	.819	
	N	166	166

The significant level as revealed by table 10 indicated no correlation between GPA and metacognitive knowledge (sig. 0,819 > 0,05) and Pearson correlation value is -0,01. These results confirmed that there is no positive relation between metacognitive regulation and metacognitive knowledge with students' GPA. The results of this study's investigation into the relationship between metacognitive awareness and academic achievement as measured by students' GPA are in direct opposition to earlier studies that found a strong correlation between the two. This study found there is no association between students' GPA and their level of metacognitive awareness.

Conclusion

This study showed that students of English department in an Indonesian university have relatively high mean score of the Metacognitive Awareness Inventory (MAI), i.e., 41.54.

The mean score for metacognitive regulation (28.4518) is also higher than metacognitive knowledge (13.0964). However, the score does not correlate positively with grade point average (GPA). There is no significant correlation between students' metacognitive awareness level and their GPA (sig. 0.462>0.05). That indicates that, while students with high metacognitive awareness level can have lower GPAs, while students with low levels of metacognitive awareness can have high GPAs. The study also supported that there are no significant variations in the level of metacognitive awareness between male and female students, suggesting that both groups have good thought regulation.

The researchers thus advise further research to qualitatively examine students' unique practices in putting their cognitive abilities because the findings imply that there is no substantial positive link between metacognitive awareness level and students' academic success. Strategies for integrating metacognitive training in higher education must be planned because it is crucial to improve students' metacognitive abilities. In order to improve students' metacognitive skill set, future studies might additionally assess students' metacognitive awareness both before and after training.

Disclosure statement

The authors reported no potential conflict of interest.

References

Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement and teaching performance of pre-service female teachers in Ajman University in UAE. *Procedia-Social and Behavioral Sciences*, 174, 560-567.

Anumudu, C., Adebayo, A., Gboyega-Tokunbo, A., & Isokpehi. (2019). Self-assessed metacognitive awareness among students of the university of Ibidan, Nigeria. *Journal of Educational and Social Research, 9*(3), 185-193.

Coskun, Y. (2018). A study on metacognitive thinking skills of university students. *Journal of Education and Training Studies, 6*(3), 38-46.

Dulay, H. C., Burt, M. K., & Krashen, S. D. (1982). *Language two*. New York: Oxford University Press.

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

Guo, P., Saab, N., Post, L. S., & Admiraal, W. (2020). A review of project-based learning in higher education: Student outcomes and measures. *International Journal of Educational Research, 102*, 1-13. https://doi.org/10.1016/j.ijer.2020.101586

Holmes, L. M. (2012). *The effects of project based learning on 21st century skills and no child left behind accountability standards (Doctoral dissertation).* Retrieved from ProQuest Dissertations and Theses database. (3569441).

Isgör, I. Y. (2016). Metacognitive skills, academic success and exam anxiety as the predictors of psychological well-being. *Journal of Education and Training Studies, 4*(9), 35-42. https://doi.org/10.11114/jets.v4i9.1607

Lau, K. L., & Chan, D. W. (2003). Reading strategy use and motivation among Chinese good and poor readers in Hong Kong. *Journal of Research in Reading, 26*(2), 177-190. **https://doi.org/10.1111/1467-9817.00195**

Listiana, L., Susilo, H., Suwono, H., & Suarsini, E. (2016). Empowering students' metacognitive skills through new teaching strategy (Group investigation integrated with think talk write) in biology classroom, *Journal of Baltic Science Education, 15*(3), 391-400.

Margaret, M. W. (2002). *Metacognition*. Singapore: Thomson Learning, Inc.

Molenberghs, P., Trautwein, F-M., Böckler, A., Singer, T., Kanske, P. (2016). Neural correlates of metacognitive ability and of feeling confident: A large-scale of fMRI study. *Social Cognitive and Affective Neuroscience, 1942-1951.*

Panaoura, A., Philippou, G., & Christou, C. (2003, March). *Young pupils' metacognitive ability in mathematics*. Paper presented at the Third Conference of the European Society for Research in Mathematics Education.

Rezvan, S., Ahmad, S.S., & Abedi, M.R. (2006). The effects of metacognitive training on the academic achievement and happiness of Esfahan University conditional students. *Counselling Psychology Quarterly, 19*(4), 415-428

Rivers, W. (2001). Autonomy at all costs: an ethnography of metacognitive self-assessment and self-management among experienced language learners. *Modern Language Journal*, *85*(2), 279-90.

Schraw, G. (1998). Promoting general metacognitive awareness. *Instructional Science, 26*(1-2), 113–125. https://doi.org/10.1023/A:1003044231033

Schraw, G., & Dennison, R. S. (1994). Assessing Metacognitive Awareness. *Contemporary Educational Psychology, 19,* 460-475. http://dx.doi.org/10.1006/ceps.1994.1033

Schraw, G., & Moshman, D. (1995). Metacognitive theories. *Educational Psychology Review*, *7*, 351-371. https://doi.org/10.1007/BF02212307

Sonowal, M., & Kalita, M. (2017). A study on metacognitive awareness and academic achievement of higher secondary level students of Dibrugarh town of Assam, India. *The Clarion: International Multidisciplinary Journal, 6*(1), 69-74. https://doi.org/10.5958/2277-937X.2017.00012.0

Taj, S., & Maqsood. (2020). Metacognitive awareness, procrastination and its impact on students' academic performance. *Sir Syed Journal of Education and Social Research (SJESR), 3*(4), 400-406.

Thomas, G. P. (2012). Metacognition in science education: Past, present and future considerations. In G.J. Fraser, K. G. Tobin, C. J. McRobbie (Eds.) *Second international handbook of science educations*, (pp. 131-144). New York: Springer.

Ya-Hui, W. (2012). A study on metacognition of college teachers. *The Journal of Human Resource and Adult Learning, 8*(1), 84-9.

Zhao, L., & Mo, S. (2016). The impact of metacognitive awareness on class performance in financial accounting courses. *Academy of Educational Leadership Journal, 20*(2), 78-88.

Zimmerman, B. J., & Martinez-Pons, M. (1988). Construct validation of a strategy model of student self-regulated learning. *Journal of Educational Psychology, 80*(3), 284-290. https://doi.org/10.1037/0022-0663.80.3.284

Ward, R. T., & Butler, D. L. (2019). An investigation of metacognitive awareness and academic performance in college freshmen. *Education, 139*(3), 120-126.

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