INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT

OPEN ACCESS JOURNAL

Vol 15, Issue 4, (2026) E-ISSN: 2226-6348

Metacognitive Strategies as Predictors of MUET Writing Performance: A Multiple Regression Analysis

Hayati Syafina Amaruddin, Nur Hazwani Hanafi, Bharathi Naidu Vijayan

Centre of Foundation Studies, Universiti Teknologi MARA Cawangan Selangor, Kampus Dengkil

Corresponding Author Email: hayatisyafina@uitm.edu.my

DOI Link: http://dx.doi.org/10.6007/IJARPED/v15-i4/29455

Published Online: 24 November 2026

Abstract

Metacognitive strategies are a subsection of metacognition that focus on the conscious awareness and understanding of a student's cognitive processes when responding to learning tasks. These strategies enable students to manage their learning by planning, monitoring and evaluating the tasks that they are doing. This study aims to determine if the three dimensions of metacognitive strategies, namely planning, monitoring, and evaluating, predict pre-university students' MUET writing performance. The findings reveal a weak linear relationship among the three dimensions and MUET writing performance. This contradicts past studies that mostly claim students' performance is influenced by the three dimensions. It is possible that there are other factors that influence students' MUET writing performance. The findings from this study will assist academics in formally training students on using metacognitive strategies.

Keywords: Metacognitive Strategies, Malaysian University English Test (MUET), Writing

Introduction

Metacognitive strategies are situated within the broader term, metacognition. Metacognition means being aware of one's own learning, where students observe, understand and modify their learning to suit their goals (Santangelo et al., 2021; Qin et al., 2022). The metacognitive strategies introduced by Flavell (1979) can be divided into planning, monitoring and evaluating. Planning focuses on students' ability to identify suitable strategies needed and other means required to complete the task (Teng & Yue, 2023). Monitoring, on the other hand, is tracking their performance as they do the task and evaluating the results of their progress in relation to their goals (Al-Bayati, 2025; Teng & Yue, 2023). These three dimensions are interrelated, where students' observation and understanding of the purpose of learning are connected to selecting a particular strategy to complete the tasks (Santangelo et al., 2021). As these strategies are interrelated and inform one another, it is interesting to explore how these strategies influence students' performance on learning tasks, particularly in writing.

At the tertiary level, writing is often viewed as more complex than other language skills among learners of English as a second language (ESL). One of the reasons for this is that writing requires generating ideas, organising thoughts to ensure coherence, and adhering to language mechanics. Moreover, students at this level are expected to convince readers of their views through their writing, which is not an easy feat. In order to attain all these, students need to carefully plan, monitor their writing and evaluate it at the end before it can be submitted as a completed product (Razzaq & Hamzah, 2024; Rosdiana et al., 2023; Teng et al., 2021; Qin et al., 2022). In other words, students need to practice metacognitive strategies to produce high-quality writing. Hence, this study aims to determine if the three metacognitive dimensions, planning, monitoring and evaluating, collectively and individually predict pre-university students' MUET Writing performance.

Statement of Problem

It is crucial for individuals to write effectively, yet many still lack this essential skill. Despite ongoing efforts to improve English proficiency in Malaysia, recent reports and examination data show that many Malaysian university students still underperform in writing, limiting their academic success and employability. Data from the Malaysian national examination (SPM) further supports this, showing persistent weakness in English. In SPM 2022, only 24.8% of the 368,351 candidates obtained A+, A, or A-. However, SPM 2025 data showed an improvement, even though only 30. 9% of 385,465 candidates attained A +, A, or A- (Lembaga Peperiksaan or Malaysian Examination Board, 2026; 2023).

In terms of MUET, the 2024 nationwide results showed that out of 38205 candidates, the majority attained Band 3 (50.55%) and Band 3.5 (23.33%) of the 9-band scale that ranges from 1 to 5+ for the writing component (Malaysian Examinations Council, 2024) which are considered average. The council's summary reports that candidates mostly used incorrect grammar, mainly incorrect subject-verb agreement and incorrect tenses. It was apparent that candidates who attained Band 2.5 to Band 4 had somewhat struggled applying appropriate grammar (Malaysian Examinations Council, 2024). Moreover, their responses for Task 2 (in the same test), which requires them to write an argumentative essay, were also in the limited to satisfactory range. Candidates mostly wrote off-topic, failed to provide suitable examples, lacked in-depth elaboration ideas and provided general explanations (Malaysian Examinations Council, 2024). These issues indicate a lack of planning, monitoring their writing and evaluating the achievement of task requirements among MUET's candidates. Metacognitive strategies could help students perform better in their writing. Some students reported they are aware of the effectiveness of these strategies in writing; however, research suggests that awareness alone does not translate into improved performance (Çam, 2023; Arrosyidah et al., 2024; El Hosayny et al., 2025). This suggests that students need to effectively employ planning, monitoring and evaluating strategies to improve their writing performance. However, research remains limited in examining the extent to which metacognitive strategies predict writing performance among pre-university students, particularly in the context of the MUET writing test. This study attempts to fill in the gap by investigating how planning, monitoring, and evaluating can predict MUET's writing performance.

The objectives of the study are:

1) To determine the extent to which planning, monitoring, and evaluating predict students' MUET Writing performance.
2) To investigate which metacognitive strategy is the strongest predictor of MUET Writing performance.

The research questions are:

1) To what extent do planning, monitoring, and evaluating predict students' MUET Writing performance?
2) Which metacognitive strategy is the strongest predictor of MUET Writing performance?

Based on the research objectives and research questions, two hypotheses are formed:

1) Null hypothesis: Planning, monitoring and evaluating have no linear effect on students' MUET writing performance.
2) Alternative hypothesis: Planning, monitoring and evaluating have a positive linear effect on MUET writing performance.

Literature Review

In writing, planning usually involves organising ideas; while monitoring tracks the progress of developing the ideas; and evaluating involves assessing and revising the complete written text. These three stages are parts of metacognition. Metacognition comprises metacognitive knowledge and metacognitive regulation (Qin et al., 2022; Teng et al., 2022). This study focuses on metacognitive regulation, namely planning, monitoring, and evaluating in composition.

Many studies indicate that metacognitive skills positively influence writing performance. For example, Qin et al. (2022) surveyed 503 students using the Metacognitive Strategies in Writing scale and found that planning, monitoring, and evaluating significantly influenced students' writing outcomes at the end of the semester. Similarly, Teng et al. (2022) found that all eight writing strategies, including planning, monitoring, evaluating, and various knowledge-based strategies, significantly predicted academic writing performance. Building on these findings, Teng and Yue (2023) employed structural equation modelling with 644 third-year students to identify relationships among metacognitive writing strategies, critical thinking, and academic writing. They found similar results, showing that metacognitive strategies help students in their writing. Teng and Qin (2026) extended this research to multimedia writing with a sample of 957 undergraduates, and they found that eight of eleven metacognitive writing strategies significantly predicted performance, while three did not, indicating that these strategies' predictive power varies. El Madani et al. (2024) also reported a strong positive correlation (ρ= .79) between metacognitive awareness and writing proficiency among 94 Moroccan university EFL students, with awareness accounting for 62% of the variability in writing ability. Razzaq (2025) found that planning, monitoring, and evaluating strategies also improved Pakistani ESL learners' writing performance. In their study, willingness to write is found to be a mediating factor. In addition, Ünsal Görkemoğlu and Karacan (2024) studied 125 Turkish EFL writers and found that metacognitive experiences predicted not only L2 writing performance but also writing enjoyment and cognitive engagement, and showed the multitude of benefits of metacognitive engagement.

Although extensive research supports the positive influence of metacognitive strategies on writing performance, several studies have questioned the relationship. For instance, Çam (2023) identified only weak positive relationships between writing achievement and person knowledge, strategy knowledge, and core metacognitive strategies such as planning, monitoring, and evaluating among 120 B2-level Turkish EFL students. The results show that task knowledge has no association with achievement. Similarly, Arrosyidah et al. (2024) found that there is no statistically significant relationship between intermediate-level metacognitive awareness and argumentative writing scores among 30 Indonesian EFL university students. Moreover, El Hosayny et al. (2025), in a study of 82 Moroccan second-year students, corroborated these findings when they reported a weak correlation (r = .192) between awareness and argumentative writing performance. These findings suggest that metacognitive awareness alone may not improve performance without real application. Fahreza (2025) substantiated this perspective, noting moderate awareness and generally good writing performance but no significant correlation (r = .074, p > .05) between self-reported awareness and actual strategy use. Vijayan et al. (2025) study further highlights this divergence, arguing that students' self-reports on strategies used may not accurately reflect their engagement in authentic writing contexts.

However, intervention studies that explicitly teach metacognitive strategies provide opposing findings. Studies show that when students are taught the strategies explicitly, they perform better in writing. This is supported by Han (2024) who found that EFL learners who received instruction in metacognitive writing strategies actually outperformed a control group in writing performance and exhibited increased motivation. It shows that the learners seem to be “aware” of what helps them to write best. Moreover, Khosravi et al. (2023) examined strategy-based instruction in a flipped classroom, and they also observed improvements in writing performance, reduced anxiety, and enhanced self-efficacy. These findings indicate that explicit instruction and guided implementation of metacognitive strategies can bridge the gap between awareness and effective use of the strategies, resulting in improved writing outcomes. This shows that there is a need to move from just being aware of the use of metacognitive strategies to actively incorporating the strategies in their writing.

Conceptual Framework

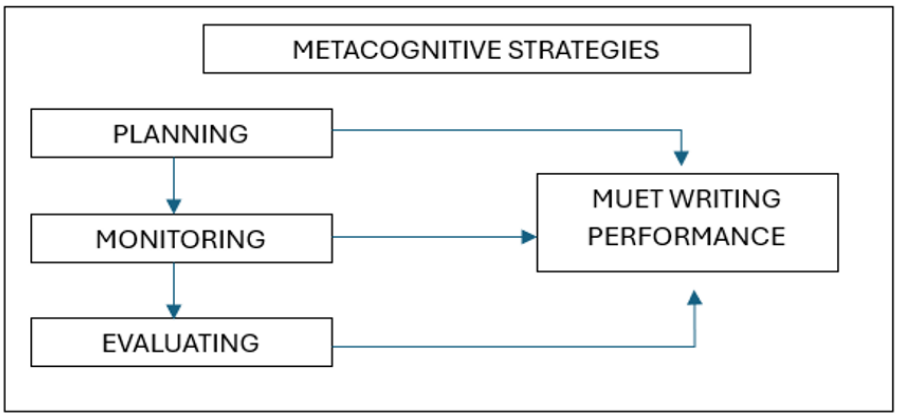

Figure 1: Conceptual Framework of the relationship of Pre-university Students’ use of metacognitive strategies and the MUET writing performance

This conceptual framework is situated within the three dimensions of metacognitive strategies: planning, monitoring and evaluating. Planning strategies are observed before writing. These strategies assist students in thinking about how to complete the task which covers steps such as analysing the task, brainstorming ideas, setting goals, etc. Monitoring strategies are used during writing which enable students to check on their writing as they do the task. These strategies are ongoing until students complete the writing task. The last strategies are evaluating, which are observed at the end of writing; these strategies enable students to reflect on what they have written. These strategies cover the quality of the product that they produced, if they have followed the criteria set for the task, proofread, etc. This framework aligns with the current study as this study aims to determine if the three metacognitive dimensions, planning, monitoring and evaluating, predict pre-university students' MUET writing performance.

Methodology

This study employed a quantitative research design to determine whether the three metacognitive dimensions collectively and individually predict MUET writing scores. Multiple regression analysis was performed to assess the extent to which the dimensions–namely planning, monitoring, and evaluating, predict students' MUET writing scores. The sampling procedure employed a combination of cluster sampling and convenience sampling techniques. Cluster sampling was used to select intact classes of students at a pre-university programme in Selangor, which serve as the representative sample of the cohort. Subsequently, convenience sampling was employed to recruit accessible students from the selected clusters who were available and willing to participate in the data collection of this study. Data were collected using a questionnaire adapted from Qin and Zhang (2019) assessing students' use of metacognitive strategies on a five-point Likert Scale, alongside their official MUET writing test score. The adapted items were sent for review by an expert and a pilot study was conducted (N=51). The pilot study exhibited high internal consistency (Cronbach's α=0.9) as shown in Table 1, demonstrating strong validity and reliability.

Table 1
Reliability of Survey

Reliability Statistics	
Cronbach's Alpha	0.9
N	21

Findings

Table 2
Descriptive Statistics of Metacognitive Strategies Usage and MUET Writing Score

Variable	Measurement Scale	Mean	SD	Description / Level
Planning	1–5 Scale	3.97	0.652	Medium
Monitoring	1–5 Scale	4.27	0.557	High
Evaluating	1–5 Scale	4.42	0.649	High
MUET Writing Score	0–90 Score	50.03	9.775	Moderate / Average

Descriptive statistics were conducted for the metacognitive writing strategies and MUET writing performance. Table 2 reported use of metacognitive writing strategies on a 1–5 Likert scale which indicated high levels of use for Evaluating (M = 4.42, SD = 0.649) and Monitoring (M = 4.27, SD = 0.557). A medium level was reported for Planning (M = 3.97, SD = 0.652). Furthermore, for the MUET writing score, students achieved a moderate average of 50.03 (SD = 9.775) out of 90.

Table 3
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	.007(a)	.006	-.025	9.894

(a) Predictors: Planning, Monitoring, Evaluating
(b) Dependent Variable: MUET Writing Score

A multiple regression was conducted to determine if planning, monitoring, and evaluating (predictors) can reliably predict students' MUET writing scores (dependent variable). The model summary table reports a correlation coefficient (R = .007), indicating a very weak linear relationship. The coefficient of determination (R Square = .006) shows that only 0.6% of the variance in MUET writing scores can be predicted from metacognitive strategies, namely planning, monitoring, and evaluating. Therefore, planning, monitoring, and evaluating do not reliably predict students' MUET writing scores.

Table 4
ANNOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.175	3	19.058	.195	.900 (b)
	Residual	9593.736	98	97/895		
	Tota;	9650.912	101			

(a) Dependent Variable: MUET Writing Score
(b) Predictors: Planning, Monitoring, Evaluating

The ANOVA analysis evaluates whether the regression model is statistically significant in predicting MUET writing scores. Table 4 shows that the overall regression model is not statistically significant, F (3,98) = .195, with a p-value of .900. Since the p-value is less than 0.05, therefore the independent variables do not reliably predict the dependent variable.

Table 5
Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	48.091	7.957		6.043	< .001
	Planning	.263	2.057	.018	.128	.899
	Monitoring	1.739	2.557	.099	.680	.498
	Evaluating	-1.478	2.338	-.098	-.632	.529

A coefficient test was conducted to see which metacognitive strategy is the strongest predictor of MUET Writing performance. Table 5 shows that none of the predictor variables emerged as statistically significant predictors of MUET writing scores. Planning (B = .263, SE = 2.057, β = .018, t = .128, p = .899), monitoring (B = 1.739, SE = 2.557, β = .099, t = .680, p = .498), and evaluating (B = -1.478, SE = 2.338, β = -.098, t = -.632, p = .529). Based on the data, none of the predictors has a p-value less than 0.05. Hence, all three predictors do not have any effect on students' MUET writing scores.

Discussion

The findings of this study reveal that planning, monitoring and evaluating do not significantly predict pre-university students' MUET writing performance (R-square=.006, p=.900). Moreover, none of the metacognitive dimensions emerged as significant predictors. These results contrast with previous studies that revealed a positive relationship between the use of metacognitive strategies and students' writing performance (Qin et al. 2022; Teng et al. 2022; Teng and Yue, 2022; El Madani et al. 2024; Ünsal Görkemoğlu and Karacan, 2024; Razzaq, 2025; Teng and Qin, 2026).

This divergence provides several insights into Malaysian pre-university students' writing patterns and abilities. The discrepancy between students' high self-reported use of monitoring and evaluating strategies and their moderate MUET writing performance suggests a potential gap between strategy use and effective implementation. As pre-university students, they are still transitioning into a tertiary education environment, they may report surface-level usage of the metacognitive strategies with little awareness of the importance of using the strategy effectively for high-stakes examinations like MUET. Although students reported using the strategies, the implementation may be superficial rather than reflective. The findings of the current study are supported by El Hosayny et al. (2025), Fahreza, (2025),

Vijayan et al., (2025), who noted that self-reported use or superficial implementation of the strategies does not necessarily lead to better writing performance.

Furthermore, this superficial implementation of metacognitive strategies may be attributed to their lack of experience in independent learning environments, specifically in tertiary education. In other words, they struggle to adopt and use planning, monitoring and evaluating strategies when writing independently, thereby limiting the impact of these strategies on their writing. These findings emphasise the need for pedagogical intervention (Han, 2024; Khosravi et al., 2023). Pre-university students cannot be expected to employ metacognitive strategies in an in-depth manner without receiving formal training. The effective application of metacognitive strategies among students requires structured and systematic instruction (Han, 2024; Khosravi et al., 2023) which focuses on developing students' understanding of how planning, monitoring and evaluating strategies can be effectively integrated into the writing process to enhance the quality of their writing.

The step-by-step approach to teaching metacognitive strategies allows students to better understand how the dimensions are interdependent, helping them improve the overall quality of their writing. This is in line with Han (2024) and Khosravi et al. (2023) studies where strategy-based instruction and explicit instruction help to bridge the gap between awareness of the strategies and effective implementations, contributing to significant improvements in students' writing quality. Therefore, educators must incorporate metacognitive training into their writing classes to help foster effective integration of metacognitive strategies into students' writing process.

Overall, this study shows that a high self-reported use of metacognitive strategies does not necessarily guarantee better writing performance, particularly in high-stakes exams like MUET. Without in-depth knowledge of how to integrate the different strategies effectively into their writing process, students will not be able to produce high-quality work. Bridging the gap between surface-level understanding and application requires pedagogical interventions in helping students become more aware of the writing process. Ultimately, these interventions enable students to effectively employ metacognitive strategies to produce logical and coherent writing.

Conclusion and Implications

When responding to a writing task, students often employ the three metacognitive dimensions; planning, monitoring and evaluating. These strategies are important as they help students to ensure they meet the criteria set for writing tasks. This study expands upon the existing literature on metacognitive strategies by highlighting that the three dimensions of metacognitive strategies do not necessarily affect students' writing performance as opposed to most past studies which show that the three dimensions of metacognitive strategies positively influence students' writing performance. This indicates that there could be various underlying factors to why the three dimensions of metacognitive strategies did not affect students' writing performance.

The findings from this study highlight that metacognitive strategies are essential for writing tasks; however, it is important to ensure that students are aware of how to apply these strategies in an in-depth manner. Language trainers should also be aware of students'

struggles in using these strategies in the classrooms. Moreover, they could conduct metacognitive training workshops to formally train students on how to use these strategies to attain maximum benefit.

Future studies using a qualitative approach could be used to carry out an in-depth exploration on the reasons why high self-reported writing does not lead to high writing performance. Moreover, researchers could also employ a mixed-method study on the extent of students' knowledge of metacognitive strategies influences their writing performance.

References

Al-Bayati, Z. A. A. (2025). The interrelationship of planning, monitoring, and evaluation (PME) as high-order executive skills on EFL university students' writing performance. *Mustansiriyah Journal of Humanities*, (Special Issue). https://mjh.uomustansiriyah.edu.iq/index.php/mjh/article/view/889.

Arrosyidah, H. J., Munir, A., & Mustofa, A. (2024). The correlational study between EFL students' metacognitive awareness and argumentative writing performance. *Eralingua: Jurnal Pendidikan Bahasa Asing dan Sastra*, *8*(1), 95–112. https://doi.org/10.26858/eralingua.v8i1.59595

Çam, E. (2023). An investigation into the relationship between metacognitive knowledge and writing achievement of Turkish EFL learners. *Journal of Language Research*. https://doi.org/10.51726/jlr.1374408

El Hosayny, O., Razkane, H., & Yeou, M. (2025). Metacognition in academic writing: Analyzing strategies and gender differences among Moroccan university EFL learners. *Jurnal Arbitrer 12*(1*)*. https://arbitrer.fib.unand.ac.id/index.php/arbitrer/article/view/642

El Madani, E. M., Larouz, M., Fagroud, M., & Saadallah, Z. (2024). The relationship between writing proficiency in English and metacognitive awareness of writing strategies among EFL university students. *Jurnal Arbitrer, 11*(3), 373–383. https://doi.org/10.25077/ar.11.3.373-383.2024

Fahreza, H. (2025). *An explanatory sequential investigation of the correlation between metacognitive awareness and academic writing skills among EFL university students.* [Master's Thesis, UIN Sunan Gunung Djati Bandung]. https://digilib.uinsgd.ac.id/115566/

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. *American Psychologist*, *34*(10), 906–911. https://doi.org/10.1037/0003-066X.34.10.906

Han, L. (2024). Metacognitive writing strategy instruction in the EFL context: Focus on writing performance and motivation. *SAGE Open*, *14*(2). https://doi.org/10.1177/21582440241257081

Khosravi, R., Dastgoshadeh, A., & Jalilzadeh, K. (2023). Writing metacognitive strategy-based instruction through flipped classroom: An investigation of writing performance, anxiety, and self-efficacy. *Smart Learning Environments, 10* (48). https://doi.org/10.1186/s40561-023-00264-8

Lembaga Peperiksaan or Malaysian Examination Board, Ministry of Education. (2026). *Laporan analisis keputusan peperiksaan Sijil Pelajaran Malaysia (SPM) 2025*. Kementerian Pendidikan Malaysia. https://lp.moe.gov.my/index.php/laporan-analisis-keputusan/1435-laporan-analisis-keputusan-spm-2025

Lembaga Peperiksaan or Malaysian Examination Board, Ministry of Education. (2023). *Laporan analisis keputusan peperiksaan Sijil Pelajaran Malaysia (SPM) 2023*. Kementerian Pendidikan Malaysia. https://lp.moe.gov.my/files/spm/2023/Laporan%20Analisis%20Keputusan%20Peperiksaan%20SPM%202022.pdf

Malaysian Examinations Council (2024). *Report and insights MUET 2024*. Penerbitan Pelangi.

Qin, C., Zhang, R., & Xiao, Y. (2022). A questionnaire-based validation of metacognitive strategies in writing and their predictive effects on the writing performance of English as foreign language student writers. *Frontiers in Psychology*, *13*, 1071907.

Qin, L., & Zhang, L.J. (2019). English as a foreign language writers' metacognitive strategy, knowledge of writing and their writing performance in multimedia environments. *Journal of Writing Research, 12*(2), 393-413. doi:10.17239/jowr-2019.11.02.06

Razzaq, S. & Hamzah, M. H. (2024). The integration between metacognitive writing strategies and willingness to write: A way to expediate writing performance of Pakistani ESL learners a mixed-methods approach. *Social Sciences & Humanities Open*, *10*. doi: 101010. 10.1016/j.ssaho.2024.101010.

Razzaq, S. (2025). *The roles of metacognitive writing strategies and willingness to write in writing performance of Pakistani ESL learners* [Doctoral Thesis, Universiti Utara Malaysia]. https://etd.uum.edu.my/11815/

Rosdiana, L. A., Damaianti, V. S., Mulyati, Y., & Sastromiharjo, A. (2023). The role of metacognitive strategies in academic writing skills in higher education. *International Journal of Learning, Teaching and Educational Research*, *22*(6), 328–344. https://doi.org/10.26803/ijlter.22.6.18

Santangelo, J., Cadieux, M., & Zapata, S. (2021). Developing student metacognitive skills using active learning with embedded metacognition instruction. *Journal of STEM Education: Innovations and Research*, *22*(2).

Teng, M. F., & Huang, J. (2021). The effects of incorporating metacognitive strategies instruction into collaborative writing on writing complexity, accuracy, and fluency. *Asia Pacific Journal of Education, 43*(4), 1071–1090. https://doi.org/10.1080/02188791.2021.1982675

Teng, M. F., & Qin, C. (2026). Assessing metacognitive writing strategies and the predictive effects on multimedia writing. *Asia Pacific Journal of Education*, *46*(1), 39–62. https://doi.org/10.1080/02188791.2024.2325132.

Teng, M. F., & Yue, M. (2023). Metacognitive writing strategies, critical thinking skills, and academic writing performance: A structural equation modelling approach. *Metacognition and Learning*, *18*(1), 237–260. https://doi.org/10.1007/s11409-022-09328-5

Teng, M. F., Qin, C., & Wang, C. (2022). Validation of metacognitive academic writing strategies and the predictive effects on academic writing performance in a foreign language context: Validation of metacognitive academic writing strategies and the predictive effects on academic writing performance in a foreign language context. *Metacognition and learning*, *17*(1), 167-190.

Ünsal Görkemoğlu, B., & Karacan, C. G. (2024). Metacognitive experiences of EFL students as predictors of enjoyment, engagement, and performance in L2 writing. *Journal of College Reading and Learning, 54*(1), 32–54. https://doi.org/10.1080/10790195.2024.2316578

Vijayan, B. N., Hanafi, N. H., & Amaruddin, H. S. (2025). The influence of metacognitive writing strategies on foundation students' writing performance. *International Journal of*

Academic Research in Business and Social Sciences, 15(9), 467–476. https://doi.org/10.6007/IJARBSS/v15-i9/26501