

**Investigating Students' Metacognitive Awareness Inventory
in Listening Comprehension**

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Abstract

Understanding listening skills is vital in language learning, yet many students struggle with it, partly due to low metacognitive awareness. This research emphasizes the importance of metacognitive awareness in language learning, specifically in listening comprehension. Students often face challenges due to low metacognitive awareness, affecting their ability to plan, monitor, and evaluate listening strategies. The urgency of this study lies in enhancing listening skills through improved metacognitive training, which can aid in effective listening comprehension and overall academic performance. By identifying these areas of need, educators can better tailor teaching methods and curricula to foster more active and reflective listening in students, ultimately benefiting their language learning journey. This study aims to investigate the relationship between metacognitive awareness and listening comprehension among high school students. Conducted in two classes with a total of 39 students, the research employed a quantitative design using the "Metacognitive Awareness Inventory for Listening (MAIL)" and a "Listening Comprehension Test." Data were analyzed using descriptive statistics and independent samples t-tests to compare scores between the two classes. Results indicated no significant differences in metacognitive awareness ($p = 0.638$) and listening comprehension ($p = 0.431$) between the two groups. These findings suggest that other contextual factors, beyond metacognitive awareness, may influence listening comprehension. Further research is recommended to explore these additional factors and their impact on students' listening skills and metacognitive strategies in educational contexts.

Keywords: Metacognition, metacognitive awareness, listening comprehension

INTRODUCTION

Understanding listening skills is a crucial part of language learning, but many students face difficulties mastering it. One key issue identified is the low metacognitive awareness of students in the listening process. Metacognitive awareness involves the ability to plan, monitor, and evaluate one's listening strategies (Xu et al., 2021). A low level of awareness often leads to an inability to cope with challenges in listening texts, such as understanding accents, the speed of speech, or complex sentence structures, thereby hindering students' ability to comprehend the conveyed message (Ocak, et al., 2020). Metacognitive awareness in education has been a focus of research since Flavell introduced the concept in 1979. However, its application to listening skills, especially in the context of foreign language learning, has only received significant attention in the last two decades. Early research largely concentrated on reading and writing skills, with listening often overlooked. Recently, research has recognized the importance of listening skills as an integral component of comprehensive communication competence. The rise of technology and multimedia in education has also opened new opportunities to develop and measure metacognitive awareness in listening (Liu, 2020).

The importance of this research is based on the need to enhance students' listening skills, which is a fundamental component in language learning. This study aims to fill the gap in the existing literature by exploring the relationship between metacognitive awareness and listening comprehension. Understanding how students use metacognitive strategies in listening can help educators develop more effective and relevant teaching methods. Additionally, this research is expected to provide insights on integrating metacognitive training into language learning curricula to improve students' learning outcomes. Recent research indicates a positive relationship between metacognitive awareness and successful listening comprehension. Goh & Vandergrift (2021) found that students actively using metacognitive strategies tend to perform better in listening. Emphasized that structured interventions can increase students' metacognitive awareness, subsequently enhancing their listening ability. Rahimi & Katal (2019) found that students with high metacognitive awareness are more capable of handling various listening challenges, such as different accents and speaking rates (Rahimirad & Shams, 2014). Another study by Al-Khresheh & Alruwaili (2023) highlighted that metacognitive awareness also aids in developing effective coping strategies when faced with difficulties in listening.

The problem related to "Investigating Students' Metacognitive Awareness Inventory in Listening Comprehension" is that many students struggle to understand material presented through listening, both in classroom settings and real-life situations. This difficulty is often due to low metacognitive awareness in listening, which includes their ability to plan, monitor, and evaluate their own listening processes. Students may lack the skills to identify effective listening strategies, do not know when to use certain strategies, or do not possess the skills to reflect on what they hear and connect it to existing knowledge. As a result, this low metacognitive awareness can hinder their ability to fully and effectively comprehend information, negatively impacting their academic performance and communication skills. Investigating metacognitive awareness is crucial to identify areas where students need further support and to develop intervention programs that can enhance their listening skills and comprehension.

The urgency of investigating students' metacognitive awareness inventory in listening comprehension lies in the importance of improving students' listening skills, which are fundamental in the learning process and communication. Low metacognitive

awareness in listening can hinder material comprehension, reduce learning effectiveness, and lower students' academic performance. By understanding and enhancing students' metacognitive awareness, educators can design more effective teaching strategies, help students become more active and reflective listeners, and improve the overall quality of education. This research can also significantly contribute to the development of curricula and teaching methods that are more adaptive and responsive to students' needs.

Based on these findings, this study intends to further investigate the level of metacognitive awareness in students' listening comprehension and its influence on their listening skills using a quantitative approach. The study employs a case study methodology, including structured surveys and statistical analysis, to gather insights into students' experiences and their metacognitive strategies. Through in-depth data analysis, this study aims to contribute to the development of more effective and adaptive teaching practices and improve students' listening proficiency within the framework of foreign language learning. The goal of this research is to determine the level of metacognitive awareness among students in listening comprehension.

METHOD

This research employed a quantitative design to investigate metacognitive awareness in listening comprehension among students. The study took place in two classes at a high school in a metropolitan area, with a sample of 17 and 22 students, totaling 39 students. Data collection occurred during regular class hours to minimize disruptions. The research spanned three months, including preparation and ethical clearance (1 month), data collection (1 month), and data analysis and report writing (1 month). The independent variable was students' metacognitive awareness in listening, while the dependent variable was their listening comprehension performance. Instruments used included the "Metacognitive Awareness Inventory for Listening (MAIL)" to assess metacognitive awareness and the "Listening Comprehension Test" to measure students' listening performance. Data were collected by administering the MAIL and listening comprehension test to students. Data analysis was carried out using descriptive statistics and an independent samples t test to compare scores between the two classes. Ethical clearance was obtained from the school's ethical review committee and relevant educational authorities. Informed consent was obtained from all participants and their guardians (for students under 18). Participant confidentiality and anonymity were maintained throughout the research process.

FINDINGS AND DISCUSSION

The analysis of metacognitive awareness and listening comprehension levels between Class A and Class B revealed intriguing insights into the students' cognitive processes and learning outcomes. In terms of metacognitive awareness, the distribution of students across low and medium categories differed slightly between the two classes. Class A had 7 students with low metacognitive awareness and 10 with medium awareness, while Class B had 11 students in each category. This suggests a nuanced difference in how students in each class recognize and organize their thought processes. On the other hand, the analysis of listening comprehension test scores showed a more pronounced difference. While both classes had a similar number of students in the high category (5 in Class A and 5 in Class B), Class B had a significantly larger number of students in the medium category (18 in Class B compared to 12 in Class A). This indicates a potentially higher level of diversity in listening comprehension skills among students in

Class B. The following sections further discuss these findings and their implications for educational strategies and policies.

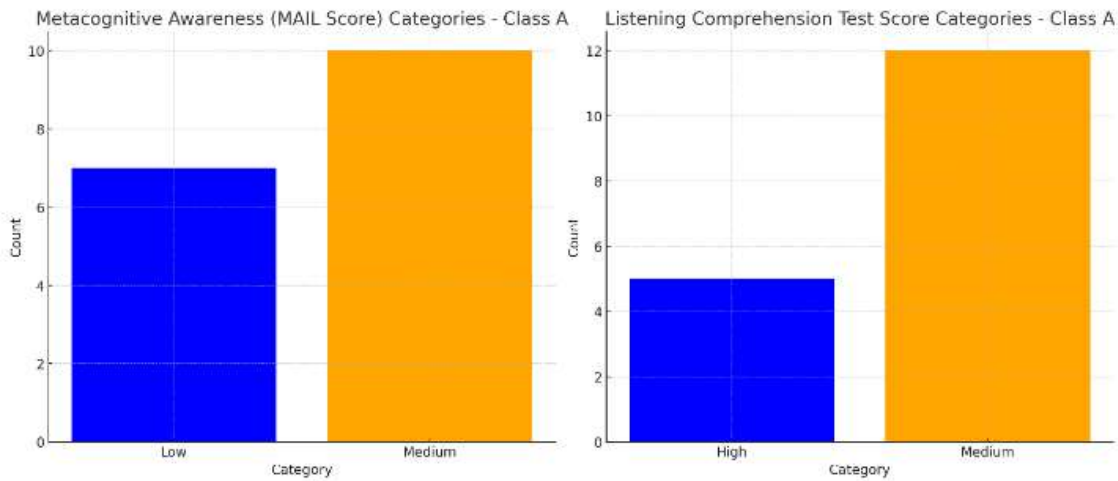


Figure 1 : Metacognitive Awareness (MAIL Score)

In the analysis of metacognitive awareness based on the Metacognitive Awareness Inventory for Listening (MAIL Score) category, differences are observed between two classes: Class A and Class B. In Class A, there are 7 students classified as having low metacognitive awareness and 10 students in the medium category. In contrast, Class B has 11 students with low metacognitive awareness and 11 students in the medium category. This indicates that both classes have a similar number of students in the low metacognitive awareness category, but Class B slightly outnumbers Class A in the medium category. Dividing students based on these categories can provide insight into differences in learning patterns or students' ability to recognize and organize their own thought processes. Further identification and analysis of the factors that influence students' metacognitive awareness in these two classes can help educators and educational policy makers to design more effective strategies in improving the quality of student learning.

The analysis of metacognitive awareness and listening comprehension levels between Class A and Class B revealed intriguing insights into the students' cognitive processes and learning outcomes. In terms of metacognitive awareness, the distribution of students across low and medium categories differed slightly between the two classes. Class A had 7 students with low metacognitive awareness and 10 with medium awareness, while Class B had 11 students in each category. This suggests a nuanced difference in how students in each class recognize and organize their thought processes.

Based on the analysis of metacognitive awareness levels using the Metacognitive Awareness Inventory for Listening (MAIL) score, differences between the two classes, Class A and Class B, were observed. In Class A, there are 7 students with low metacognitive awareness and 10 students with medium awareness. Meanwhile, in Class B, there were 11 students with low metacognitive awareness and 11 students with medium awareness. This data shows that both classes have almost the same number of students in the low metacognitive awareness category, but Class B has a slightly higher number of students in the medium category. Categorizing students in this manner can provide insights into differences in learning patterns or students' abilities to recognize and organize their own thought processes. Further identification and analysis of the factors

influencing students' metacognitive awareness in these two classes can help educators and educational policymakers design more effective strategies to improve student learning quality.

On the other hand, the analysis of listening comprehension test scores showed a more pronounced difference. While both classes had a similar number of students in the high category (5 in Class A and 5 in Class B), Class B had a significantly larger number of students in the medium category (18 in Class B compared to 12 in Class A). This indicates a potentially higher level of diversity in listening comprehension skills among students in Class B. This difference may be due to various factors such as teaching methods, the level of learning support at home, or individual student characteristics.

These findings have important implications for educational strategies and policies. For instance, understanding that Class B has more students with listening comprehension skills in the medium category allows educators to design more tailored teaching approaches to help these students improve their abilities. Similarly, the differences in metacognitive awareness between the two classes highlight the need for different approaches in teaching critical and reflective thinking skills. Identifying the factors that influence metacognitive awareness and listening comprehension can aid in developing more effective interventions. For example, special training to enhance metacognitive awareness might be necessary for students in Class A, whereas approaches focusing more on improving listening skills might be more beneficial for students in Class B.

Overall, this analysis suggests that differences in metacognitive awareness and listening comprehension among students in two different classes can provide valuable insights for enhancing teaching approaches and improving overall student learning outcomes. Educators and policymakers should consider these findings when designing more effective and responsive educational programs.

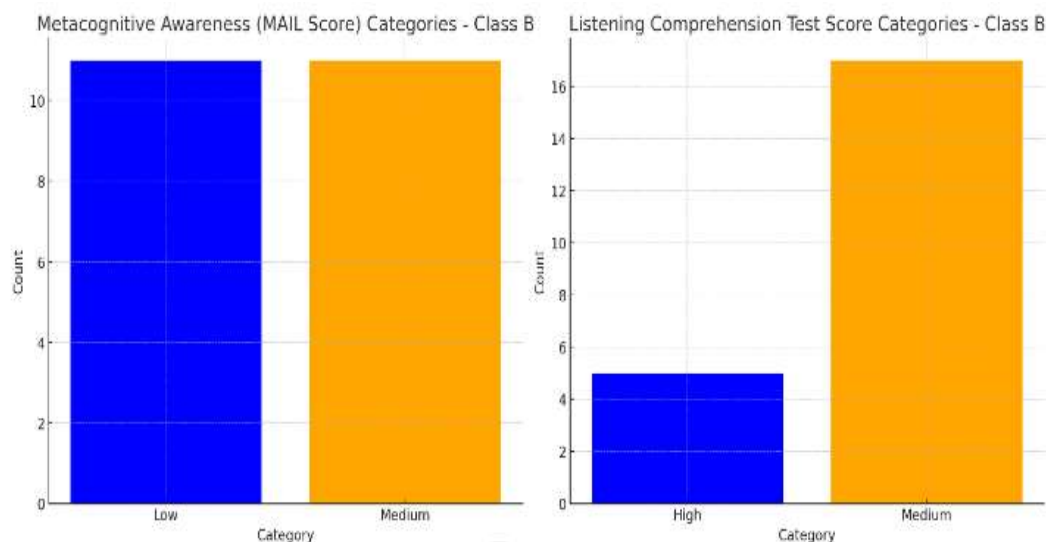


Figure 2: Listening Comprehension Test Score Categories

The listening comprehension test analysis reveals that in Class A, there are 5 students in the High category and 12 students in the Medium category. In Class B, the number of students in the High category remains the same at 5, but the number of students in the Medium category is larger, with 18 students. This data suggests that although the number of students in the High category is relatively equal between both classes, Class B

has a greater number of students in the Medium category. This information could imply that Class B has a more diverse student population in terms of listening comprehension skills, with a larger number of students in the Medium category. Educators and policymakers may consider these differences when designing instructional strategies tailored to the needs of students in each class.

The analysis of listening comprehension test scores reveals significant differences between Class A and Class B. In Class A, there are 5 students in the High category and 12 students in the Medium category. Similarly, in Class B, there are also 5 students in the High category, but the number of students in the Medium category is notably larger, with 18 students. This data suggests that while the number of students in the High category is relatively equal between both classes, Class B has a greater number of students in the Medium category. This indicates a higher level of diversity in listening comprehension skills among students in Class B. The findings imply that Class B has a more varied student population in terms of listening comprehension abilities, with a significant proportion of students in the Medium category. This diversity presents unique challenges and opportunities for educators and policymakers. When designing instructional strategies, it is crucial to consider these differences to effectively address the varying needs of students in each class. For instance, Class A, with a smaller number of students in the Medium category, might benefit from more focused interventions that target students who are struggling to move from Medium to High proficiency. Strategies such as personalized listening exercises, small group discussions, and targeted feedback could help these students enhance their comprehension skills.

In contrast, Class B, with a larger number of students in the Medium category, may require a broader range of instructional strategies to cater to the diverse needs of its students. Differentiated instruction could be particularly effective, where teaching methods and materials are adapted to suit different learning styles and proficiency levels. Group activities that encourage peer learning and collaborative problem-solving could also be beneficial, allowing students to learn from each other and improve their listening comprehension collectively. Educational policymakers should take these findings into account when designing and implementing instructional programs. For Class B, policies that support differentiated instruction and provide resources for diverse learning needs will be essential. This might include professional development for teachers to equip them with skills in differentiated instruction and the provision of varied instructional materials. Moreover, assessment practices should be adapted to reflect the diverse proficiency levels within classes. Formative assessments that provide ongoing feedback can help identify students' specific needs and track their progress over time. This continuous assessment approach allows for timely interventions and supports students' development more effectively.

The analysis of listening comprehension test scores between Class A and Class B highlights important differences in student proficiency levels. These differences necessitate tailored instructional strategies and policies to support the diverse needs of students. By addressing these needs through targeted interventions and differentiated instruction, educators can enhance listening comprehension skills and overall learning outcomes for all students.

Table 1. Differences in Metacognitive Awareness and Listening Comprehension in the two Classes

Independent Samples Test	Kelas	N	Mean	Std. Deviation	t	P value
Metacognitive Awareness (MAIL Score)	A	17	69.9412	2.77197	0.475	0.638
	B	22	69.5455	2.42462		
Listening Comprehension Test Score	A	17	78.1176	2.28808	0.797	0.431
	B	22	77.5000	2.48328		

Table 1 presents a comparison of Metacognitive Awareness (MAIL Score) and Listening Comprehension Test scores in the two classes. For Metacognitive Awareness, Class A has an average score of 69.9412 with a standard deviation of 2.77197, while Class B has an average score of 69.5455 with a standard deviation of 2.42462. The Independent Samples Test shows that the difference between the two classes in Metacognitive Awareness scores is not statistically significant, with a t-value of 0.475 and a P-value of 0.638. For the Listening Comprehension Test scores, Class A has an average score of 78.1176 with a standard deviation of 2.28808, while Class B has an average score of 77.5000 with a standard deviation of 2.48328. The Independent Samples Test indicates that the difference between the two classes in Listening Comprehension Test scores is not statistically significant, with a t-value of 0.797 and a P-value of 0.431. In conclusion, although the average scores between the two classes differ slightly, these differences do not reach a statistically significant level.

In this study, differences in metacognitive awareness and listening comprehension between the two classes were observed through metacognitive awareness and listening (mail) scores and listening comprehension test scores. Independent test results showed that there was no significant difference in metacognitive awareness between the two classes ($t = 0.475$, $p = 0.638$). Similarly, there was no significant difference in listening comprehension between the two classes ($t = 0.797$, $p = 0.431$). When comparing these findings to previous research, several studies emphasize the significant connection between metacognitive awareness and listening comprehension. They underscore that metacognitive awareness plays a pivotal role in the learning process, suggesting that individuals who are conscious of their thought processes and learning strategies typically perform better academically. This notion supports the idea that metacognitive awareness can enhance listening comprehension by encouraging more deliberate and thoughtful engagement with auditory information (Rezai et al., 2023).

However, multiple studies, suggest that the relationship between metacognitive awareness and academic performance is not straightforward. For instance, Ceylan (2016) found that while metacognitive awareness positively influences academic performance, the impact can vary depending on factors such as individual differences in learning styles, cultural context, and educational environment. Reinforce this finding by highlighting that metacognitive awareness interacts with contextual factors, such as motivation and teaching methods, to shape academic outcomes (Rezai et al., 2023). These studies indicate that metacognitive awareness does not operate in isolation. Instead, its effectiveness can be mediated by various contextual factors. For instance, a student's motivation, the learning environment, and instructional strategies employed by educators play a significant role in determining how metacognitive awareness translates into improved

academic performance and listening comprehension. Additionally, suggests that the cultural background and linguistic proficiency of students can influence the way they engage with metacognitive strategies, thus affecting the overall listening comprehension outcomes (Madani et al., 2024).

Meanwhile, in the context of listening comprehension, research conducted by Kok (2023) suggests that listening comprehension can be significantly enhanced through teaching approaches that bolster metacognitive awareness. For instance, emphasizing the understanding of various information processing strategies enables students to become more aware of their cognitive processes while engaging with auditory material. This heightened awareness can lead to more deliberate and thoughtful engagement, ultimately improving listening comprehension. Such teaching methods encourage active learning, prompting students to reflect on their own strategies and how they interact with the auditory information they receive. However, research by Umam et al. (2020) presents a more nuanced perspective. Umam's findings indicate that contextual factors, such as a student's motivation and interest in the material, play a pivotal role in influencing listening comprehension. For instance, if a student is highly motivated and shows genuine interest in the subject matter, they are more likely to engage actively in listening tasks and use metacognitive strategies effectively. Conversely, if a student lacks motivation or interest, these engagement and cognitive processes may not be as effectively utilized, impacting their listening comprehension outcomes.

These divergent findings highlight the complexity of the relationship between metacognitive awareness and listening comprehension. The interplay between metacognitive awareness, motivation, and interest demonstrates that the educational environment is multi-faceted and that a variety of factors contribute to students' learning experiences. Furthermore, contextual factors such as the teaching approach, classroom environment, and cultural aspects can significantly shape how metacognitive awareness influences listening comprehension. In light of these insights, future research that delves into these contextual factors will be valuable in providing a deeper understanding of the intricate relationship between metacognitive awareness and listening comprehension. By exploring these variables more comprehensively, educators and researchers can design more tailored and effective learning strategies that support and enhance student learning outcomes in listening comprehension.

In the context of this research, there are several theories that support the findings that the differences in performance between the two classes in terms of Metacognitive Awareness (MAIL) and Listening Comprehension Test did not reach a statistically significant level. First, concerning Metacognitive Awareness, the theory of metacognition by Efklides (2009) states that metacognition involves awareness of mental processes and self-regulation regarding the effective use of learning strategies. However, the research findings indicate that the difference in MAIL scores between the two classes is not statistically significant. In the context of this research, several theories provide support for the findings that the differences in performance between the two classes in terms of Metacognitive Awareness (MAIL) and Listening Comprehension Test did not reach a statistically significant level. First, regarding metacognitive awareness, the theory of metacognition proposed by Efklides (2009) highlights that metacognition involves awareness of mental processes and self-regulation concerning the effective use of learning strategies. The research findings indicate that the difference in MAIL scores between the two classes is not statistically significant. This suggests that metacognitive awareness alone does not fully account for the variations in learning outcomes between the classes.

This aligns with the concept that other factors, beyond metacognitive awareness, such as motivation, emotional regulation, and the learning environment, can have a substantial impact on students' academic performance.

For instance, emphasize that motivation plays a significant role in enhancing metacognitive awareness. If students are intrinsically motivated to learn and engage in self-regulation, they are more likely to apply metacognitive strategies effectively. Additionally, the learning environment, including the classroom atmosphere, the teaching approach, and peer interactions, can also influence how metacognitive awareness translates into academic success. A supportive learning environment can empower students to engage more actively and thoughtfully with their learning process, facilitating higher levels of metacognitive awareness and academic performance. Furthermore, individual differences in learning styles and cultural backgrounds can also play a role in shaping how students perceive and utilize metacognitive strategies. For instance, students from different cultural backgrounds might have varying attitudes toward self-regulation and reflection, which can impact their learning outcomes differently. The findings of this research suggest that factors beyond metacognitive awareness, such as motivation, emotional regulation, learning environment, and individual differences, can significantly influence students' academic performance. Future research should explore these factors in greater depth to understand how they interact with metacognitive awareness and contribute to the overall academic outcomes in diverse educational contexts (Zarrabi, 2020).

Second, regarding the Listening Comprehension Test, the theory of listening comprehension proposed emphasizes the importance of accurately and efficiently processing auditory information within the learning context argues that strong listening comprehension skills enable students to engage deeply with learning materials and absorb information more effectively. This is supported by findings indicating that good listening comprehension enhances students' performance in various subjects, suggesting a direct correlation between listening skills and academic success (Kim & Lee, 2021). However, the research findings in this study reveal that the difference in Listening Comprehension Test scores between the two classes is not statistically significant. This suggests that while listening comprehension is an important factor, its impact on academic performance may be influenced by additional contextual elements. For instance, the research by Suningsih & Dewi (2020) highlights that students' intelligence levels and learning strategies can play a significant role in shaping the outcomes of listening comprehension assessments. Different learning styles, motivation levels, and cultural backgrounds may also affect how students approach and process auditory information (Rezai et al., 2023).

Moreover, listening comprehension is a multi-faceted skill that can be influenced by various factors, such as familiarity with the language, prior exposure to diverse auditory experiences, and the type of materials being listened to. The nature and difficulty of listening comprehension tasks can vary, and how students navigate and interpret these tasks may also depend on their cognitive and metacognitive awareness. Additionally, individual differences in intelligence, memory, and attention span can affect a student's ability to comprehend and retain auditory information effectively (Ocak et al., 2020). In conclusion, the complexity of the relationship between listening comprehension and academic performance suggests that multiple factors contribute to a student's success in listening comprehension tests. These factors include learning strategies, intelligence levels, motivation, and individual differences. Future research should consider these various aspects to gain a deeper understanding of how listening comprehension influences

academic performance and the underlying mechanisms driving these interactions (Cao & Lin, 2020).

The application of learning models significantly influences student engagement and learning outcomes. This research aimed to assess high-level cognitive learning outcomes through the implementation of the “discovery learning” approach, with particular attention to students’ metacognitive characteristics. Discovery learning emphasizes active student participation in acquiring new information. However, field observations indicate that students’ cognitive learning outcomes remain low, and they struggle to manage their existing abilities effectively (Xu et al., 2021). The findings demonstrate a significant difference in learning outcomes between students taught using the Discovery Learning method and those taught using conventional methods. Specifically, students exposed to Discovery Learning showed improved cognitive learning outcomes compared to those in traditional learning environments. This suggests that Discovery Learning is more effective in enhancing students’ cognitive abilities and actively engaging them in the learning process. Consequently, educators and policymakers should consider integrating Discovery Learning into educational strategies to improve student learning outcomes (Rahayu et al., 2024).

This research also confirms that the application of learning models has a significant influence on student engagement and learning outcomes. Although this study did not find significant differences in metacognitive awareness and listening comprehension between the two classes, it is important to note that the relationship between these two variables is complex and may be influenced by contextual factors that have not been revealed in this study. Further research that considers these factors may provide deeper insight into the relationship between metacognitive awareness and listening comprehension in educational contexts.

Therefore, even though Discovery Learning has been proven to be effective in improving students’ cognitive learning outcomes compared to conventional methods, it is important to continue to study and understand the various factors that influence the student learning process. In this way, educators and policy makers can design educational strategies that are more effective and responsive to students’ needs, in order to improve their overall learning outcomes. The “discovery learning” approach provides benefits in increasing student engagement and cognitive learning outcomes compared to conventional learning methods. The results showed that the difference in the average Metacognitive Awareness scores and Listening Comprehension Test scores between the two classes was not statistically significant. However, this approach still has potential to encourage active participation in the learning process.

Weaknesses of this research include limitations in data measurement and interpretation, as well as the potential influence of unidentified contextual factors on the research outcomes. Factors such as the learning environment, student motivation, and teaching quality may impact student learning outcomes. Future research should delve deeper into these factors to gain a more comprehensive understanding. Future research should include more detailed measurements of contextual factors such as motivation, the learning environment, and alternative learning methodologies that may affect student learning outcomes. Additionally, exploring innovative learning approaches could enhance student engagement and improve learning outcomes. By broadening the scope of investigation and considering various variables that influence learning, future research can contribute significantly to the development of more effective teaching methods.

CONCLUSION

This study assessed high-level cognitive learning outcomes using the “discovery learning” approach, with a focus on metacognitive characteristics. Although the analysis of average Metacognitive Awareness (MAIL Score) and Listening Comprehension Test scores showed no statistically significant differences between the two classes, the findings underscore the potential benefits of the discovery learning approach in enhancing active student participation and cognitive learning compared to conventional methods. However, the complex relationship between metacognitive awareness and listening comprehension, influenced by various contextual factors such as motivation and interest in the material, requires further exploration. Educators and policymakers should continue to examine these factors and refine educational strategies to optimize student learning experiences and outcomes.

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