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The Role of Metacognitive Strategies in Enhancing EFL Learners' Academic Success

Yasamiyan Alolaywi

Department of English Language and Literature, College of Languages and Humanities -Almithnab Branch-, Qassim University, Buraydah 51411, Saudi Arabia

ABSTRACT

This research examines the effect of metacognitive strategies in enhancing academic achievement among English as a Foreign Language (EFL) learners. It also focuses on the discrepancies between male and female undergraduate students. Utilizing a case study design, a quantitative approach was implemented to systematically gather and analyze data from 50 college students enrolled in the Department of English and Literature at Qassim University. The primary research instruments employed were the Metacognitive Awareness Inventory (MAI) and academic achievement scores obtained from previous classes. Findings indicated that female students outperform their male counterparts in overall academic achievement. However, no significant differences in metacognitive awareness were observed between genders, indicating that both male and female students exhibit similar levels of metacognitive strategies. Moreover, a positive association emerged between metacognitive awareness and academic success, suggesting that students with higher metacognitive awareness—encompassing an understanding of their cognitive processes and the exercise of self-regulation—tend to achieve better educational outcomes. This highlights the pivotal role metacognition plays in foreign language education, where students must constantly reflect on their learning methods and adapt them for improvement. Key implications for educators include integrating metacognitive strategies into the curriculum and promoting reflective

*CORRESPONDING AUTHOR:
Yasamiyan Alolaywi, College of Languages and Humanities -Almithnab Branch-, Department of English Language and Literature, Qassim University, Buraydah, Qassim 51411 , Saudi Arabia; Email: yalieoy@qu.edu.sa

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practices such as journaling or group discussions. Lastly, the study suggests that further investigation into the factors influencing gender differences in academic success among EFL learners is warranted, underscoring the importance of tailored educational interventions to enhance diverse learning needs.

Keywords: Academic Success; Foreign Language Learning; Knowledge of Cognition; Metacognitive Strategies; Self-regulation

1. Introduction

In the realm of foreign language education, metacognitive techniques have emerged as a crucial element influencing learners' academic gains. Metacognition, defined as the awareness and regulation of one's cognitive processes [1], includes planning, monitoring, and evaluating one's learning activities. This study seeks to investigate how the implementation of metacognitive strategies can significantly improve the academic performance of EFL learners.

As globalization continues to emphasize the importance of English proficiency, understanding the factors that contribute to successful language acquisition becomes increasingly crucial. Traditional instructional methods often focus solely on content knowledge, neglecting the cognitive processes that underpin effective learning. By integrating metacognitive strategies into EFL curricula, learners can develop essential skills that empower them to take charge of their education, leading to improved comprehension, retention, and application of language skills.

This research aims to examine the specific metacognitive techniques employed by successful EFL learners and assess their impact on academic outcomes. Through a systematic analysis of learner experiences and performance metrics, we aim to provide educators with valuable insights for tailoring effective instructional practices that foster greater learner autonomy and academic success.

1.1. Research Questions and Hypotheses

1.1.1. Research Questions

1. What are the differences in overall academic achievement between male and female undergraduate students, and what factors contribute to these differences?
2. How do male and female undergraduate students differ in their levels of metacognitive awareness, and how does this awareness impact their academic performance?
3. How does the level of metacognitive awareness affect academic achievement among undergraduate students, particularly regarding gender differences?

1.1.2. Hypotheses

1. *There is no significant difference in academic achievement among undergraduate students with respect to gender.*
2. *There is no significant difference in metacognitive awareness among undergraduate students with respect to gender.*
3. *There is no significant variation in academic achievement among college students with high or low levels of metacognitive awareness.*

1.2. Statement of the Problem

In recent years, the emphasis on academic success among English as a Foreign Language (EFL) learners has become increasingly pronounced; yet, many students still struggle to fulfill their capabilities in mastering the language. A significant challenge faced by these learners is the lack of effective learning strategies that foster autonomy and critical thinking. Metacognitive strategies—skills that involve self-regulation, self-monitoring, and reflection on one's learning processes—have emerged as a promising approach to enhancing language acquisition and academic performance. Despite the accumulating research evidence highlighting the importance of metacognitive strategies, a gap remains in understanding how these strategies specifically contribute to academic success among EFL learners. Additionally, there is a lack of empirical evidence on the types of metacognitive strategies that are most beneficial, as well as how students can be effectively trained to utilize them. This study aims to fulfill these gaps by exploring the role of metacognitive strategies in enhancing the academ-

ic success of EFL learners, thereby providing insights that can inform educational practices and curriculum design in language learning contexts.

1.3. Significance of the Study

The present research holds substantial significance for a number of reasons:

Firstly, the study adds to the growing corpus of works on language acquisition by highlighting the importance of metacognitive awareness in the learning process.

Secondly, enhancing the academic success of EFL learners is crucial in today's interconnected world, where English proficiency is often linked to professional opportunities and social integration.

Moreover, this research has practical implications for curriculum development and teacher training programs. By identifying specific metacognitive strategies that positively impact EFL learning outcomes, educational stakeholders can devise targeted interventions, resources, and workshops that empower both teachers and students.

Additionally, the findings may provide policymakers with valuable information for improving language education frameworks within various educational systems.

Lastly, this study may provide insights for future research that explores the interplay between metacognition and various facets of language acquisition, such as motivation, engagement, and skill transfer.

1.4. Limitations of the Study

The current study presents two main constraints:

1. The research involved a relatively small sample of EFL learners, which may restrict the generalizability of the findings to larger populations.
2. This study used questionnaires to evaluate metacognitive strategies and metrics of academic performance. Although these tools yielded valuable data, they potentially introduced bias from self-reporting, as students may overestimate their use of metacognitive strategies. Therefore, incorporating experimental methods in future research may offer more comprehensive insights into the role of these strategies in enhancing academic performance.

2. Literature Review

2.1. Theoretical Perspectives: Metacognition

Metacognition has been a key concept in cognitive psychology for over thirty years [2]. It involves awareness of an individual's thinking process, or the capacity to reflect on one's intellectual activities [3]. Wenden described metacognition as an understanding of learning, which consists of a learner's accumulated knowledge and interconnected ideas that are typically stable, developed early, and abstracted from personal experiences [4]. Flavell referred to metacognitive knowledge as "one's knowledge concerning one's cognitive processes and products or anything related to them, e.g., the learning-relevant properties of information or data" [5] (p. 232). As an advanced form of cognition, metacognition entails the active regulation of cognitive processes [4]. It is often regarded as the 'seventh sense' and a crucial mental trait that effective learners utilize [6].

Metacognitive knowledge, a form of declarative knowledge, can be categorized based on its focus on the learner, the specific task, or the learning process. These categories include person knowledge, which pertains to what a person understands about themselves and others as cognitive processors; task knowledge, which involves an understanding of the information and resources necessary for completing a task; and strategy knowledge, which refers to awareness of the strategies likely to be effective in achieving goals and completing tasks [5,7].

According to Brown, Bransford, Ferrara,et al. [8], metacognition encompasses two key elements: metacognitive knowledge and metacognitive strategies. Metacognitive knowledge denotes the insight learners gain about their learning processes, while metacognitive strategies comprise the skills used to manage and steer that learning. Basic strategies include linking new information to prior knowledge, choosing specific thinking strategies, and planning, monitoring, and evaluating thought processes [9]. These strategies enable learners to oversee their educational activities, maintain awareness of their learning, devise and choose suitable approaches, track their progress, address mistakes, assess the effectiveness of their approaches, and adjust their behaviors and strategies as needed [10].

The implementation of these three strategies in edu-

cation is known as self-regulation in cognitive psychology and self-direction in adult education. Research within the field of educational psychology indicates that employing metacognitive strategies is crucial for enhancing learning, as they empower students to plan, manage, and assess their learning processes [9]. According to O'Malley and Chamot [11], "students without metacognitive approaches are essentially learners without direction or opportunity to plan their learning, monitor their progress, or review their accomplishments and future learning directions" (p. 8). Additionally, these strategies help learners gain insight into themselves and the tasks at hand, ultimately leading to improved performance and better learning outcomes [4].

2.2. Empirical Considerations: Previous Studies

Understanding how various learning strategies affect language acquisition is crucial to improving educational outcomes. This section synthesizes findings from several studies that explore the impacts of metacognitive and cognitive strategies in English language acquisition among students of varying proficiency levels. [12], investigated the impact of learning strategies on language acquisition, specifically comparing high-achieving and low-achieving students. The study found that effective learning strategies positively impact language learning gains and underscored the necessity of integrating strategy training into English teaching curricula. Additionally, [13], investigated the role of self-regulated learning strategies in language learning, revealing that students who employ self-regulated techniques tend to perform better academically.

Similarly, Sun examined the connection between metacognitive strategy use and English language proficiency among Malaysian university students, considering variables such as gender, ethnicity, and scores on the Malaysian University Entrance Test (MUET) [14]. Their findings indicated no significant differences in metacognitive strategy use across gender and ethnic groups; however, proficient learners employed these strategies more effectively compared to their less proficient counterparts. Yang investigated metacognitive strategies among English listeners in a foreign language setting [15]. The study indicated that while directed attention was the most frequently utilized strategy, monitoring was employed the least. Additionally, the research highlighted notable differences in the use of metacognitive strategies among proficient and struggling listeners.

Sartika, Santihastuti, and Wahjuningsih analyzed the usage of strategies among senior high school students based on their success in English language learning [16]. The results indicated that successful students predominantly used metacognitive strategies, categorizing them as high users, while less successful students were identified as medium users of cognitive strategies. Moreover, Idris, Isa, and Zakaria, et al. investigated how learners utilize both cognitive and metacognitive strategies in foreign language learning [17]. The findings indicated a general adoption of both strategy types among participants, emphasizing the importance of these approaches in achieving language proficiency. Cognitive strategies were often used for rehearsal and elaboration, followed by organization, and then critical thinking. Metacognitive strategies were often used in planning and self-evaluation.

Furthermore, Nosratinia, Saveiy, Zaker investigated the link between self-efficacy, metacognitive awareness, and the use of language learning strategies among EFL learners. Their analysis revealed significant relationships: self-efficacy correlates with metacognitive awareness, self-efficacy is linked to the use of language learning strategies, and metacognitive awareness is associated with the use of language learning strategies [18]. Lastly, Raoofi, Chan, and Mukundan, et al. studied the role of metacognition in language learning, specifically its impact on second or foreign language acquisition [19]. Their findings indicated that metacognitive interventions could enhance language performance. However, overall, the evidence for the efficacy of these interventions in boosting metacognitive awareness and strategy use was mixed.

In conclusion, the reviewed studies demonstrate a clear positive link between effective learning strategies, particularly metacognitive approaches, and achievement in language acquisition. They emphasize the significance of integrating strategy training into instructional programs to meet the distinct needs of learners, ultimately enhancing their English language proficiency. Nonetheless, the research on metacognitive strategies reveals a gap, especially regarding gender differences and more recent studies on the subject. Furthermore, while some studies have concentrated on foreign language learners, there remains a lack of research specifically targeting Saudi EFL learners.

3. Methodology

3.1. Participants and Sampling

The study involved 50 college students from the Department of English and Literature at Qassim University, with an equal distribution of 25 males and 25 females. These participants were native speakers of Arabic and were learning English as a foreign language (EFL). The participants' ages ranged from 19 to 22 years, reflecting the typical demographic of undergraduate students in the program.

The study population comprised EFL learners in Saudi Arabia. The participants were recruited via random sampling techniques. A questionnaire was given to all students in the program along with consent forms, and only those who volunteered were included in the study. Prior to participation, all individuals were required to complete a consent form to ensure ethical compliance and voluntary involvement.

Initially, the study aimed to include 72 participants; however, following data screening procedures, the sample was refined to 50 participants to ensure homogeneity within the sample. This reduction involved eliminating cases that were either extra or incomplete, resulting in two balanced groups of 25 participants each, which allowed for more reliable and valid results regarding the role of metacognitive strategies in enhancing academic success among EFL learners.

3.2. Research Design

This research utilized a case study design to investigate the role of metacognitive strategies in enhancing the academic success of English as a Foreign Language (EFL) learners. The case study approach facilitated a thorough exploration of the phenomenon by examining a specific group of EFL learners over a defined period [20]. This approach is particularly suited for understanding complex interactions and contexts, making it ideal for the nuanced examination of metacognitive strategies and their impact on academic performance.

A quantitative approach was adopted in this study to collect and analyze numerical data systematically. This approach facilitated the use of statistical tools to examine the relationships between the use of metacognitive strategies and academic success among EFL learners.

3.3. Data Collection and Analysis

The research data were sourced from two primary sources: the Metacognitive Awareness Inventory (MAI) and students' academic achievements, based on their previous class results.

The MAI served as the primary tool for assessing the metacognitive awareness of English as a Foreign Language (EFL) learners. Participants completed the questionnaire, providing insight into their metacognitive strategies. Additionally, students' academic achievements were determined based on their previous class results, which provided a quantitative measure of their performance in EFL courses. These data points were essential for analyzing the connection between metacognitive awareness and academic success.

The collected data were systematically analyzed using various statistical tools to draw meaningful conclusions regarding the function of metacognitive strategies in learning. Initial analyses involved calculating descriptive statistics, including the mean, median, and standard deviation of both metacognitive awareness scores and academic achievement results.

To examine differences in metacognitive awareness and academic achievement based on gender and achievement levels, independent samples t-tests were employed. This statistical method is beneficial for comparing the means of two independent groups. T-tests were conducted to compare the metacognitive awareness and academic achievement scores of male and female students, aiming to identify any significant differences that might indicate variations in metacognitive strategy usage based on gender. Additionally, T-tests were utilized to compare the academic achievement of high- and low-achieving students, seeking to assess whether notable differences exist in academic performance linked to levels of metacognitive awareness among these two distinct groups.

3.4. Research Instruments

3.4.1. Metacognitive Awareness Inventory (MAI)

The study employs the Metacognitive Awareness Inventory (MAI) as the primary instrument to assess the

metacognitive strategies utilized by EFL learners. The MAI, developed by Schraw and Dennison [7], comprises 52 items structured to assess two primary constructs: knowledge of cognition and regulation of cognition (**Appendix A Tables A1** and **A2**).

Within the framework of these constructs, the MAI explores several specific facets of metacognitive awareness, including:

1. Monitoring: The ability of learners to assess their understanding and performance during learning tasks.
2. Evaluation of Learning: The assessment of the effectiveness of one's learning strategies and outcomes.
3. Debugging Strategies: Techniques employed to identify and correct errors in understanding or performance.
4. Conditional Knowledge: Awareness of when and why to use particular strategies for effective learning.
5. Planning: The ability to outline and organize learning strategies before engaging in tasks.
6. Declarative Knowledge: Understanding what strategies exist and their potential applications.
7. Information Management Strategies: Techniques for organizing and processing information to enhance comprehension and retention.
8. Procedural Knowledge: Knowledge of how to implement learning strategies in practical scenarios.

The MAI will provide a comprehensive assessment of EFL learners' metacognitive strategies, allowing for an exploration of their correlation with academic success. Each item on the inventory requires participants to self-report their metacognitive awareness and strategies, ensuring that a nuanced understanding of their learning processes is captured.

3.4.2. Students' Academic Achievements

In addition to (MAI), the study incorporates students' academic achievements as another research instrument. Academic achievements were obtained from participants' previous class results, serving as a quantitative measure of their performance in their courses.

These data points are critical for several reasons:

Quantitative Measurement: By utilizing specific class results, the study ensures a numerical representation of academic performance, facilitating objective analysis.

Correlation Analysis: The collected academic achievement data will enable the examination of potential correlations between metacognitive awareness, as assessed by the MAI, and students' success in EFL. This relationship is pivotal in understanding how metacognitive strategies influence learning outcomes.

Contextual Data: Previous performance in EFL courses provides context for understanding individual differences among learners, which can affect the application of metacognitive strategies.

Together, the MAI and data on students' academic achievements will enable a comprehensive exploration of research objectives, supporting a nuanced understanding of their learning processes.

3.5. Validity

To evaluate the structural validity of the current study, we draw on the work of Schraw and Dennison [7], who conducted an extensive investigation utilizing confirmatory factor analysis to examine the MAI's structural framework.

Their findings revealed a robust 2-factor solution, demonstrating that the MAI effectively captures the constructs of metacognitive awareness. Specifically, the 2-factor solution accounted for 65% of the variance in one sample and 58% in another, highlighting the MAI's strong explanatory power. This evidence supports the conclusion that the MAI is a reliable tool for assessing metacognitive awareness among EFL learners.

In addition to establishing structural validity, this study will ensure content validity by systematically aligning the selected metacognitive strategies with established theories and empirical evidence pertaining to the academic achievement of EFL learners. By integrating theoretical and practical perspectives, we aim to reinforce the relevance and applicability of the chosen strategies in enhancing metacognitive awareness among EFL learners.

3.6. Reliability

In this study, the reliability of the instrument used to measure metacognitive strategies among EFL learners was

assessed through internal consistency. The internal consistency reliability was evaluated using Cronbach's alpha, a widely accepted measure for evaluating the reliability of scales.

The findings revealed a high degree of internal consistency, with a Cronbach's alpha coefficient of $\alpha = 0.950$, consistent with the findings of Schraw and Dennison [7]. This score reflects an excellent degree of reliability, suggesting that the items within the instrument consistently measure the same underlying construct related to metacognitive strategies.

A Cronbach's alpha value above 0.90 is generally considered indicative of high reliability, supporting the use of this instrument in the present research (**Table 1**).

Table 1. Reliability of the Instrument.

Reliability Statistics	
Cronbach's alpha	N of items
0.950	52

4. Results

RQ1: What are the differences in overall academic achievement between male and female undergraduate students, and what factors contribute to these differences?

This research question aimed to explore the differences in overall academic achievement between male and female undergraduate students. The results indicate a significant difference in academic achievement, with female students exhibiting higher academic performance than their male counterparts.

The mean academic achievement for female students was 74.18 (SD = 8.48), while the mean for male students was 67.09 (SD = 8.05). The t-test conducted revealed a t-value of 3.472, with a p-value less than 0.05, showing that the difference in academic achievement is statistically significant (**Table 2**).

Table 2. Mean Difference in the academic achievement of male and female Participants.

Variable	**Female (N = 25)**		**Male (N = 25)**		**t-value**	**Level of significance**
	Mean	S.D.	Mean	S.D.		
Academic Achievement	74.18	8.48	67.08	8.04	3.47	0.5

These results suggest that female college students tend to perform better academically compared to their male counterparts. Therefore, the hypothesis stating that " there is no significant difference in academic gains among college students about gender" is rejected. However, further analysis could explore the contributing factors to this disparity in academic success, as this research provides a foundational comprehension of the role of gender in academic achievement among EFL learners.

RQ 2: How do male and female undergraduate students differ in their levels of metacognitive awareness, and how does this awareness impact their academic performance?

The analysis revealed no significant differences in metacognitive awareness between male and female undergraduate students. The dimensions of metacognitive awareness, comprising "knowledge about cognition" and "regulation of cognition," were evaluated, and the results are shown in **Table 3** below.

Table 3. Mean Difference in the knowledge about cognition, Regulation of cognition, and total metacognitive awareness of undergraduate male and female students.

Dimension of Metacognitive Awareness	**Female (N = 25)**		**Male (N = 25)**		**t-value**
	Mean	S.D.	Mean	S.D.	
Knowledge about cognition	13.70	3.644	12.63	3.120	1.115
Regulation of Cognition	24.88	6.294	23.30	5.368	1.243
Total of Both Dimensions= Metacognitive Awareness	37.115	9.938	35.93	8.488	0.453

In terms of knowledge about cognition, female students demonstrated a mean score of 13.70 (SD = 3.644), while male students had a mean score of 12.63 (SD = 3.120). The t-value for this comparison was 1.115, indicating that although females scored higher on average, the variation was not statistically significant.

Regarding the regulation of cognition, female students attained a mean score of 24.88 (SD = 6.294), compared to male students, who attained a mean of 23.30 (SD = 5.368). The t-value calculated for this dimension was 1.243. Again, while female students outperformed their male counterparts, the difference was not significant.

When combining both dimensions to assess overall metacognitive awareness, female students had an overall average score of 37.11 (SD = 9.938), while male students had an average score of 35.93 (SD = 8.488). However, the t-value for the total metacognitive awareness scores was 0.453.

The findings suggest that there is no statistically significant difference in metacognitive awareness based on gender among undergraduate students. Both male and female students demonstrate comparable levels of metacognitive strategies, which highlights the need for further investigation into other factors that may influence academic success in EFL contexts.

RQ3: How does the level of metacognitive awareness influence academic achievement among undergraduate students, particularly regarding gender differences?

This research question aimed to explore the influence of metacognitive awareness on academic attainment among undergraduate students, particularly regarding gender differences. To this end, the analysis was categorized according to the three factors of metacognitive awareness: knowledge about cognition, regulation of knowledge, and total metacognitive awareness.

In terms of knowledge about cognition, participants were divided into two groups based on their academic achievement levels: high-scoring students and low-scoring students. The mean score for high-scoring students in the knowledge about cognition dimension was 14.720 (SD = 0.93), while low-scoring students had a mean of 6.75 (SD = 2.50). The t-test results indicated a meaningful difference between the two groups, with a t-value of 14.90 ($p < 0.001$). This suggests that higher academic achievers possess significantly greater knowledge about cognition compared to their lower-achieving counterparts.

In terms of the knowledge dimension, high-scoring students achieved a mean score of 30.56 (SD = 1.80), contrasting with the mean score of low-scoring students at 16 (SD = 4.28). The t-test revealed a t-value of 15.65 ($p < 0.001$), indicating a substantial difference in the regulation of knowledge between the two groups. This finding highlights the importance of regulating cognitive processes effectively for academic success among EFL learners.

When measuring total metacognitive awareness, high-scoring students exhibited a mean of 44.776 (SD = 2.613), while low-scoring students had a mean of 22.75 (SD = 6.607). The t-test statistics reflected a t-value of 15.5 ($p < 0.001$), corroborating the earlier findings and highlighting that students with higher metacognitive awareness displayed significantly better academic achievement (**Table 4**).

Table 4. Mean difference in the academic achievement of undergraduate students with high and low scores in total dimensions of metacognitive awareness.

Metacognitive Awareness	High Score (N = 25)		Low Score (N = 25)		t-value
	Mean	S.D.	Mean	S.D.	
Knowledge about cognition	14.72	0. 93	6.75	2.50	14.90
Regulation of Cognition	30.56	1.80	16.00	4.28	15.65
Total of Both Dimensions = Metacognitive Awareness	44.77	2.61	22.75	6.60	15.5

In summary, the results provide evidence against the null hypothesis stating that "there is no significant difference in academic achievement among undergraduate students with high or low levels of metacognitive awareness". Findings indicate that there are significant differences in academic achievement based on the levels of metacognitive awareness among undergraduate students. Higher metacognitive awareness—both in terms of knowledge about cognition and regulation of knowledge—was positively correlated with greater academic success, thereby

underlining the vital role of metacognitive strategies in enhancing EFL learners' performance.

5. Discussion

The results of this study emphasize several important aspects related to academic performance and gender, as well as metacognitive awareness.

Firstly, the results indicate that female undergraduate students perform better academically than their male equivalents. This finding is consistent with the work of Parajuli, Thapa, Shoaib, and Ullah [21,22], both of whom documented significant gender differences favoring females in academic achievement. Such findings suggest that female students may possess attributes or learning strategies that contribute to their academic success in higher educational contexts. Contrarily, the results are at odds with Okafor and Egbon [23], whose research indicated no significant differences in the academic performance of male and female students in undergraduate courses. Similarly, Smith and Davis also found no significant gender differences in academic performance among undergraduate students [24]. This discrepancy may indicate that varying contextual factors influence academic performance across different studies.

Notably, despite the identified gender differences in academic success, our investigation revealed no statistically significant difference in metacognitive awareness based on gender. Both male and female students demonstrated comparable levels of metacognitive strategies, aligning with the findings of Kummina and Rahman [14]. This suggests that while gender may influence academic outcomes, it does not affect the metacognitive awareness that students possess. The ability to employ metacognitive strategies appears to be equally available to both genders, highlighting the universality of these cognitive processes among undergraduate students.

Furthermore, our research significantly adds to the understanding of the connection between metacognitive awareness and academic success, as we found that higher levels of metacognitive awareness are associated with greater academic success. This finding corroborates previous studies by Sun, Kummina, Rahman, and Zimmerman [12,14,25]., which also documented a favorable relationship between metacognitive awareness, self-regulation and scholastic achievement. Notably, this aligns with Yang [15], which highlighted distinct differences in metacognitive strategy usage between high-achieving and low-achieving learners. The implications of this correlation are profound, suggesting that fostering metacognitive awareness could be a viable intervention for enhancing academic success among EFL learners.

Additionally, the findings of Sartika, Nosratinia, and Raoofi et al. [16,18,19] further substantiate the value of metacognitive techniques in academic contexts. Their analyses revealed similar positive relationships, underscoring the need for educational practices that foster the enhancement of metacognitive awareness among students.

In conclusion, this study underscores the pivotal role of metacognitive strategies in achieving academic success among EFL learners. While gender differences in academic performance were evident, they did not extend to metacognitive awareness levels. As such, educational interventions should focus on enhancing metacognitive skills universally among students, regardless of gender, to foster improved academic outcomes. Future studies should further investigate the intricacies of these relationships and examine additional factors that may mediate or moderate the roles of metacognitive strategies and gender in academic success.

6. Conclusions

The current study has yielded insightful conclusions regarding the interplay between metacognitive awareness and academic achievement among undergraduate students. The data verify that female students outperform their male counterparts in overall academic achievement, shedding light on the potential impact of gender on educational outcomes.

Interestingly, the investigation revealed no significant differences in metacognitive awareness across genders, indicating that both male and female students possess similar levels of metacognitive strategies. This finding suggests that while academic performance may differ, the recognition and application of metacognitive strategies are equally accessible to both groups.

Furthermore, the study established a positive correlation between metacognitive awareness and academic success. Students demonstrating higher metacognitive aware-

ness—encompassing both knowledge of their cognitive processes and the regulation of this knowledge—tend to achieve better academic outcomes. This highlights the importance of developing metacognitive strategies in learning environments to improve academic performance.

In light of these findings, it is suggested that upcoming studies delve deeper into the factors influencing the gender differences in academic achievement observed in this study. By exploring variables such as motivation, study habits, and environmental influences, a more comprehensive understanding of the academic landscape for male and female students can be developed.

Lastly, for future studies, researchers should explore additional factors that mediate or moderate the relationships between metacognitive strategies and academic success, address the methodological limitation regarding the reliance on self-reported data in the Metacognitive Awareness Inventory (MAI) to mitigate potential bias, and include a more diverse participant pool to enhance generalizability across various educational contexts.

6.1. Pedagogical Implications

The implications of this study can be summarized as follows:

1. Educators should consider incorporating metacognitive strategies (e.g., self-monitoring, self-assessment) into the curriculum. This could involve teaching learners how to organize, assess, and reflect on their learning activities.
2. Implementing training sessions for both teachers and students on metacognitive awareness will enhance the understanding of these strategies and how to apply them effectively.
3. Encourage reflective practices in the classroom. Students can keep journals where they reflect on their learning processes, helping to solidify their understanding of metacognitive strategies.
4. Recognizing that EFL learners have diverse needs, educators should provide personalized instruction that caters to individual learning styles and levels of metacognitive awareness.
5. Develop assessment methods that evaluate not only the outcomes of learning but also the processes involved. This could include self-reported measures of strategies and their impact on academic performance.
6. Foster collaborative learning environments that encourage students to discuss their metacognitive strategies with peers. Group activities can enhance their understanding and application of these strategies.

6.2. Future Directions

According to the results of this study, the following suggestions are made:

1. It is recommended to investigate the factors influencing gender differences in academic success among EFL learners, with a particular focus on understanding the reasons behind female superiority in academic performance.
2. It is also recommended to conduct longitudinal research to track the long-term effects of metacognitive strategies on the academic performance of EFL learners across different educational levels.
3. Investigate the efficacy of metacognitive techniques across diverse learner populations, including varying age groups, cultural backgrounds, and proficiency levels, to identify tailored approaches that enhance learning.
4. Explore the integration of technology-based tools (e.g., apps and online platforms) that promote metacognitive awareness and self-regulation among EFL learners, assessing their impact on language acquisition and academic success.
5. Conduct comparative studies between learners who utilize metacognitive strategies and those who do not, employing various assessment methods to evaluate the differences in academic success.
6. Examine the specific influence of metacognitive strategies on different language abilities (listening, speaking, reading, writing) to determine which strategies are most beneficial for each area.

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Institutional Review Board Statement

This research study has been reviewed and approved by the Research Committee of Almithnab Branch of the Department of English Language and Literature. This approval was granted to maintain the participants' rights and to ensure the integrity of the research process.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data used in this study are available from the author upon reasonable request.

Conflicts of Interest

The author declares no conflict of interest.

Appendix A

Metacognitive Awareness Inventory

Metacognition refers to the learner's ability to monitor, understand, and regulate their learning. The following inventory should be given to learners to assess their metacognitive awareness (**Table A1**). Learners will mark true or false based on their learning and studying habits.

Table A1. Knowledge of Cognition.

	Statements	TRUE	FALSE
1	I ask myself periodically if I am meeting my goals.	○	○
2	I consider several alternatives to a problem before I answer.	○	○
3	I try to use strategies that have worked in the past.	○	○
4	I pace myself while learning in order to have enough time.	○	○
5	I understand my intellectual strengths and weaknesses.	○	○
6	I think about what I really need to learn before I begin a task.	○	○
7	I know how well I did once I finish a test.	○	○
8	I set specific goals before I begin a task.	○	○
9	I slow down when I encounter important information.	○	○
10	I know what kind of information is most important to learn.	○	○
11	I ask myself if I have considered all options when solving a problem.	○	○
12	I am good at organizing information.	○	○
13	I consciously focus my attention on important information.	○	○
14	I have a specific purpose for each strategy I use.	○	○
15	I learn best when I know something about the topic.	○	○
16	I know what the teacher expects me to learn.	○	○

Table A1. *Cont.*

	Statements	TRUE	FALSE
17	I am good at remembering information.	○	○
18	I use different learning strategies depending on the situation.	○	○
19	I ask myself if there was an easier way to do things after I finish a task.	○	○
20	I have control over how well I learn.	○	○
21	I periodically review to help me understand important relationships.	○	○
22	I ask myself questions about the material before I begin.	○	○
23	I think of several ways to solve a problem and choose the best one.	○	○
24	I summarize what I've learned after I finish.	○	○
25	I ask others for help when I don't understand something.	○	○
26	I can motivate myself to learn when I need to.	○	○
27	I am aware of what strategies I use when I study.	○	○
28	I find myself analyzing the usefulness of strategies while I study.	○	○
29	I use my intellectual strengths to compensate for my weaknesses.	○	○
30	I focus on the meaning and significance of new information.	○	○
31	I create my own examples to make information more meaningful.	○	○
32	I am a good judge of how well I understand something.	○	○
33	I find myself using helpful learning strategies automatically.	○	○
34	I find myself pausing regularly to check my comprehension.	○	○
35	I know when each strategy I use will be most effective.	○	○
36	I ask myself how well I accomplish my goals once I'm finished.	○	○
37	I draw pictures or diagrams to help me understand while learning.	○	○
38	I ask myself if I have considered all options after I solve a problem.	○	○
39	I try to translate new information into my own words.	○	○
40	I change strategies when I fail to understand.	○	○
41	I use the organizational structure of the text to help me learn.	○	○
42	I read instructions carefully before I begin a task.	○	○
43	I ask myself if what I'm reading is related to what I already know.	○	○

Table A1. *Cont.*

	Statements	TRUE	FALSE
44	I reevaluate my assumptions when I get confused.	○	○
45	I organize my time to best accomplish my goals.	○	○
46	I learn more when I am interested in the topic.	○	○
47	I try to break studying down into smaller steps.	○	○
48	I focus on overall meaning rather than specifics.	○	○
49	I ask myself questions about how well I am doing while I am learning something new.	○	○
50	I ask myself if I learned as much as I could have once I finish a task.	○	○
51	I stop and go back over new information that is not clear.	○	○
52	I stop and reread when I get confused.	○	○

Scoring

Score 1 point for each true response in the indicated categories. Score 0 points for each false response. Subcategories for Knowledge about Cognition are declarative knowledge (knowledge about self and about strategies), procedural knowledge (knowledge about how to use strategies), and conditional knowledge (knowledge about when and why to use strategies) (**Table A2**). Subcategories for Regulation of Cognition are planning, comprehension monitoring, information management strategies, debugging, and evaluation. Space is provided for each subscore and total score. These scores can help indicate strengths and weaknesses to help guide learner.

Table A2. Knowledge about Cognition.

Knowledge about Cognition	Score	Possible
Declarative Knowledge (# 5, 10, 12, 16, 17, 20, 32, 46)		8
Procedural Knowledge (# 3, 14, 27, 33)		4
Conditional Knowledge (# 15, 18, 26, 29, 35)		5
Total		**17**
Regulation of Cognition	**Score**	**Possible**
Planning (# 4, 6, 8, 22, 23, 42, 45)		7
Comprehension Monitoring (# 1, 2, 11, 21, 28, 34, 49)		7
Information Management Strategies (# 9, 13, 30, 31, 37, 39, 41, 43, 47, 48)		10
Debugging Strategies (# 25, 40, 44, 51, 52)		5
Evaluation (# 7, 18, 24, 36, 38, 49)		6
Total		**35**
Combined Total		**52**

(Source:Schraw G, Moshman D. Metacognitive theories. Educ Psychol Rev [Internet]. 1995 Dec. 7(4):351–71. Available from: http://link.springer.com/10.1007/BF02212307 [cited 2022 Feb 15])

References

[1] McGuane, C., 2006. Metacognition and self-regulated learning: A guide for the classroom. In: Van der Hoeven, A.J. (ed.). Exploring the Self-regulated Learner. pp. 51–65.

[2] Goh, C., 2008. Metacognitive instruction for second language listening development: Theory, practice and research implications. Regional Language Centre Journal. 39(2), 188–213.

[3] Nelson, T.O., 1996. Consciousness and metacognition. American Psychologist. 51, 102–116.

[4] Wenden, A., 1998. Metacognitive knowledge and language learning. Applied Linguistics. 19(4), 515–537.

[5] Flavell, J.H., 1976. Metacognitive aspects of problem solving. In: Resnick, L.B., (ed.). The Nature of Intelligence. Erlbaum: Hillsdale, NJ, USA.

[6] Birjandi, P., Mirhassani, A., Abbasian, G., 2006. Setting-based metacognitive strategy use. Journal of Faculty of Letters and Humanities. 49(198), 39–87.

[7] Schraw, G., Dennison, R.S., 1994. Assessing metacognitive awareness. Contemporary Educational Psychology. 19(4), 460–475. DOI: https://doi.org/10.1006/ceps.1994.1033

[8] Brown, A., Bransford, J.D., Ferrara, R., et al., 1983. Learning, remembering and understanding. In: Flavell, J.H., Markman, E.M., (eds.). Carmichael's Manual of Child Psychology, Vol. 1. Wiley: New York, NY, USA.

[9] Oxford, R., 2002. Language learning strategies. In: Carter, R., Nunan, D., (eds.). The Cambridge Guide to Teaching English to Speakers of Other Languages. Cambridge University Press: Cambridge, UK. pp. 166–172.

[10] Ridley, D.S., Schutz, P.A., Glanz, R.S., et al., 1992. Self-regulated learning: The interactive influence of metacognitive awareness and goal-setting. Journal of Experimental Education. 60(4), 293–306.

[11] O'Malley, J.M., Chamot, A.U., 1990. Learning Strategies in Second Language Acquisition. Cambridge University Press: New York, NY, USA.

[12] Sun, L., 2013. The effect of meta-cognitive learning strategies on English learning. Theory and Practice in Language Studies. 3(11), 2004–2009. DOI: http://dx.doi.org/10.4304/tpls.3.11.2004-2009

[13] Zhang, Y., 2019. The impact of self-regulated learning strategies on language acquisition among English language learners. Journal of Language Teaching and Research. 10(2), 321–330.

[14] Kummina, S., Rahman, S., 2010. The relationship between the use of metacognitive strategies and achievement in English. Procedia-Social and Behavioral Sciences. 7(C), 145–150.

[15] Yang, C., 2009. A study of metacognitive strategies employed by English listeners in an EFL setting. International Education Studies. 2(4), 134–139.

[16] Sartika, D.H.M., Santihastuti, A., Wahjuningsih, E., 2019. The learning strategies used by EFL students in learning English. IJEE (Indonesian Journal of English Education). 6(1), 10–20. DOI: http://dx.doi.org/10.15408/ijee.v1i1.12111

[17] Idris, N., Isa, H.M., Zakaria, N.N.N., et al., 2022. An investigation of the use of cognitive and metacognitive strategies in foreign language learning. International Journal of Academic Research in Business and Social Sciences. 12(2), 70–89.

[18] Nosratinia, M., Saveiy, M., Zaker, A., 2014. EFL learners' self-efficacy, metacognitive awareness, and use of language learning strategies: How are they associated? Theory and Practice in Language Studies. 4(5), 1080–1092. DOI: http://dx.doi.org/10.4304/tpls.4.5.1080-1092

[19] Raoofi, S., Chan, S.H., Mukundan, J., et al., 2014. Metacognition and second/foreign language learning. English Language Teaching. 7(1), 36–48. DOI: https://doi.org/10.5539/elt.v7n1p36

[20] Creswell, J.W., 2013. Qualitative Inquiry and Research Design: Choosing among Five Approaches, 3rd ed. Sage Publications: New York, NY, USA.

[21] Parajuli, M., Thapa, A., 2017. Gender differences in student academic performance. Journal of Development and Social Engineering. 3(1), 39–47. DOI: http://dx.doi.org/10.3126/jdse.v3i1.27958

[22] Shoaib, M., Ullah, H., 2019. Female and male students' educational performance in tertiary education in the Punjab Pakistan. Pakistan Journal of Social Issues. X(1), 83–100.

[23] Okafor, C.A., Egbon, O., 2011. Academic performance of male versus female accounting undergraduate students: Evidence from Nigeria. Higher Education Studies. 1(1), 9–19.

[24] Smith, J., Davis, L., 2020. Gender differences in academic performance among undergraduate students: A multi-institutional study. Journal of Educational Research. 112(4), 410–422.

[25] Zimmerman, B.J., 2002. Becoming a self-regulated learner: An overview. Theory into Practice. 41(2), 64–70. DOI: http://dx.doi.org/10.1207/s15430421tip4102_2