Exploring Metacognitive Awareness of Reading Strategies among Undergraduates

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ABSTRACT

This study explores how Malaysian ESL undergraduates are aware of their reading strategies and processes. This study draws on the framework established by Mokhtari and Reichard (2002) to explore how students view their use of global, problem-solving, and support reading strategies, as well as the relationship between these strategies. A quantitative method was employed, involving 146 participants who completed a self-report questionnaire. Studies show that students frequently use various reading strategies, particularly demonstrating a strong interest in predicting, rereading, and highlighting. The findings reveal significant positive relationships among all three types of strategies, indicating that students often use multiple strategies at the same time to enhance their understanding. The results highlight the importance of developing metacognitive awareness in ESL teaching and learning process.

Keywords: Reading strategies, Metacognitive awareness, ESL learners, Global strategies, Problem-solving, Support strategies

INTRODUCTION

Background of Study

Reading is an active process that involves mental engagement and comprehension. As a receptive talent, it necessitates that readers comprehend, evaluate, and analyse textual material. For English as a Second Language (ESL) learners, proficient reading abilities are crucial for academic achievement and comprehensive language development. Reading enables learners to enhance their vocabulary, refine their grammar, and strengthen their comprehension of the language. To become better English users, ESL students must therefore develop good reading skills.

Reading proficiency is more than just an academic activity; it also opens the door to greater language ability and lifetime learning (Ekowijayanto et al., 2021). Reading enables learners to engage in critical thinking, enhance their vocabulary, and gain new knowledge (Suwarso & Praseno, 2022). Effective reading skills play a vital role in academic success, especially for ESL learners who face the dual challenges of learning the language and understanding academic content (Alenezi, 2021). Reading necessitates skills for understanding texts, which are essential in language acquisition (Habók et al., 2024). Mastering reading skills is essential for ESL learners, as it significantly affects their academic development and their ability to engage with the wider world. Therefore, it is important for them to adopt effective strategies to support this mastery.

Statement of Problem

Exploring reading strategies and how they influence comprehension can play a significant role in shaping effective reading experience. Gaining insight into the most effective strategies for enhancing reading

comprehension can empower educators to enrich learning experiences and foster reading abilities. To develop into proficient readers, learners must cultivate both cognitive and metacognitive abilities. Metacognitive skills specifically entail an awareness of and the ability to manage the reading comprehension process (Ondé et al., 2022). Skilled readers often employ different techniques to keep track of and refine their comprehension of a text. They show an understanding of their reading methods and the demands of the task at hand, while also making good use of contextual clues.

Researchers have long been interested in how reading strategies allow learners to enhance their reading skills. Utilising these strategies effectively can significantly improve reading skills, especially when readers are mindful of the strategies that they use. This awareness serves as the basis for employing reading strategies, which includes recognising one's cognitive processes and utilising self-regulation techniques to oversee and improve comprehension (Ngoc, 2021). Louiza and Fadhila (2022) suggested that teaching and enlightening ESL learners on their reading strategies should be the primary focus in any English language classroom. Moreover, researchers also highlighted the importance of incorporating strategy-based instruction into the ESL reading curriculum to support learners' comprehension and engagement with texts. This suggestion shows how important it is for learners to use strategies to help them read better and on their own. Despite exposure to academic reading tasks in English-medium teaching, some Malaysian university students persist in encountering difficulties with reading comprehension and academic performance. This problem might be related to low metacognitive awareness of reading strategies. In light of this gap, it is essential to explore the awareness and application of reading strategies among Malaysian undergraduates, especially those that engage metacognitive processes. This study seeks to explore the perception of Malaysian ESL undergraduates on their reading strategies and the relationship between the strategies.

Objective of the Study and Research Questions

This study aims to explore learners' perceptions of their use of various reading strategies. Specifically, it seeks to answer the following research questions:

1. How do learners perceive their use of global reading strategies?
2. How do learners perceive their use of problem-solving reading strategies?
3. How do learners perceive their use of support reading strategies?
4. Is there a relationship between the different types of reading strategies?

LITERATURE REVIEW

Theoretical Framework

Theories of Reading and Metacognitive awareness

Flavell (1979) says that Flavell's metacognitive theory defines reading comprehension as needing both knowledge of cognition and the ability to control one's own cognitive processes. Skilled readers use metacognitive strategies that are based on the idea of strategic reading to plan, check, and rate their understanding. Schema theory suggests that understanding comes from activating existing knowledge structures (schemata)(Carrell & Eisterhold, 1983; Khartite, 2021). This means that ESL readers must connect new information from texts to what they already know in order to make sense of it . In real-world situations, readers use global strategies (like setting a purpose and previewing text structure) to plan and summarise their reading, problem-solving strategies (like re-reading and changing their reading speed) to get over comprehension problems, and support strategies (like taking notes and using a dictionary) to help them understand better (Mokhtari & Sheorey, 2002). Each of these categories of strategies are based on Sheorey and Mokhtari metacognitive awareness framework, which shows how readers organise their thinking on a global, problem-solving, and support level. These theories are more effective when you use instructional models like cognitive apprenticeship and concept-oriented reading instruction. A cognitive apprenticeship approach (Collins et al.,

1989) makes expert thinking visible by having teachers model and scaffold reading strategies (like questioning and summarising) in real-life situations and slowly giving students more responsibility. Similarly, Concept-Oriented Reading Instruction (CORI) combines explicit strategy instruction (such as activating preexisting knowledge and questioning) with content learning, a practice that has been demonstrated to enhance students' reading comprehension and engagement (Guthrie et al., 2004). Recent empirical studies involving ESL undergraduates confirm the significance of these theoretical foundations. For example, Anggia and Habók (2024) discovered a positive correlation between students' utilisation of global, support, and problem-solving strategies and their performance in English reading comprehension. Moreover, the instruction of explicit metacognitive strategies has demonstrated effectiveness: educating university EFL learners on the application of these strategies notably enhanced their awareness and reading results (Khellab et al., 2022; Khurram, 2023). These theories and studies collectively emphasise that enhancing metacognitive awareness of reading strategies through schema activation, guided practice, and strategy instruction empowers ESL undergraduates to become more strategic and self-regulated readers, thereby enhancing their comprehension of academic texts.

Although most experts concur that improving ESL undergraduates' reading comprehension requires metacognitive awareness, their methods and focus differ depending on the theoretical viewpoint and the empirical research. Flavell's (1979) metacognitive theory establishes that strategic reading encompasses both cognitive knowledge and the regulation of learning processes. Schema Theory (Carrell & Eisterhold, 1983) highlights the significance of activating prior knowledge, which is particularly vital for ESL learners who may not possess cultural or linguistic familiarity with texts. Instructional models like cognitive apprenticeship (Collins et al., 1989) and Concept-Oriented Reading Instruction (Guthrie et al., 2004) implement these theories by directing learners in strategy modelling and scaffolding within genuine learning environments. While both of these frameworks aim to promote reading comprehension, their approaches are different; apprenticeship models and metacognitive theory emphasise process management, while schema theory focuses on content activation. Recent empirical research (Anggia & Habók, 2024; Khurram, 2023; Khellab et al., 2022) indicates that ESL students achieve the most benefit when these theories are integrated. Specifically, students instructed to activate schema, employ global and problem-solving strategies, and monitor their reading progress exhibit significantly enhanced comprehension. Therefore, it is agreed that although each theory provides a distinct perspective, an integrated instructional method based on both content and cognitive regulation most effectively facilitates metacognitive development in ESL undergraduate readers.

Reading Strategies

Reading strategies refer to the intentional methods readers use to understand and engage with texts more effectively. These strategies are particularly important for ESL learners, who must often manage both language challenges and complex academic content. Effective reading does not happen by chance. It requires conscious planning, monitoring, and evaluating one's own reading process.

Several researchers have categorised reading strategies into three major types: global, problem-solving, and support strategies. Global strategies involve overall planning, such as setting a purpose for reading or previewing a text before engaging with it. Problem-solving strategies are applied when readers face difficulties. These include re-reading unclear sections, slowing down for better comprehension, or guessing the meaning of unfamiliar words using context clues. Support strategies refer to the use of tools and techniques that assist understanding, such as highlighting, note-taking, or referring to dictionaries.

Recent studies affirm the relevance of these categories in contemporary classrooms. For instance, Awang et al. (2024) examined Malaysian undergraduates and found that problem-solving strategies were the most frequently reported, especially during academic reading tasks. The study also showed that students often combined strategies, suggesting that strategic reading is not linear but adaptive. Similarly, El Madani et al. (2024) identified a strong positive relationship between students' awareness of these strategies and their actual reading performance. Their findings confirm that students who understand how they read tend to perform better academically.

Another recent study by Khurram (2023) demonstrated that direct instruction in reading strategies led to increased student confidence and engagement. Learners who were taught how to activate prior knowledge, make

predictions, and skim for main ideas became more involved in the reading process and more effective in handling academic texts.

Across these studies, one conclusion stands out. Reading strategies are not merely helpful; they are essential tools for learning. When students become aware of their own reading behaviours and learn to use appropriate strategies, they improve not only their reading comprehension but also their overall academic success.

Past Studies

Past Studies on The Use of Reading Strategies

Reading strategies are considered crucial for improving students' reading comprehension, as they provide learners with the necessary skills to handle and tackle reading tasks more efficiently (Banditvilai, 2020). In a related study, Küçükoğlu (2013) carried out a study that involved 14 intermediate-level students participating in an integrated skills course. The focus was on exploring the impact of explicit instruction in reading strategies on enhancing the students' reading performance. The findings showed that providing structured support in strategy application resulted in meaningful improvements in reading skills.

Similarly, Banditvilai (2020) investigated how reading techniques affected understanding of second-year English majors at Kasetsart University. Following training, students effectively employed skimming, scanning, anticipating, and questioning techniques that improved their comprehension, the study revealed.

In a different study, Gustanti and Ayu (2021b) conducted a research to explore the relationship between cognitive reading strategies and the English proficiency test scores of third-year English education students at a private university. A total of 40 students participated in the study, providing responses to a 25-item self-report questionnaire designed to evaluate their strategies during pre-reading, while-reading, and post-reading phases. The statistical study done using SPSS revealed a favourable correlation between application of cognitive reading strategies and English competence. The results indicate that students often utilised cognitive strategies while engaging with reading materials.

Expanding on the importance of strategies use, more recent studies have increasingly concentrated on learners' metacognitive awareness, which encompasses their capacity to plan, monitor, and assess their reading processes. Al-Mekhlafi (2018) explored how often EFL students in higher education utilise specific reading strategies. Data were gathered from a group of 74 tertiary-level learners using the Metacognitive Awareness of Reading Strategies Inventory (MARSI) alongside a think-aloud approach. Participants evaluated their use of strategies using a 5-point Likert scale. The results showed that learners at elementary, intermediate, and advanced proficiency levels frequently utilised all three categories of metacognitive reading strategies—global, problem-solving, and support strategies. The study revealed that there were no meaningful differences in how frequently strategies were employed across the various proficiency groups.

Shah et al. (2024b) examined a group of 350 first-year college students from the Shaheed Benazirabad. The study utilised the Metacognitive Awareness of Reading Strategies Questionnaire (MARSQ) alongside a reading comprehension test, revealing that while students excelled at answering literal questions, they faced challenges with inferential and evaluative comprehension tasks. Of the three categories of metacognitive strategies: global, problem-solving, and support, problem-solving strategies emerged as the most frequently used. The results indicate that although learners exhibit a degree of strategic awareness, there are still shortcomings in their higher-order comprehension and the application of strategies.

Conceptual Framework

Students employ various reading strategies to understand the material they are engaging with. Rahmat et al. (2022) suggest that effective reading strategies are essential for navigating various learning tasks in higher education, and utilising these strategies appropriately enhances readers' engagement with the text. The conceptual framework of the study is illustrated in Figure 1. This research is based on the reading strategies outlined by Mokhtari & Reichard (2002). The three primary reading strategies include global, problem-solving,

and support reading strategies. Global reading strategies encompass various skills, including skimming, previewing, summarising, and posing questions during the reading process. Next, problem-solving reading strategies involve the various techniques that readers employ during their reading process. These methods assist in analysing and comprehending the text. The methods encompass recognising information, drawing conclusions, and utilising critical thinking abilities. Finally, support reading strategies include those that help readers improve their comprehension and fluency. Among some of the strategies are making connections, making predictions, visualizing, summarising and many more. This study also explores if there is a relationship between all these three strategies.

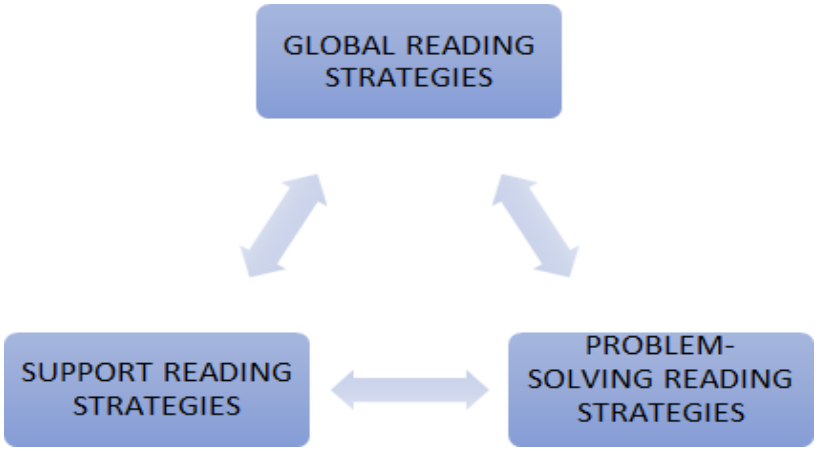

Figure 1- Conceptual Framework of the Study-

Relationship between all Reading Strategies

METHODOLOGY

This quantitative study aims to investigate the metacognitive awareness of reading strategies among undergraduate students. A total of 146 participants were selected to complete the survey. Data were collected through an online questionnaire administered via Google Forms.

Table 1- Likert Scale

Frequency

1	Never
2	Seldom
3	Sometimes
4	Often
5	Almost Always

As seen in Table 1, the instrument employed was a 5-point Likert scale, with response options ranging from *never*, *seldom*, *sometimes*, *often*, to *almost always*, adapted from Mokhtari and Reichard (2002). It aimed at assessing students' metacognitive awareness regarding their reading strategies. The survey consists of four sections. Section A collects demographic information. Section B contains 13 items assessing Global Reading Strategies, Section C comprises 8 items on Problem-Solving Strategies, and Section D includes 9 items related to Support Reading Strategies. The variables measured through the instrument are detailed in Table 2 below.

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Table 2- Distribution of Items in the Survey

SECTION	READING STRATEGY	NO OF ITEMS	CRONBACH ALPHA
B	Global Strategies	13	.913
C	Problem-Solving Strategies	8	.878
D	Support Strategies	9	.856
		30	.947

The reliability analysis of the survey instrument is shown in Table 2. The findings show a high level of internal consistency across the three categories of strategies, reflected in Cronbach's alpha values of .913 for Global Reading Strategies, .878 for Problem-Solving Strategies, and .856 for Support Strategies. The combined reliability for all 30 items is .947, indicating that the instrument utilised is very reliable. Subsequently, descriptive statistical analyses were conducted with SPSS to answer the study's research questions.

FINDINGS

Findings for Demographic Profile

Table 3- Percentage for Demographic Profile

Question	Demographic Profile	Categories	Percentage (%)
1	Gender	Male	53%
		Female	47%
2	Discipline	Science & Technology	47%
		Social Sciences	4%
		Business	49%
3	Level of Study	Diploma	93%
		Degree	7%
4	Semester	1-3	99%
		4-6	1%
5	Name of College or university	UiTM	71%
		UMS	8%
		UniKL	21%

This study surveyed 146 undergraduate students from three Malaysian public and private institutions. Students were drawn from three institutions: Universiti Teknologi MARA (UiTM) accounted for 71% of the sample, followed by Universiti Kuala Lumpur (UniKL) with 21%, and Universiti Malaysia Sabah (UMS) with 8%. The gender breakdown was 53% male and 47% female. The participants represented three academic disciplines, with the majority enrolled in Business programmes (49%), followed by Science and Technology (47%), and a small

proportion from the Social Sciences (4%). Most of the students were pursuing Diploma-level qualifications and were in their early semesters of study (Semester 1 to 3).

Findings for Global Reading Strategies

This section presents data to answer research question 1- How do learners perceive their use of global reading strategies? Global reading strategies call for deliberate planning and monitoring of reading for general meaning and purpose. Commonly employed strategies involve actions like establishing reading objectives, previewing the material, making predictions, and utilising contextual or visual cues to improve understanding.

Table 4- Mean for GLOBAL READING STRATEGIES (GLOB)

Item	Mean	SD
GLOBQ1 Specific reading goal maintained.	3.6	0.74052
GLOBQ 2 Prior knowledge used for understanding.	3.8	0.78808
GLOBQ 3 Text previewed before detailed reading.	3.8	0.89379
GLOBQ 4 Alignment with reading objectives considered.	3.6	0.81147
GLOBQ 5 Text scanned for length and structure.	3.5	0.96272
GLOBQ 6 Reading parts selected based on importance.	3.6	0.95434
GLOBQ 7 Visual aids used for comprehension.	3.7	1.02784
GLOBQ 8 Context clues applied for meaning.	3.8	0.86590
GLOBQ 9 Key information identified through formatting.	3.3	1.01104
GLOBQ 10 Information critically assessed.	3.55	0.76271
GLOBQ 11 Understanding verified when conflicts arise.	3.8	0.88051
GLOBQ 12 Content predicted during reading.	3.7	0.91541
GLOBQ 13 Predictions evaluated for accuracy.	3.9	0.85911

Table 4 presents the mean scores for Global Reading Strategies (GLOB). The highest mean is M=3.9 (SD=0.85911) for evaluating predictions for accuracy (GLOBQ 13), while the lowest is M=3.3 (SD=1.01104) for identifying key information through formatting (GLOBQ 9). Other strategies with high usage include GLOBQ 2, GLOBQ 3, GLOBQ 8, and GLOBQ 11, each with a mean of 3.8, reflecting the use of prior knowledge, previewing texts, applying context clues, and verifying understanding during conflicts. Learners demonstrate a moderate to high use of global reading strategies, particularly those related to comprehension monitoring and prediction. However, the lower engagement with format-based strategies may indicate a lack of familiarity or training. The observed variability in the use of visual aids and formatting strategies may reflect differences in learners' reading proficiency, strategic awareness, or individual learning preferences.

Findings for Problem-Solving Reading Strategies

This section presents data to answer research question 2- How do learners perceive their use of problem-solving reading strategies? Problem-solving strategies refer to actions readers take when they encounter difficulties in understanding a text. These strategies that can call for intentional cognitive processes include slowing down reading, revisiting difficult sections, or varying reading pace depending on the difficulty of the content.

Table 5- Mean for PROBLEM-SOLVING STRATEGIES (PROB)

Item	Mean	SD
PROBQ1 Text read slowly for comprehension.	4	0.82165
PROBQ 2 Focus regained after distraction.	4	0.81356
PROBQ 3 Reading speed adjusted based on difficulty.	3.9	0.81900
PROBQ 4 Attention increased during challenging section.	4.1	0.85282
PROBQ 5 Reading paused for reflection	3.6	0.93228
PROBQ 6 Information visualized to aid memory	3.8	0.91963
PROBQ 7 Difficult sections reread for clarity.	4.1	0.86007
PROBQ 8 Meaning of unfamiliar words inferred.	4	0.86568

The data suggest that students are generally aware of their use of problem-solving strategies when reading. Among the strategies, two stood out with the highest mean scores: increasing attention during challenging sections (M = 4.1, SD = .85282) and rereading difficult parts to enhance understanding (M = 4.1, SD = .86007). These findings indicate that when faced with complex or unclear content, students tend to engage more actively and persistently to make sense of the text. Other frequently used strategies included slowing down to aid comprehension (M = 4.0, SD = .82165), regaining focus after distractions (M = 4.0, SD = .81356), and inferring the meaning of unfamiliar words from context (M = 4.0, SD = .86568), showing a high level of metacognitive awareness. On the other hand, pausing to reflect while reading received a slightly lower mean score (M = 3.6, SD = .93228), which may suggest that this strategy is less intuitive or less practised among learners. Overall, the responses reflect a group of readers who are not only aware of their reading behaviours but are also actively applying strategies to manage comprehension, particularly when the material becomes demanding.

Findings for Support Reading Strategies

This section presents the findings related to Research Question 3: How do learners perceive their use of support reading strategies? Support strategies refer to strategies that help enhance understanding and memory during the reading process, such as taking notes, underlining key information, rereading, and consulting external resources.

Table 6- Mean for SUPPORT READING STRATEGIES (SUPP)

Item	Mean	SD
SUPPQ1 Notes taken for better understanding	3.2	0.98781
SUPPQ 2 Text read aloud when difficult.	3.6	0.97324
SUPPQ 3 Key points summarized.	3.5	0.80656
SUPPQ 4 Text discussed with others for confirmation.	3.5	0.94048
SUPPQ 5 Key information underlined or circled.	3.7	1.02735
SUPPQ 6 Reference materials consulted.	3.5	0.84891
SUPPQ 7 Ideas rephrased for clarity.	3.6	0.90881
SUPPQ 8 Text revisited to identify connections.	3.6	0.86040
SUPPQ 9 Guiding questions generated during reading.	3.5	0.83939

Table 6 presents the mean scores and standard deviations for items measuring students' use of Support Reading Strategies (SUPP). The highest mean score (M = 3.7, SD = 1.03) was reported for the strategy "Key information underlined or circled," suggesting that students often utilise visual markers to enhance their understanding. This is followed by "Text read aloud when difficult" (M = 3.6, SD = 0.97), "Ideas rephrased for clarity" (M = 3.6, SD = 0.91), and "Text revisited to identify connections" (M = 3.6, SD = 0.86), suggesting active efforts in processing and clarifying content. Other commonly used strategies include summarising key points, discussing with peers, and consulting reference materials, all averaging around a mean of 3.5. The strategy with the lowest mean score was "Notes taken for better understanding" (M = 3.2, SD = 0.99), indicating much less dependence on note-taking among students.

Findings for Relationship between all Reading Strategies

This section explores Research Question 4: Is there a relationship between the different types of reading strategies? A Pearson correlation analysis was performed using SPSS to examine the relationship between global, problem-solving, and support reading strategies. The findings are displayed in Tables 7, 8, and 9, respectively.

Table 7- Correlation between Global and Problem-Solving Reading Strategies

		GLOBAL READING STRATEGIES	PROBLEM-SOLVING READING STRATEGIES
GLOBAL READING STRATEGIES	Pearson (Correlation	1	.698**
	Sig (2-tailed)		.000
	N	146	146
PROBLEM-SOLVING READING STRATEGIES	Pearson (Correlation	.698**	1
	Sig (2-tailed)	.000	
	N	146	146

**Correlation is significant at the level 0.01(2-tailed)

The data presented in Table 7 indicates a relationship between global reading strategies and problem-solving reading strategies. The correlation analysis indicates a strong and significant relationship between global reading strategies and problem-solving reading strategies, with a correlation coefficient of r = .698** and a p-value of .000. Jackson (2015) notes that the coefficient is significant at the .05 level, indicating a positive correlation measured on a scale from 0.1 to 1.0. A weak positive correlation is typically observed within the range of 0.1 to 0.3, while a moderate positive correlation falls between 0.3 and 0.5. A strong positive correlation is indicated by values ranging from 0.5 to 1.0. This indicates a significant positive connection between global reading and problem-solving strategies.

Table 8- Correlation between Problem-Solving and Support Reading Strategies

		PROBLEM-SOLVING READING STRATEGIES	SUPPORT READING STRATEGIES
PROBLEM-SOLVING READING STRATEGIES	Pearson (Correlation	1	.645**

	Sig (2-tailed)		.000
	N	146	146
SUPPORT READING STRATEGIES	Pearson (Correlation	.645**	1
	Sig (2-tailed)	.000	
	N	146	146

**Correlation is significant at the level 0.01(2-tailed)

Table 8 illustrates a relationship between problem-solving and support reading strategies. Correlation analysis shows that there is a high significant association between problem-solving and support reading strategies (r=.645**) and (p=.000). Jackson (2015) notes that the coefficient is significant at the .05 level, indicating a positive correlation measured on a scale from 0.1 to 1.0. A weak positive correlation is indicated by values ranging from 0.1 to 0.3, while a moderate positive correlation falls between 0.3 and 0.5. A strong positive correlation is represented by values from 0.5 to 1.0. This indicates that there is a significant positive relationship between problem-solving and the use of support reading strategies.

Table 9- Correlation between Support and Global Reading Strategies

		SUPPORT READING STRATEGIES	GLOBAL READING STRATEGIES
SUPPORT READING STRATEGIES	Pearson (Correlation	1	.696**
	Sig (2-tailed)		.000
	N	146	146
GLOBAL READING STRATEGIES	Pearson (Correlation	.696**	1
	Sig (2-tailed)	.000	
	N	146	146

**Correlation is significant at the level 0.01(2-tailed)

Table 9 indicates a significant relationship between support and global reading strategies. The Pearson correlation analysis reveals a strong positive correlation between the two (r = .696**, p = .000). Based on Jackson's (2015), a correlation coefficient between 0.5 and 1.0 denotes a strong positive relationship. Therefore, the findings indicate that students who regularly utilise support strategies are also likely to consistently apply global reading strategies.

CONCLUSION

Summary of Findings and Discussions

Findings of this study show that learners generally demonstrate moderate to high use of global reading strategies, especially those related to monitoring comprehension and making predictions. Strategies such as using prior knowledge, previewing texts, and applying context clues are commonly employed. This finding aligns with the

results of Ngoc and Nhung (2022), who observed that learners demonstrated a notable tendency to monitor and assess their predictions during reading. In this study, it was found that prediction evaluation was the global reading strategy most commonly utilised. These findings point to good metacognitive awareness as they imply that students are actively using strategies that enable them to make sense of the text prior and during reading. These also strongly relate to Al-Mekhlafi (2018), whose research revealed a focus on prediction, previewing, and connecting prior knowledge to the reading material.

When it comes to problem-solving strategies, students are generally aware of these strategies while reading, especially when dealing with difficult content. They frequently apply techniques such as rereading, focusing attention, and using context to understand challenging parts. This is similar to Gustanti and Ayu (2021), where their study revealed that students often reread sentences and text to remember important points. However, pausing to reflect is used less often, suggesting it may be a less familiar strategy.

It is also clear that students frequently use support reading strategies that involve visual and verbal reinforcement, such as underlining key information, reading aloud, rephrasing ideas, and revisiting text to find connections. This finding is consistent with the research conducted by Ngoc and Nhung (2022), in which students similarly indicated that they frequently utilised underlining or circling to highlight key information in the text. This approach was preferred due to its success in enhancing memory and promoting a better understanding of the text.

In contrast to the findings of Nisrina (2023), which indicated a low mean score for reading aloud, the present study reveals that a significant number of students often read aloud when faced with challenging texts. This difference could indicate variations in context or instruction between the two groups of learners. Nirwana et al. (2025) highlight that reading aloud significantly improves students' reading comprehension, vocabulary growth, and pronunciation abilities. This highlights the notion that reading aloud can serve as a valuable support strategy, particularly for ESL learners aiming to enhance their comprehension and language skills.

The findings also reveal strong and significant positive relationships among global, problem-solving, and support reading strategies. Students that often employ a particular strategy are also inclined to utilise others, indicating that different strategies are commonly integrated to improve comprehension. Those who actively apply problem-solving strategies sometimes use support strategies such as note-taking or revisiting challenging areas. This tendency aligns with the findings of Aziz et al. (2023) and Pahrizal et al. (2024), who similarly observed that students generally integrate several reading methods to enhance their comprehension of texts.

Implications and Suggestions for Future Research

Theoretical and Conceptual Implications

This study's findings align with key ideas from the theoretical frameworks surrounding metacognitive awareness of reading strategies. The consistent use of global, problem-solving, and support strategies by learners reflects the understanding that successful reading involves both cognitive engagement and self-management. The finding also reveals similarity with Mokhtari & Reichard (2002)’s framework of reading strategies. The significant relationships among the three types of strategies indicate that students frequently employ multiple strategies simultaneously, thereby supporting the conceptual framework that strategy use is interrelated rather than isolated.

Pedagogical Implications

This study emphasises the significance of implementing metacognitive awareness reading strategies in the context of ESL, especially within higher education settings. As learners employ various strategies to boost their reading skills, there remains rooms for improvement, particularly in developing higher-level comprehension skills and encouraging more thoughtful reading habits. Educators and curriculum developers need to integrate instructions on metacognitive awareness reading strategies into the teaching and learning process. Improving students' understanding of their own thinking processes by teaching specific reading strategies may boost their reading comprehension and contribute to greater academic achievement.

Suggestions for Future Research

This research provides important perspectives on the metacognitive awareness of reading strategies among undergraduate students. However, many areas still need further investigation. Future studies could explore a qualitative or mixed-methods approach to gain a deeper understanding of how students apply these strategies in real reading contexts. Think-aloud procedures or reading diaries, for example, can reveal more complex patterns in learners' strategic behaviour that surveys alone might not fully capture. Future research could investigate the relationship between metacognitive awareness and factors like reading motivation, academic achievement, or digital reading practices. As reading occurs across various platforms, understanding how learners adapt and apply their skills in digital environments is an important and meaningful area for exploration.

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