

ASSESSING METACOGNITIVE STRATEGIES FOR L2 READING: INSIGHTS FROM TERTIARY ESL CLASSROOMS IN KELANTAN

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Abstract. This research examines the use of metacognitive strategies in the context of second-language reading employed by tertiary education learners at a public university in Kelantan, Malaysia. Quantitative methodologies were utilised to investigate the strategies used in the ESL classroom. Metacognitive strategies are vital in enhancing reading comprehension and academic achievement, particularly among learners whose English is not their first language. Primarily, this study seeks to identify prevalent metacognitive strategies used, then evaluate their frequency of use concerning three reading strategies; global, problem-solving, and support, as well as analyse the interrelationship among the aforementioned metacognitive reading strategies. Surveys were administered to a sample of tertiary students in their respective ESL classrooms at a public university in Kelantan, for data collection purposes. Accordingly, descriptive and correlation statistical analyses were employed to assess the data and evaluate the effectiveness of metacognitive strategies in predicting the learners' success, specifically their reading comprehension. The study reveals that learners most commonly recognise problem-solving strategies, and there is a significant positive correlation among all metacognitive reading strategies. The results elucidate the role of metacognitive strategies in enhancing reading abilities within ESL contexts and henceforth propose recommendations for improving ESL teaching practices as informed by these findings.

Keywords: *reading strategies, metacognitive, global, problem-solving, support*

Introduction

English is used as a second language (ESL) in many areas of Malaysia, particularly in education. L2 reading proficiency in the ESL context is a major obstacle for Malaysian students (Semtin and Maniam, 2015). The deliberate attempts to enhance comprehension in reading, apart from decoding the language, and extracting meaning from reading materials are known as reading techniques. With regard to the boundary of this present study, metacognitive reading strategies in ESL classrooms are deemed essential for the improvement of L2 learners' academic achievement through their reading comprehension. According to Anderson (2003), second language acquisition is accelerated by the use of metacognitive strategies. Additionally, Vandergrift (2002) pointed out that the knowledge of these strategies aids students in controlling and directing their education, which is necessary for self-directed learning and

metacognitive awareness (Chamot, 1990). On the same page, Mustajab Ahmed (2020) examined several characteristics, including age and gender, that influence learners' choices when utilising these strategies. Furthermore, other studies revealed that learners' preferred reading style is also influenced by their fields of study, be it English, science, business, or humanities (Dabaghi and Akvan, 2014; Magogwe, 2013; Park, 2010).

The goal of the current study is to investigate how students view metacognitive (global, problem-solving, support) reading strategies in their L2 reading and to determine how these reading strategies relate to one another. Consequently, the following research topics are attempted to be addressed by this study: (1) how do learners perceive global reading strategies in reading? (2) how do learners perceive problem-solving reading strategies in reading? (3) how do learners perceive support reading strategies in reading? (4) is there a relationship between all metacognitive reading strategies?

Literature review

Metacognitive reading strategies (global, problem-solving, support)

According to Mokhtari and Sheorey (2002), three primary metacognition approaches to reading are classified as metacognitive reading strategies. In the first place, global reading strategies assist readers in establishing objectives for their reading, thus enhancing their vocabulary and comprehension of many subjects. Moving on to the second, problem-solving strategies are utilised by readers when they are confronted with challenges in their reading materials. These challenges may necessitate the modifying of reading speed, rereading, or determining difficult terms. Meanwhile, the third approach which is support strategies offers additional techniques, such as making use of reference resources to assist ESL learners in their reading. The study by Abu-Snobar (2017) contends that metacognitive reading strategies demand the readers to engage in active regulation and monitoring of comprehension. The adoption of these strategies throughout the reading stage may be demonstrated when ESL learners participate in pre-reading activities, e.g. goal setting (global), the attempt to solve any challenges or diversions (problem-solving), and post-reading activities to increase comprehension and retention (support). On the other hand, employing metacognitive reading methods is not restricted to a single step of the reading process since these strategies are possible to be utilised at any stage of the reading process.

Summary of past studies on metacognitive reading

Through their research conducted at Universitas Negeri Malang in Indonesia, Deliany and Cahyono (2020) investigated the level of awareness that English as a Foreign Language (EFL) students have about metacognitive reading strategies and how they are employed. Demographically, the authors compared male (20) and female (33) students in their research. It is clear from the findings that every student is well aware of and utilise these strategies. Even though there are some differences in awareness between the sexes, these differences are not significant; thus, there are no substantial gender disparities regarding how these methods are utilised. On the other hand, a study by Annury et al. (2019) investigates the metacognitive reading strategies that are most frequently utilised by English Language Teaching (ELT) students at the Faculty of Education and Teacher Training, UIN Walisongo Semarang. This research which was conducted in a similar Indonesian context surveyed a single group of 43 students, with

10 males and 33 females participating. Based on the findings, it can be deduced that the students predominantly employ problem-solving methods, whereas global reading strategies and support reading strategies have a lower frequency of utilisation. Meanwhile, Mustajab Ahmed (2020) in Oman attempted to investigate how his English as a Foreign Language (EFL) students from various fields utilise and comprehend cognitive and metacognitive reading methods. The participants of his study comprised of 375 first-year students from different study backgrounds such as biology, business, information technology, engineering, and English. The findings reveal that students prefer problem-solving (formerly known as cognitive) strategies the most, followed by support and global (previously known as metacognitive) strategies.

Conceptual framework

Figure 1 illustrates the proposed conceptual framework of the study. This study is based on the metacognitive reading strategies outlined by Mokhtari & Reichard (2002). This study examines the relationship between global reading, problem-solving, and support reading as independent variables and metacognitive reading strategies as the dependent variable. This research aims to determine whether there is a relationship between global reading, problem-solving, and support reading concerning metacognitive reading strategies.

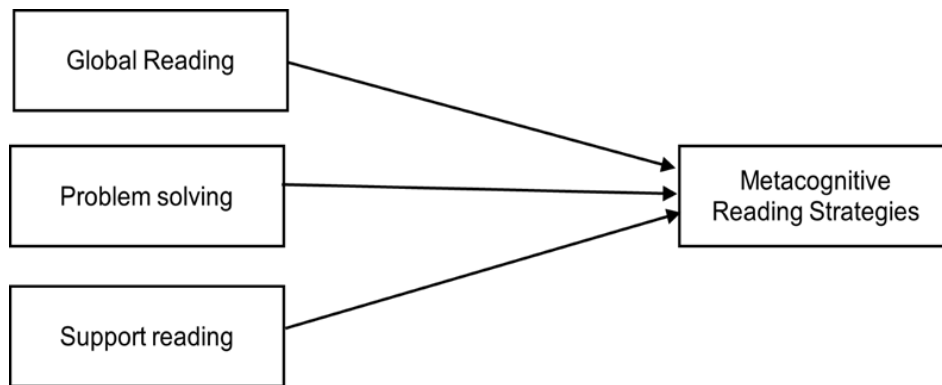


Figure 1. Conceptual framework.

Materials and Methods

This quantitative study explores factors for online learning among undergraduates. A purposive sample of 100 participants responded to the survey. The instrument used is a 5-point Likert scale survey based on Mokhtari and Reichard (2002) to reveal the variables in Table 1. The survey consists of four sections. Section A includes survey items on the demographic profile of the respondents, Section B has 13 items on global reading strategies, Section C contains items on problem-solving strategies, and Section D includes 9 items on support reading strategies.

Table 1. Distribution of metacognitive reading strategies.

Section	Metacognitive reading strategy	No. of items
A	Demographic Profile	4
B	Global Reading Strategies	13
C	Problem-Solving Strategies	8
D	Support Reading Strategies	9

Total

34

Reliability assessment using Cronbach's Alpha

Cronbach's Alpha is a reliability coefficient used to assess the internal consistency of a set of items or scales within a survey or test, indicating how well they measure a common underlying construct. With values ranging from 0 to 1, a higher alpha (typically above 0.7) suggests that items have relatively high correlations and measure the same concept, thus confirming reliability. In this study, Cronbach's Alpha was applied to ensure the consistency of responses related to metacognitive reading strategies, allowing us to confirm that items were reliably assessing the intended constructs within the ESL learner context.

Data presentation and descriptive analysis techniques

Descriptive analysis is used to summarise and organise data, providing a clear view of key patterns and trends. Numerically, measures such as the mode, mean, and median offer insight into central tendencies; for example, the mode identifies the most frequent response, the median provides the midpoint, and the mean calculates the average, helping to understand the distribution of responses. Graphically, data can be visualized through pie charts, which depict proportional distributions, or bar graphs, which allow for comparisons across categories. Tabular representation, using tables, organizes data in a structured way, making it easier to read specific values and categories. In this study, the mean was used as the primary measure to represent average responses. Findings were presented through various formats, including pie charts and bar graphs for visual clarity, alongside tables to display detailed data points systematically.

Intepreting correlation analysis

Correlation analysis examines the strength and direction of relationships between two or more variables, offering insights into how variables interact. Different schools of thought provide various perspectives on interpreting correlation values. For instance, Cohen (2013) suggests that a correlation of 0.1 and 0.29 is small, 0.3 and 0.49 is moderate, and 0.5 or above is large, while Sekaran (2016) suggests that a correlation coefficient (r) of 0.10 to 0.29 indicates a weak relationship, 0.30 to 0.49 a moderate relationship, and 0.50 to 1.00 a strong relationship. On the other hand, Jackson (2012) defines boundaries slightly differently, viewing correlations at the .05 level as significant, and a positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. While interpretations may vary, they all agree that correlations close to 1 or -1 indicate strong positive or negative relationships, respectively. For this study, we followed Jackson (2012), who emphasized practical application with boundaries adjusted to account for contextual variance.

Results and Discussion

To understand the background of the participants, demographic profiling was done through a survey on four items which are gender, education level, course cluster, and participants' perceived English language proficiency. *Figure 2* reveals the percentage of the respondents who were involved in this study. Most of the respondents were female

(79%) and only one-fifth of the respondents were male respondents (21%). *Figure 3* illuminates the education level of the respondents. The majority of the respondents were Diploma students (56%) followed closely by Degree students (44%). Interestingly, there were no pre-diploma students among the respondents. *Figure 4* represents the course clusters of the respondents for this study. Two-fifths of the respondents were from the Business and Management cluster (47%), followed by the Science and Technology cluster with 31% of the respondents. Only 22% of the respondents were from the Social Sciences cluster. *Figure 5* reveals the students' perceptions of their English proficiency. Most of the respondents (71%) rated their English proficiency as average. Only 25% of the respondents believed that they had a good command of English, and a small percentage (4%) perceived themselves as having poor language proficiency.

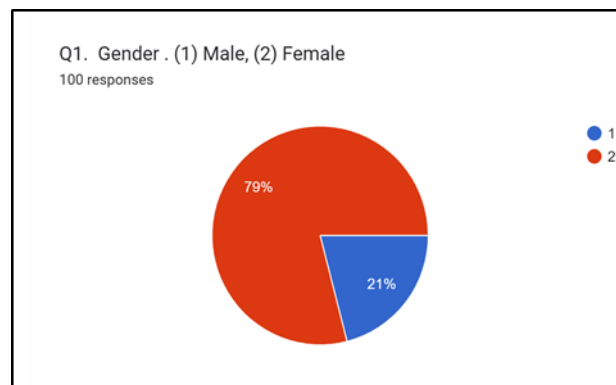


Figure 2. Percentage of respondents' gender.

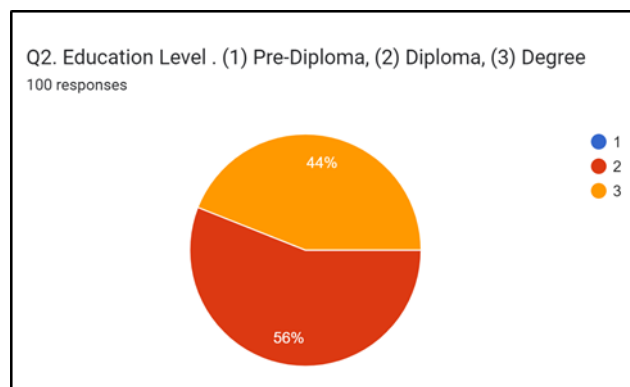


Figure 3. Percentage of the respondents' education level.

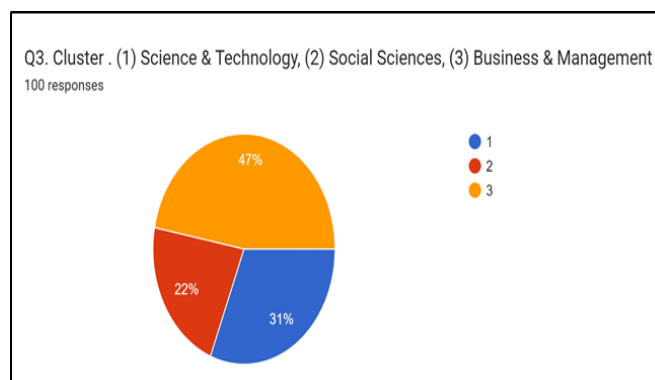


Figure 4. Percentage of the respondents' course cluster.

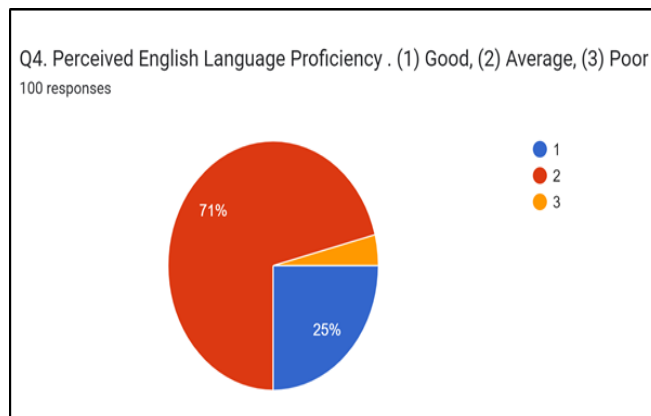


Figure 5. Percentage for respondents' perceived English language proficiency.

Reliability test

Table 2 reveals the reliability of the survey items. The analysis showed a Cronbach alpha of 0.922, thus revealing the good reliability of the instrument used. Further analysis using SPSS is done to present findings to answer the research questions for this study.

Table 2. Reliability of survey.

Cronach alpha	No of items
0.992	30

Summary of findings

The study examines metacognitive reading strategies among ESL learners in tertiary education in Kelantan, focusing on three strategies: global, problem-solving, and support. The findings indicate that problem-solving strategies were the most frequently used, demonstrating students' active engagement with challenging text through methods like adjusting reading speed and re-reading for comprehension. In the meantime, global strategies showed moderate usage, where students prioritized understanding over text structure, while support strategies were also moderately used, with activities like underlining key points and using reference materials aiding comprehension.

Findings for global reading strategies

This section presents data to answer research question 1: How do learners perceive global reading strategies in reading? According to Figure 6 below, the mean values for the global strategies range from 3.5 to 4.2. The study found that learners perceived global reading strategies as moderately useful, employing them primarily for goal-setting and activating prior knowledge before reading. Key strategies included previewing the text, skimming for structure, and linking new content with familiar concepts. This finding aligns with Mokhtari and Sheorey (2002), who describe global strategies as useful tools for organizing and approaching text. However, the moderate frequency of use suggests that while learners recognize the importance of these strategies, they may prioritize them less when immediate comprehension challenges arise. This is consistent with studies by Deliany and Cahyono (2020), who observed that

global strategies are often secondary to problem-solving strategies in terms of frequency of use among ESL learners.

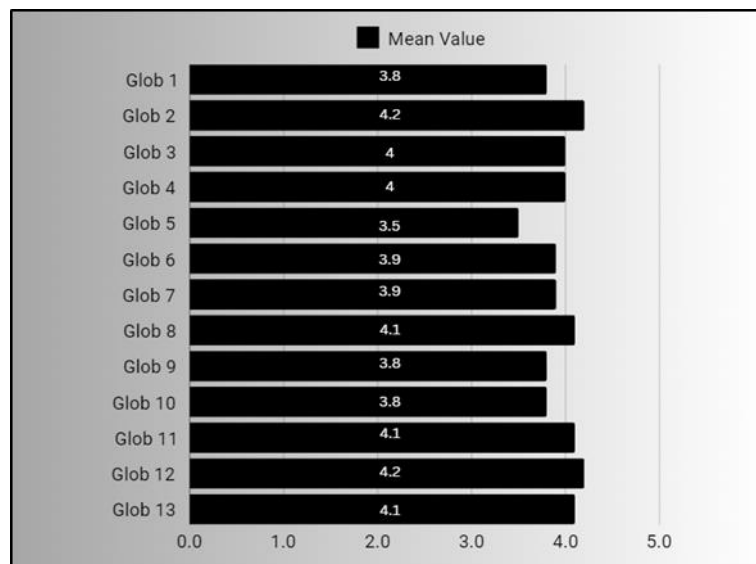


Figure 6. Mean values for global reading strategies.

Findings for problem-solving strategies

This section presents data to answer research question 2: How do learners perceive problem-solving reading strategies in reading? According to Figure 7, the mean values for the problem-solving strategies range from 3.9 to 4.4. Meanwhile, problem-solving strategies emerged as the most frequently used and highly regarded by the students, indicating that learners actively engage with the text, especially when it becomes challenging. Common problem-solving approaches included adjusting reading speed, re-reading difficult sections, and visualizing information. These findings support Mustajab Ahmed (2020) and Annury et al. (2019), who both found that problem-solving strategies are pivotal for ESL learners, particularly in enhancing comprehension and managing difficult passages. The high engagement with problem-solving strategies suggests that students prioritize direct, practical methods to address comprehension difficulties, which may contribute significantly to their confidence and reading success.

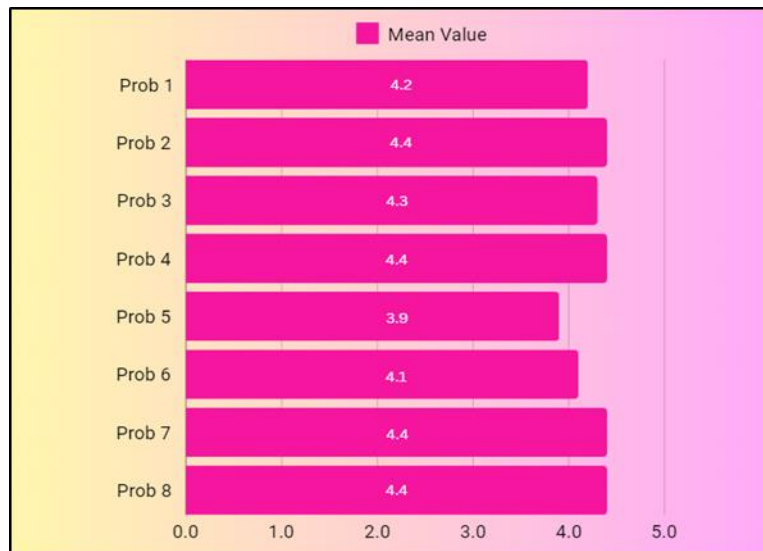


Figure 7. Mean values for problem-solving reading strategies.

Findings for support reading strategies

This section presents data to answer research question 3: How do learners perceive support reading strategies in reading? According to Figure 8, the mean values for the support reading strategies range from 3.5 to 4.2. On the other hand, support strategies were also used moderately, particularly methods such as underlining key points, using reference materials, and taking notes. While these strategies were valued for reinforcing comprehension, they were not as frequently prioritized as problem-solving strategies. This moderate use reflects findings from Magogwe (2013), who highlighted that support strategies serve as helpful tools for consolidating understanding rather than primary methods for addressing immediate comprehension issues. The participants' use of support strategies indicates an awareness of these methods as supplementary aids that provide additional reinforcement in the reading process.



Figure 8. Mean values for support reading strategies.

Correlation analysis

This section presents data to answer research question 4: Is there a relationship between all metacognitive reading strategies? To examine whether there is a significant association among the mean scores of various metacognitive reading strategies, the data were analysed using SPSS to perform correlation analyses. Jackson (2012) indicates that the coefficient is significant at the .05 level, with a positive correlation assessed on a scale from 0.1 to 1.0. A weak positive correlation ranges from 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a high positive correlation from 0.5 to 1.0. The findings are detailed in Tables 3, 4, and 5, which present the results of these analyses separately.

Correlation between global and problem-solving strategy

Table 3 indicates a significant association between global and problem-solving reading strategies. The correlation analysis reveals a strong positive correlation between these two strategies, with a correlation coefficient of $r=.762^{**}$ and a significance level of $p=.000$.

Table 3. Correlation between global and problem-solving strategy.

Category		Global	Problem solving
Global	Pearson correlation	1	.762**
	Sig. (2-tailed)		.000
	N	103	103
Problem solving	Pearson correlation	.762**	1
	Sig. (2-tailed)	.000	
	N	103	103

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

Correlation between problem-solving and support strategy

Table 4 demonstrates a connection between problem-solving and support strategies. The correlation analysis reveals a significant positive relationship between the two variables, with a correlation coefficient of $r=.535^{**}$ and a p-value of .000.

Table 4. Correlation between problem-solving and support strategy.

Category		Problem solving	Support
Problem solving	Pearson correlation	1	.535**
	Sig. (2-tailed)		.000
	N	103	103
Support	Pearson correlation	.535**	1
	Sig. (2-tailed)	.000	
	N	103	103

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

Correlation between support and global strategy

Table 5 illustrates a relationship between support and global strategies. The correlation analysis indicates a strong positive association between these two variables, with a correlation coefficient of $r=.577^{**}$ and a p-value of .000. Based on the results, the study's correlation analysis revealed significant positive relationships among global, problem-solving, and support strategies, with particularly strong correlations between global and problem-solving strategies. This suggests that learners use these strategies in

a complementary manner, combining different approaches to enhance their reading experience and comprehension. These findings resonate with Anderson (2003) and Chamot (1990) perspectives on the role of multiple metacognitive strategies in fostering deeper language comprehension. This interrelationship between strategies indicates that students tend to utilize a balanced approach to reading, where problem-solving methods address immediate challenges while global and support strategies foster a broader understanding and retention of information.

Table 5. *Correlation between support and global strategy.*

Category		Support	Global
Support	Pearson correlation	1	.577**
	Sig. (2-tailed)		.000
	N	103	103
Global	Pearson correlation	.577**	1
	Sig. (2-tailed)	.000	
	N	103	103

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

Conclusion

In conclusion, the results of this study align with previous research by Mustajab Ahmed (2020) and Annury et al. (2019), which found problem-solving strategies to be the most frequently used metacognitive reading strategies among ESL learners, particularly in challenging reading contexts. Additionally, Deliany and Cahyono (2020) who previously found high metacognitive awareness among ESL students, turns out to concur with the findings of the current study. Therefore, this indicates the significant use across all three strategy types. Overall, these insights confirm past findings that emphasise the role of problem-solving strategies in managing complex reading tasks, while global and support strategies complement by reinforcing overall comprehension and retention. Future research could expand on these findings by first examining the efficacy of different strategies across diverse text types, such as scientific articles versus narratives, to determine if certain strategies are more effective for specific materials. Additionally, as digital reading becomes increasingly integrated into educational settings, studies could investigate how digital formats, including e-books and online articles, influence students' strategy choices and effectiveness. Finally, exploring affective factors like motivation and confidence could provide valuable insights into how emotions impact strategy use, as these factors may significantly affect students' engagement and persistence with challenging texts. Together, these areas of research would deepen understanding of metacognitive strategy use and its contextual influences.

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Conflict of interest

The authors report there are no competing interests to declare.

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