Exploring the Impact of Metacognitive Strategy on University Student Reading Performance

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Abstract. This study aimed to find a relationship between EFL students' metacognitive awareness of reading strategies and reading comprehension. The research design uses quantitative methods; the sample required is 63 EFL students as participants, and reading comprehension scores and questionnaires are used to improve Metacognitive Awareness Reading Strategies in students. Metacognitive Awareness of Reading Strategy Inventory (MARSI-R) and Reading Test in the Essential Reading course to determine students' metacognitive awareness levels. The results of this study indicate that 51 students, or 81%, can be categorized as high group level, and 10 students, or 18%, can be categorized as medium group level. For the low category, there are two students, or 3%. This research shows that the most used strategy by EFL learners is the PRS (Problem-solving strategy), with a mean of 3.21; the GRS (Global reading strategy), with a mean of 3.41; and the SRS (Supports reading strategies), with a mean of 3.02. For correlation, the Spearman Rho coefficient results show no relationship between EFL students' metacognitive awareness of reading strategies and reading comprehension.

Keywords: Metacognitive Reading Strategies, Reading Comprehension, Reading Performance, Reading Strategy

1. INTRODUCTION

Metacognitive is the ability to comprehend the learning process, be aware of the factors that influence intellectual performance, know how, when, where, and why to use specific strategies, and this ability is used to help and adjust student learning performance (Wilson & Conyers, 2016). According to Niedringhaus (2010), a learner with metacognitive awareness will know how to think and be able to control their learning. According Rompayom, Tambunchong, Wongyounoi, & Dechsri (2010) Metacognitive knowledge of task operations supports us to think about how to manage a design divides knowledge into three categories, namely knowledge about oneself or individuals (declarative knowledge), knowledge about activities (procedural knowledge) and knowledge about understanding learning strategies (conditional knowledge). Metacognitive is the ability to think at a higher level where the object of thought

has a process occurring in oneself thinking about knowledge, and thinking about how to acquire it consciously by students during the learning process.

Reading helps students understand the material, providing them with much information and knowledge, especially related to reading comprehension performance (Arabmofrad et al., 2021). Reading has been a part of recent research studies (Carine et al., 2016). Reading is a form of development to interpret direct meaning and understand existing ideas (Arabmofrad et al., 2021).

Reading is considering and understanding the meaning in written form, so the result is a mental description of the characters or symbols that make up the text. It is one of the basic language learning skills that students must master because it includes many things in context and develops their thinking processes to understand information from the entire text.

According to Kintsch and Rawson (2005) and Clarke et al. (2013), reading is a construction-integration model carried out by several skills and reading processes. During the process, it can automatically make representations of the text's meaning and understand language and topics. Reading is an ability that helps students understand the text they read. A reader anticipates what will be discussed and understood in the text to relate to prior knowledge material, asks questions while reading, monitors their understanding of the text, and summarizes what they have read. Moreover, it is a multi-step process that requires the reader to interact with the material to create a mental model of the text or a contextual model (Okkinga et al., 2018).

Metacognitive strategies are believed to be "high-order executive skills that make use of knowledge of cognitive processes and constitute an attempt to regulate one's learning using planning, monitoring, and evaluating" (Hartman, 2001b; L. Zhang & Seepho, 2013). Zhang (2017) stated that Purpura (1997) points out that metacognitive strategies are "a set of conscious or unconscious mental or behavioral activities which are directly or indirectly related to some specific stage of the overall process of language acquisition, use or testing" (p.6). Mokhtari & Reichard (2002) point out that metacognitive strategies focus on how students structure their connections with the context and apply the strategies, which is still relevant to reading comprehension efficiency. Moreover, a metacognitive reading strategy can help students develop reading comprehension in a second or foreign language acquisition. (Ahmadi et al., 2013).

Various educational researchers have revealed students' metacognitive awareness of reading strategies and comprehension. The relationship between students' metacognitive awareness about reading strategies and reading comprehension requires information from the explanation of the data. Some subjects exhibited inconsistencies found in the results. In addition, only a few research studies have directly focused on English students in Indonesia. As explained in the data above, the results found are much more interesting for researchers to study. Therefore, it is critical to the relationship between students' metacognitive awareness of reading strategies and their correlation with their reading comprehension, especially among EFL students at the university level in a specific context.

Even more, with general information explained so far by the researcher, this research aims to investigate details about: (1) to explain the students' metacognitive awareness levels. (2) to explain any correlation between EFL students' metacognitive awareness of reading strategy and reading comprehension.

2. METHOD

The research design assists the researcher in this study. This study aims to determine the correlation between EFL students' metacognitive awareness of reading strategy and reading performance. This study involved 63 students of the Essential Reading course majoring in

English Education at UNESA who completed the online questionnaire.

The sample from a population: The participants must have enrolled in all essential reading classes, from ER-A to ER-E. Based on this requirement, the EFL learners who can participate in this study are ER-C and ER-D class students. Hence, this study considered purposive sampling because the participants comprised 63 students.

For the data of this study and answering research question number one, the researcher used a questionnaire called the Metacognitive Awareness of Reading Strategy Inventory. - revised (MARSI-R), adopted from Mokhtari et al. (2018). The questionnaire was used to investigate the students' metacognitive awareness of reading strategies when learners read the texts. The three parts of MARSI-R, such as *Global reading strategies, Problem-solving strategies,* and *Support reading strategies*, contain five items for each category. There were 30 items in total on the questionnaire, and the participants were required to answer each item on a five-point Likert scale. I know this strategy very well whenever I use it [5]. I can explain its use and how to use it [4], I have heard of this strategy, and I understand its meaning [3], I had never heard of this strategy before and had no idea what it meant [2], I had never heard of this strategy before [1]. According to Mokhtari & Reichard (2002), in examining individual and group reading strategy usage on the MARSI, which ranges from 1 to 5, three levels of usage were identified in the table below:

Table 1. Table category levels.

Category	Mean
High	3.5 - >3.5
Moderate	2.5 - 3.4
Low	2.4 - <2.4

The data used to answer the second research question concerns the correlation between metacognitive awareness of reading strategies and reading comprehension, so it is used to analyze the results of EFL students' reading comprehension scores. Thus, the researcher requested the participants to take an essential reading skill test to get the data. The data for this score was uploaded through a Google form along with the MARSI-R questionnaire, which was distributed in one *Google form* and delivered through the *WhatsApp Group*.

The consequence of the MARSI-R was analyzed using descriptive statistics through SPSS 22. The result of the Likert-scale of the questionnaire of total MARSI-R participants' scores was determined and provided in the form of the mean score (M) and standard deviation (σ).

Table 2. MARSI-R results.

Strategy	Cronbach's alpha coefficient	Result
Global Reading	.825	Reliable
Problem Solving	.703	Reliable

Support Reading	.840	Reliable

The MARSI-R questionnaire the researcher collected was considered reliable because it adopted the original questionnaire, and many researchers worldwide had already used it. The result of the internal consistency reliability of MARSI-R is that it has three documented strategies: .825 as global reading, .703 as problem-solving, and .840 as support reading strategies. All the strategies ranged from .82 to .96, and score reliability for the total sample was .96, indicating that the three documented strategies are reliable measures of metacognitive awareness of reading strategies. It was a formula from Cronbach's alpha coefficient.

Before testing the correlation between Metacognitive Awareness of Reading Strategy and Reading Comprehension, the researcher conducted a normality test to check the normality of the data distribution. From the Kolmogorov-Smirnov test, the result showed that the data distribution was $\rho = .000$, which indicated the data were not distributed normally. As stated by Crewell (2012, pp. 188-189), if the result of ρ-output is lower than .05, the Spearman rho coefficient correlation should be used. Therefore, the researcher used the Spearman Rho Coefficient to analyze the correlation between the variables to answer the second research question.

Researchers need the degree of correlation coefficient results from the existing data to determine the strength of the correlation. The strength of the correlation coefficient can be used to interpret the results. Correlation describes whether there is a positive or negative correlation between paired scores and the strength of that association. Correlation will show if the value of $\rho < 0.05$, but if there is no correlation between the two variables, the value of ρ will be> 0.05. Furthermore, the researcher will conduct a hypothesis test to determine whether there is a correlation coefficient. According to Cohen et al. (2020), there are four levels of the degree of correlation coefficient that will be shown below:

Table 3. Degree of correlation coefficient.

Correlation Score	Level
0.20 – 0.35	Low
0.35 – 0.65	Moderate
0.65 – 0.85	High
>0.85	Very high

3. RESULT

3.1. EFL Students' Level of Metacognitive Awareness of Reading Strategy

The MARSI-R questionnaire has 15 items answered by 60 Senior and Junior EFL students. The table below already presents the EFL students' awareness of the reading strategies, and it is categorized as High, Moderate, or Low, which indicates their level of strategy usage. The result will be explained further.

Table 4. Level of strategy usage.

Category	Mean	Frequency (N)
High	3.5 - >3.5	51
Moderate	2.5 - 3.4	10
Low	2.4 - <2.4	2
Total	**248.21**	**63**

Researchers have data to measure the frequency of using learning strategies so that the level of metacognitive awareness of EFL students regarding reading strategies can be identified. It can be gleaned from Table 3 that 51 students, or 80,95%, generated a mean score between 3.6 – >3.6, categorized as high group levels, 10 students, or 15,87%, obtained a mean score between 2.7 – 3.5, categorized as moderate group levels, and two students, or 3,17%, were found to have low reading strategy levels. Overall, the mean level of EFL learners' metacognitive awareness of reading strategies is 248.21.

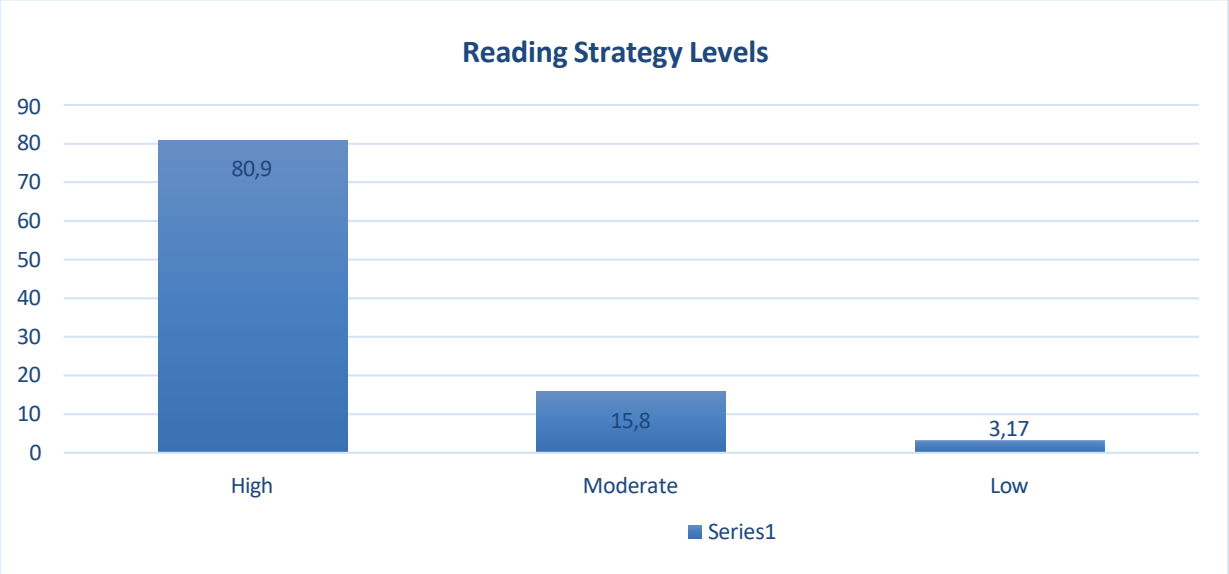

Figure 1. Reading strategy levels.

The high group levels of EFL students can recognize and process individual words and their meanings. On the one hand, the moderate group levels of EFL students go beyond word isolation by recognizing or processing the meaning of the general part of the text. Based on the

results, there were only high and moderate levels. Thus, it can be asserted that all participants of the EFL students in that university are strategic readers who employ metacognitive awareness of reading strategies to increase their reading comprehension and overcome the problems faced while reading an English text.

The MARSI-R identified three categories of metacognitive awareness of reading strategies used by EFL learners: GRS (Global reading strategies), PRS *(Problem-solving strategies),* and SRS *(Support reading strategies*). (Mokhtari et al., 2018)

a) Global Reading Strategies.

Table 5. Students' level of using global reading strategies.

Global Reading Strategies	Mean
[QRS1] Use previous knowledge	3,03
[QRS2] Comprehending text before reading	3,20
[QRS3] Check content and linier objectives	3,53
[QRS4] Skimming the characteristics of text	3,30
[QRS5] Identifying what the topic	3,43
[QRS6] Using text on symbols and features	3,50
[QRS7] Having the clue of context	3,40
[QRS8] Using typography and size aids	3,54
[QRS9] Dividing to evaluate what is read (critical reading)	3,27
[QRS10] Resolving inappropriate information data	3,60
[QRS11] Predict or guess the meaning of the text in the reading	3,50
[QRS12] Confirms predictions on the given text	3,30
[QRS13] Setting goals in reading	3,70
Total Score	**44,3**
Mean	**3,41**

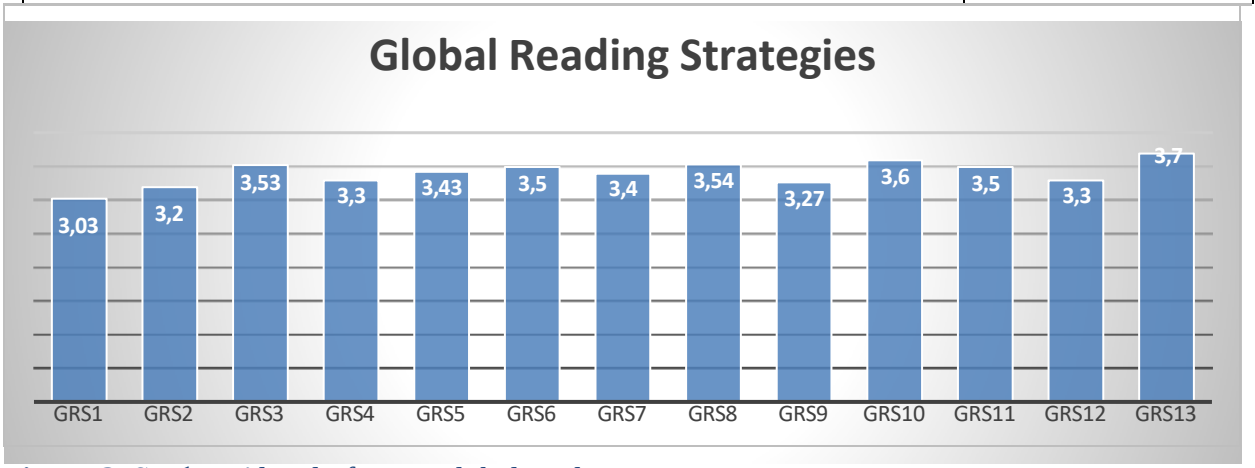

Figure 2. Students' level of using global reading strategies.

Based on the table above, the lowest point in global reading strategies is in point 1 about "Use previous knowledge," which obtained 3.03 points. It means the students in an educational context have information to learn before they read and learn new information. The highest score from Global Reading Strategies is for "Setting goals in reading," which revealed 3.7 points. They have the purpose of identifying the reading text. The mean score for all of the strategies is 3.20 points. The table shows the moderate level. This means that the students are well prepared before reading.

b) Problem Reading Strategies

Table 6. Students' level of using problem-reading strategies.

Problem Reading Strategies	Mean
[PRS1] Focus while reading	3,27
[PRS2] Reading comprehension with repetition	3,73
[PRS3] Trying to stay focused on reading	3,47
[PRS4] Visualizing information read	3,33
[PRS5] Sentences and words to guess	2,53
[PRS6] Strategy: Read slowly and carefully	3,20
[PRS7] Think and focus on reading	3,40
[PRS8] Reading speed should be adjusted	2,70
Total Score	**25,63**
Mean	**3,20**

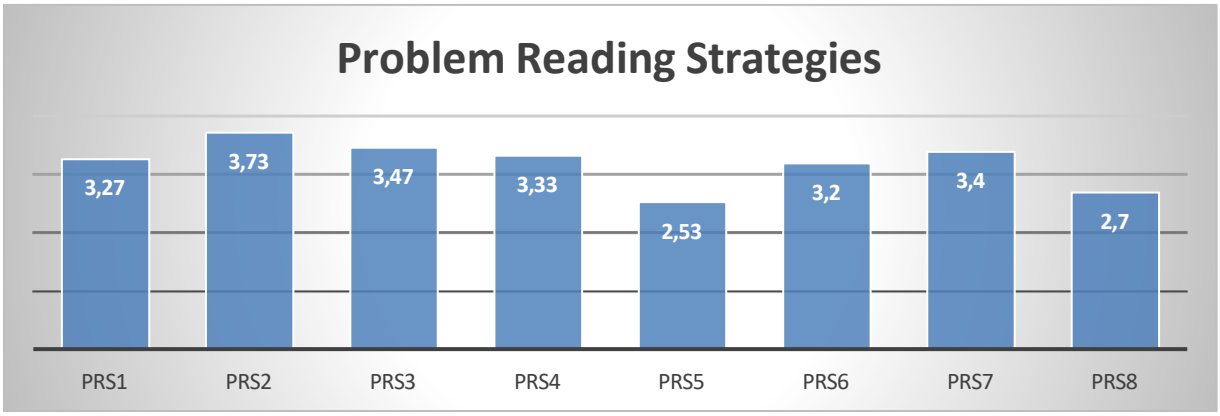

Figure 3. Students' level of using problem-reading strategies.

The table above provides information on students' use of problem-reading strategies. The lowest score, "Reading speed should be adjusted," got 2.70 points. They tend to read fast by using a louder voice. The highest score was for "Re-reading for better understanding"; they used their prior knowledge and connected it with the text, for which they got 3.73 points. The mean of problem reading strategies is 3.20 points from 8 statements. It showed a moderate level, meaning the students mostly used an excellent reading strategy.

c) Support Reading Strategies

Table 7. Students' level of using support reading strategies.

Support Reading Strategies	Mean
[SRS1] When reading, take notes	3,30
[SRS2] Loud voice when having trouble understanding text	3,10
[SRS3] Text information to be summarized	3,20
[SRS4] Discuss with others about reading	2,57
[SRS5] Information contained in the text should be underlined for clarity	2,60
[SRS6] The references used must be updated	3,17
[SRS7] Reading comprehension is done with paraphrasing	3,60

[SRS8] Repetition of reading text	2,83
[SRS9] Questions to ask yourself	3,20
Total Score	**27,57**
Mean	**3,06**

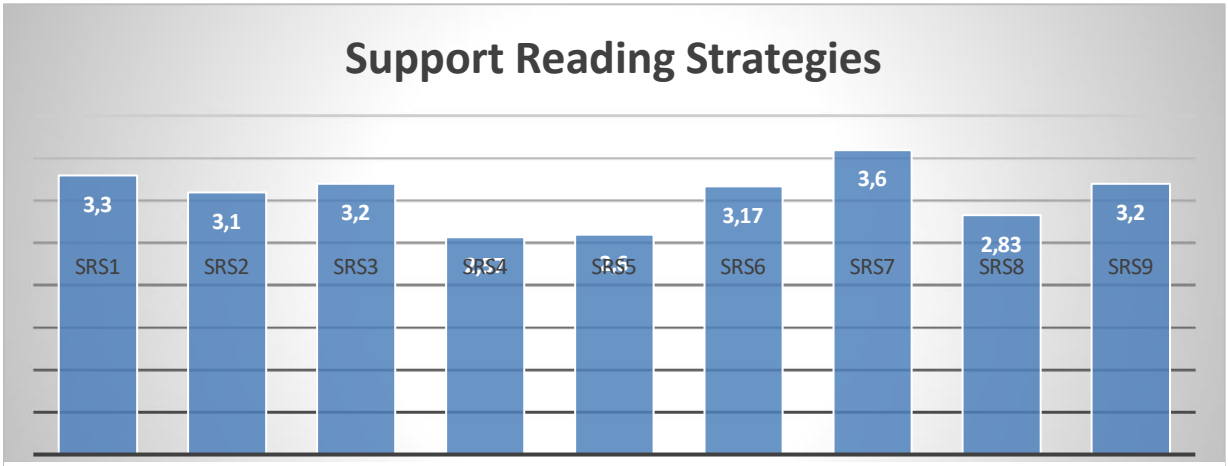

Figure 4. Students' level of using support reading strategies.

The table above shows the mean score of 3.06 points from 9 statements of support for reading. The highest score was 3.60 points for "Reading comprehension is done with paraphrasing," meaning the students mostly gave themselves complex and straightforward questions. The lowest score is the "Discuss with others about reading" statement, which got 2.57 points. Based on Figure 6, the students have a moderate level, resulting in a critical mind after they understand the text.

Table 8. Result of reading strategy.

Strategies	Mean	Std. Deviation
GRS	3.2	0.92
PRS	3.3	0.97
SRS	3.04	1.02

The Metacognitive Awareness of Reading Strategy Inventory (MARSI-R) questionnaire data showed that EFL students mostly used global reading strategies, with a 3.41 mean score. Problem-solving reading strategies were found to be the second-order strategy that EFL students used, with a 3.20 mean score, and support reading strategies became the fewest reading strategies with a 3.65 mean score. This result was also in line with Meniado (2016). They revealed that the subcategories of metacognitive awareness used by those participants also align with this study, which is Problem-Solving Strategies. This demonstrates that Problem-Solving Strategies are frequently and effectively used by learners of various levels and circumstances.

The result of this study reveals that all participants are considered to have a high and moderate level of using the Metacognitive Awareness of Reading Strategy. According to a research study by Daguay-James & Bulusan (2020), EFL students can use appropriate strategies while reading any texts, from pre-reading until post-reading, to comprehend and understand the

written texts well, unlike low-proficient readers. According to researchers (Daly et al., 2005; Duke & Pearson, 2002; Collins & Cheek, 1999; Susar, 2006; Epçaçan, 2009; Topuzkanamış & Maltepe, 2010), EFL students can use some appropriate strategies during the process of reading any texts, from pre-reading until post-reading. It is also in tune with (Maryam et al., 2019), who stated that 1) readers can construct, monitor, and evaluate the meaning of texts by doing better in reading comprehension than readers who do not use Metacognitive strategies. 2) readers, who are more Metacognitively aware may know what to do when they have learning difficulties, for example: they may need repetition as they read; 3) readers who use metacognitive strategies can identify what they need to do so they can quickly understand; Such of activity that makes them become high and moderate levels' aware of using Metacognitive strategy are: For the global reading strategy have the result in item [QRS3] Check content and linier objectives 3,53, [QRS6] Using text on symbols and features 3,50, [QRS8] Using typography and size aids 3,54, [QRS10] Resolving inappropriate information data 3,60, [QRS11] Predict or guess the meaning of the text in the reading 3,50, [QRS13] Setting goals in reading 3,70. For the problem, reading strategy has the result in item [SRS2] Loud voice when having trouble understanding text 3,10, [SRS3] Text information to be summarized 3,20, [SRS4] Discuss with others about reading 2,57, [SRS5] Information contained in the text should be underlined for clarity 2,60. So, for the support reading strategy, the results in item [SRS7] show that Reading comprehension is done with paraphrasing 3,60.

As the reading comprehension process goes on, readers can use metacognitive strategies such as controlling whether they can understand the text. They had to identify an acceptable cognitive approach to improve comprehension if they had already failed comprehension (metacognition). As stated by Miyamoto et al., (2019), a scenario-based metacognitive knowledge test is frequently used to assess metacognitive understanding of reading strategy, for instance: some scenarios are given to students such as "You must comprehend and memorize a text" and then prepared with any kind of strategies such as "I have to focus on these parts of the text that are easy for me to understand," or "I underlined the essential parts of the text," and "I read aloud of the text to another person."

Furthermore, only a few respondents never heard that kind of strategy in the questionnaire MARSI-R, such as item 12, "Reading aloud to help me understand what I am reading". When doing the reading test, they did not use the read-aloud strategy to help their understanding. They believe reading aloud in a test situation can disturb other students who want to keep focusing on answering the test. However, those EFL students might probably still have their problems understanding the meaning of text even they are already exposed to reading English text very often (Muhid et al., 2020), or they seem difficult to have an ability in interpret any information from the text, thinking critically, and using context clues to find the meaning (Yusuf & Fitrisia, 2015; Halim et al., 2020). Notwithstanding, this finding indicated that when reading academic English materials, EFL students engage all of the Metacognitive reading strategies consciously and efficiently.

3.2. The Correlation between EFL University Students' Metacognitive Awareness of Reading Strategy and Their Reading Comprehension

The second research question aims to find out whether there is a relationship between the use of metacognitive strategies and reading comprehension levels. The relationship between the above data on perceptions of using metacognitive strategies and reading comprehension was calculated by the Pearson product-moment correlation coefficient. The results of the analysis are presented in Table 9 below:

Table 9. Correlation table.

		Global Reading Strategies	Problem-Solving Strategies	Support Reading Strategies
Text 1	Pearson Correlation	.145	.162	.112
	ρ	.015	.007	.048
Text 2	Pearson Correlation	-.026	.050	-.064
	ρ	.465	.237	.141

Based on the correlation table above, the Pearson product-moment correlation results show that the score of the first text increases. Hence, the results also increase in using Global Reading Strategies, Problem-Solving Strategies, and strategies as a whole. There was a weak positive correlation between scores from the first text and above using a given strategy ($r = .145$, $p < .05$ for Global Reading Strategy, $r = .162$, $p < .05$ for Problem Solving Strategy, and $r = .1112$, $p < .05$ for Supporting Reading Strategy). A previous research study by Molla (2015) found a significant difference in favor of senior students under Global Reading Strategies and support from Reading Strategies. Considering the items under the Global Reading Strategies subscale, it can be said that highly skilled readers are purposeful with what they think as they read, and they look at the text before reading. They think about what they know to help them understand text, they decide what is important and what is not, and they have criticism when analyzing and evaluating the text in their readings. This is also the same result as the findings of Meniado (2016), which explains that there is no correlation between metacognitive reading strategies and reading comprehension. However, another section said that this research is one of the studies that refutes the findings of previous studies. Rastegar et al. (2017) explained that the use of general metacognitive reading strategies by students and their reading comprehension achievement results had a significant positive correlation with the existing data. The first factor of this study did not correlate the findings between metacognitive awareness of reading strategies and reading comprehension among EFL students due to a lack of knowledge, so that reading strategies among the students themselves also resulted in less (Wudneh, 2018). Lin stated that readers with high proficiency use metacognitive, support, global, and problem-solving strategies and have more metacognitive knowledge about using strategies than readers with low proficiency (Lin, 2019). According to Hanandyo (2019), no significant correlation exists between students' metacognitive reading awareness and academic English reading comprehension. As a result, students' low reading comprehension levels may stem from their lack of understanding of how to use various types of reading strategies appropriately and efficiently when reading written texts. According to Alsamadani (2009), using low strategies does not always indicate ineffective learning.

While using strategies regularly does not guarantee that learning will be successful. Pearson's product-moment correlation results show that the text score increases, as does the use of Global Reading Strategies, Problem-Solving Strategies, and strategies as a whole. A weak positive correlation exists between scores from reading texts and using the above strategy. This finding aligns with the research of Mokhtari and Reichard (2002), who developed MARSI. Their study explained that skilled readers use Global Reading Strategies and Problem-Solving Strategies more than less skilled readers. Thus, there was no relationship in this study between the MARSI scores and the reading comprehension scores of informative texts displayed in the existing data.

4. CONCLUSION

From the data above, it can be concluded that further exploration is needed on the level of metacognitive awareness with the reading strategies used by students and a correlation between metacognitive awareness of reading strategies and the value of reading comprehension. This study focuses on reading comprehension achievement as seen from students' perceptions. The results of this study indicate that metacognitive strategies impact the achievement of students' reading comprehension. Students who use metacognitive strategies in reading activities will become skilled and good readers. Students have strategic abilities to plan, monitor, and evaluate their reading, which are automatically and adequately represented by the three steps of metacognitive strategy activities. So, they have maximum results from their reading, and the planned targets will be achieved.

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