The Correlation between Students' Metacognitive Strategy and their Reading Comprehension in Higher Education

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Abstract
Numerous studies have been undertaken on metacognitive awareness and reading comprehension at the secondary school level. Consequently, this study focuses on these characteristics within the higher education level. This study aims to reveal students' metacognitive awareness in reading strategies, the levels of their reading comprehension, and how these two variables are correlated in higher education. To achieve the mentioned objectives, quantitative method, particularly descriptive and correlational approaches were employed. This study's sample consisted of the fifth-semester English Education students at IAIN Bone throughout the 2020/2021 academic year. Cluster random sampling is the sampling method utilized in this study. In order to collect the necessary data, two instruments were used, which were questionnaire to reveal students' metacognitive reading strategy, and reading test to find out students' reading comprehension. The result showed that most students routinely employed reading strategies while reading English material, and among the three metacognitive reading strategies, Problem-solving Reading Strategies was the most popular option. Besides, the result indicates that students' reading comprehension is characterized as weak. Furthermore, students' metacognitive reading strategy has an effect on reading comprehension since they involve the use of self-awareness and intentional motivation to employ one or more techniques for keeping tabs on how well one is grasping what they're reading. It can be concluded that students who employ metacognitive reading strategy have a greater chance of understanding a text, when compared to students with poor metacognitive reading strategy.
Keywords*: Metacognitive Reading Strategy, Reading Comprehension, Higher Education*

1. Introduction

Reading is one of four necessary language skills for students learning English as a second language. The ability to read English as a foreign language is crucial because it influences productive skills like writing and speaking. The ability to comprehend the meaning of printed material is known as reading comprehension. According to Kendeou et al. (2016) reading comprehension is a complicated and varied talent that requires students to use a variety of abilities and methods thoughtfully and critically when confronted with written content. To improve their reading comprehension, students should adopt certain methods, such as the use of metacognitive processes.

Metacognitive reading strategy becomes one of the most important factors for students to comprehend the reading text as a result of numerous studies indicating the importance of learning strategies in enhancing students' learning processes and outcomes, such as Chamot, (2004); Rahimi & Katal (2012); Thiede et al. (2003). In addition, according to Ahmadi et al., (2013), reading comprehension refers to the capacity of readers to understand both the obvious and subtle meanings of the text through the

application of metacognitive reading methods. Reading comprehension is a complex process that combines the text and the readers. The understanding of metacognitive reading strategy improves students' comprehension because it governs how students organize their interaction with the environment and how the application of strategies is associated with effective reading comprehension (Mokhtari & Reichard, 2002).

Considering the advantages of metacognitive strategy in reading comprehension, revealing students' metacognitive awareness of reading strategy became essential as attempt for improving students' reading comprehension. Thus, Mokhtari and Reichard (2002) developed an inventory called MARSI that aims to measure metacognitive awareness and perceived use of reading strategies while reading academic or school-related materials. This inventory was then widely used by experts who intended to find out learners' metacognitive strategy in reading, like Martínez (2008), Guan et al. (2011), as well as Al-Dawaideh and Al-Saadi (2013). Further, Mokhtari and Reichard (2002) developed another inventory called SORS that has same purpose with MARSI, but is specially made for students whose English is as second or foreign language. There were three basic revisions in SORS: more comprehensible language use, consideration of reading strategies used across language, and the removal of summarizing information read and discussion with others. Considering the characteristics of each inventory, SORS was selected as instrument to measure metacognitive awareness of reading strategy in this research because it is more suitable to be used for EFL learners as who are the subjects in this research. The use of SORS as the instruments becomes the novelty of this research as many other researches conducted on Metacognition in higher education utilized other instruments outside SORS inventory.

Numerous studies have been undertaken on metacognitive awareness and reading comprehension at the secondary school level. Consequently, this study focuses on these characteristics within the higher education level. This study intends to answer the following three research questions: What is the profile of students' metacognitive awareness in the fifth semester of the English education department at IAIN Bone? 2) What is the level of English reading comprehension of the students? 3) What are the relationships between metacognitive methods and reading comprehension in English?

2. Method

This study intends to determine students' metacognitive awareness in reading strategies, the levels of their reading comprehension, and how these two variables are correlated. This study used quantitative method, notably descriptive and correlational approaches, to meet the stated objectives. This study's sample consisted of the fifth-semester English Education students at IAIN Bone throughout the 2020/2021 academic year. Cluster random sampling is the sampling method utilized in this study. It indicates that each class has an equal chance of being selected as the sample. So, one class was selected as the research sample. Two types of instrument were utilized in order to collect the necessary data for this study. There is a questionnaire to determine the metacognitive reading strategy of the students, as well as a reading comprehension test. The questionnaire adapted the SORS inventory of metacognitive reading strategy by Mokhtari & Reichard (2002). The researcher modified the SORS inventory based on the everyday language used by the students, in this case Indonesian. Adaptation of SORS inventory was conducted by translating the SORS inventory from English to Indonesian, then adapting the difficulty level of each sentence of the questionnaire to the cognitive level of

the students. Further, the reading test was adapted from TOEFL reading test that consists of 50 numbers.

3. Results

This section discusses the findings of the research and their interpretation. These findings are organized according to the problem statements described in the introduction. Arguments and further interpretations of the results are provided in the discussion section.

3.1. Findings

3.1.1 Students' Metacognitive Reading Strategy

The following table presents the descriptive statistics analysis results of the students' metacognitive reading strategy.

Table 1. Students' Metacognitive Strategy

Strategy Type	Categories			Mean	Std. Deviation	Rank
	High	Medium	Low			
GLOB	73.5%	17.6%	8.9%	3.6	2.15	2
PROB	82.3%	8.9%	8.8%	3.8	1.62	1
SUP	58.8%	35.3%	5.9%	3.4	2.41	3

The frequency statistics of the three types of metacognitive reading strategies employed by students are presented in Table 1. With a mean score of 3.80 and a standard deviation of 1.62, Problem-solving Reading Strategies was the most popular reading strategy among students. Global Reading Strategies ranked second with a mean of 3.6 and a standard deviation of 2.15, while Support Reading Strategies ranked last with a mean of 3.4 and a standard deviation of 2.41. In addition, it can be deduced from the table that, for each strategy type, the students' use of reading methods was predominantly classified as high. 73.5 percent of the items in Global Reading Strategies fall into the high category, while 82.3 percent of the items in Problem-solving Reading Strategies and 58.8 percent of the things in Support Reading Strategies do. In contrast, less than nine percent of students' reading techniques fell into the low range for every strategy type.

Based on the mean scores for each strategy type, it can be stated that students have a high preference for adopting strategy utilized when they encounter difficulties interpreting the passage, such as guessing the meaning of an unknown word or rereading the text. In contrast, they demonstrate a moderate preference for adopting basic assistance measures, such as consulting a dictionary and taking notes, to help them comprehend the content. In addition, the standard deviation indicates that the students' use of the three types of reading strategies is nearly identical, particularly for Problem-solving Reading Strategies.

Additionally, the data analysis identifies the most and least utilized strategy by the students. The analysis considers thirty items from the three types of strategies (Global Reading Strategies, Problem-solving Reading Strategies, and Support Reading Strategies). The outcome of the analysis is provided in the table below.

Table 2. The Most and Least Frequently-used Metacognitive Reading Strategies

Strategy Type	Items	Mean	SD	Rank
The Most Frequently-used Strategies				
GLOB	I read with a purpose in mind	4.3	1.04	1
PROB	When I find difficulties in understanding the text, I repeat my reading.	4.3	1.18	2
PROB	When I start to get distracted, I try to get back on course.	4.2	0.79	3
SUP	I use dictionaries and other reference materials so I can understand the text easier.	4.2	1.07	4
SUP	I circle back and forth through the text looking for connections between the ideas.	4.2	1.24	5
GLOB	I check my guesses about the text whether they true or false.	4.1	0.82	6
PROB	When I find the text becomes more difficult, I increase my attention to the text that I read.	4.1	1.12	7
GLOB	I utilize pictures, figures, and tables in passage to so I can understand it easier.	4.0	1.04	8
PROB	I read attentively and slowly to ensure that I grasp what I'm reading.	4.0	1.23	9
SUP	When reading, I translate from English into Indonesian language.	4.0	1.16	10
The Least Frequently-used Strategies				
GLOB	Prior to reviewing the material, I make a note of its structure and length.	2.8	1.10	1
SUP	I write important things while I read so I can understand the text easier.	3.1	1.12	2
SUP	When I find the text becomes more difficult, I read aloud the text.	3.1	1.04	3
GLOB	To determine the main idea, I utilize typographical features like bold face and italics	3.1	1.25	4
GLOB	I critically analyze and evaluate the information presented in the text.	3.3	1.06	5
PROB	I try to picture or visualize information to help remember what I read.	3.4	0.91	6
SUP	I ask myself questions I like to have answered in the text	3.5	1.02	7
GLOB	I check my understanding when I come across new information.	3.6	1.10	8

PROB	I adjust my reading speed according to what I am reading.	3.6	1.25	9
PROB	I stop from time to time and think about what I am reading.	3.6	1.15	10

The frequency statistics of the thirty items comprising the students' metacognitive reading strategy are presented in Table 2 above. Four Problem-solving methods were the most often employed metacognitive reading strategies by the participating students, followed by three Global Reading Strategies and three Support Reading Strategies (table). Four Global Reading Techniques, three Problem-Solving Strategies, and three Support Reading Strategies were the least often employed strategies.

In particular, it can be deduced that when students begin a reading assignment, they always have a goal in mind. In addition, they have the option to test their audience's comprehension of the material and to apply tables, figures, and images to enhance their comprehension. In addition, when students encountered reading challenges, they chose to reread the book, regain focus when they lost it, pay greater attention when the text became challenging, and read slowly and attentively. In addition, the students use support tools to facilitate their reading process, such as utilizing a dictionary, rereading the material, and translating the text into Indonesian.

The table above also lists the reading strategy that students employ the least often. When beginning their reading work, students do not choose to study the length and organization of the text, use typographical elements to identify significant information, critically analyze and evaluate the material offered in the text, or check their understanding when encountering new information. Moreover, when students encounter reading difficulties, they are unlikely to choose certain strategy as a solution. The strategies include imagining or visualizing material, altering reading speed, and pausing periodically to reflect on what is being read. In addition, the students do not like taking notes while reading, reading aloud, or asking themselves questions about the material as support tools for the reading process.

The result of the students' reading test is as follows:

Table 3. Descriptive Statistics of Students' Reading Comprehension

	N	Score		Mean	Std. Deviation
		Minimum	Maximum		
Students' score in reading test	34	24	76	42.5	6.18

The descriptive data of the students' reading comprehension are shown in Table 3. It indicates that the lowest grade attained by the student was 24 and the highest grade was 76. In addition, the mean score of the students was 42.50 with a standard deviation of 6.18. Overall, it suggests that the students' reading comprehension is characterized as weak.

In addition, the rate percentage of students' reading comprehension achievement may be seen in the frequency distribution of data shown in the table below.

Table 4. Distribution of Students' Reading Comprehension Achievement

Range	Categories	Frequency	Percentage
91-100	Excellent	0	0%
81-90	Very good	0	0%
71-80	Good	2	5.9%
61-70	Fair	5	14.7%
<60	Poor	27	79.4%
Total		34	100%

The distribution of the students' reading comprehension scores is shown in Table 4. The bulk of students (79.4%) scored poorly on the reading comprehension test. Only five students (14.7%) received a decent grade, while two students (5.7%) received a high grade. In addition, no student received a grade of very good or excellent or above 80.

The following table is the descriptive statistics of the collected data from the two variables:

Table 5. Descriptive Statistics of the Variables

Question Types	N	Mean	Std. Deviation	Variance
Reading Comprehension	34	42.5	6.18	2.905
Metacognitive Reading Strategy Use	34	112.6	2.83	122.608

Table 5 provides descriptive statistics on the metacognitive reading strategy and reading comprehension of the students. The chart indicates that 34 students participated in this research. The students' mean metacognitive reading strategy score is 112.6, with a standard deviation of 2.80. In contrast, the mean reading comprehension score attained by students is 42.5, with a standard deviation of 6.18. The variances of the two variables are 2,905.08 and 122.608. The outcome of the correlation calculation is presented in the table below.

Table 6. The Result of Correlation Analysis

		Metacognitive Strategy	Reading Comprehension
Metacognitive Strategy	Pearson correlation	1	.719
	Sig. (2-tailed)		.002
	N	34	34
Reading Comprehension	Pearson correlation	.719	1
	Sig. (2-tailed)	.002	
	N	34	34

According to the statistical analysis reported in table 4.11, there are three distinct types of value: N = 34 subjects; Pearson Correlation (r) = 0.719; Sig. (2-tailed) = 0.002; N = 34

Pearson Correlation (r) indicates the link between two variables. The Pearson Correlation (r) was 0.719, as shown in the preceding table. This implies a significant correlation, as 0.719 is close to 1, and a positive correlation, as 0.719 is a positive value. Therefore, a strong positive correlation exists between the two variables (metacognitive reading strategy and reading comprehension).

If there is a statistically significant connection between the two variables, the Sig. If the Sig. (2-tailed) value is greater than 0.05, it can be stated that there is no statistically significant correlation between the two variables, i.e., increases or decreases in one variable do not correlate substantially with increases or decreases in the second variable. Alternatively, if the Sig. (2-tailed) value is less than or equal to 0.05, it can be stated that the correlation between the two variables is statistically significant. As observed in the above table, the Sig. (2-tailed) value is 0.002, which is less than 0.05. Therefore, there is a statistically significant association between the metacognitive reading strategy and reading comprehension of students.

The correlation coefficient between metacognitive reading strategy and reading comprehension was (r) = 0.719 with a two-tailed significance level (Sig.) of 0.002, which is less than 0.05. It implies a considerable relationship between the two variables. As the value is positive (r=0.719), the result also reveals that the correlation is positive. Therefore, the first hypothesis might be understood as accepted and the null hypothesis as rejected. Students with a strong metacognitive reading strategy are likely to have strong reading comprehension.

3.2. Discussion

Metacognitive awareness plays a crucial part in English language instruction, since students who take deliberate steps to comprehend what they are doing when performing English language tasks tend to be more successful learners (Anderson, 2022; Chamot, 2004; Rahimi & Katal, 2012). Considering the benefits of metacognitive awareness in the English language classroom, revealing students' metacognitive reading strategies as an effort to improve students' reading comprehension has become vital. Consequently, a number of studies on students' metacognitive awareness in reading technique, such as the one addressed in this study, have been done.

The majority of students in the English Education Department at IAIN Bone possessed a high degree of metacognitive reading strategy, according to the findings of this study. Similarly, Mónos (2016) discovered that university students in Hungary had a relatively high awareness of all reading strategies, including global, problem-solving, and support reading strategies. In addition, Madhumathi & Ghosh (2012) found that the overall reading strategy use of Indian ESL students demonstrates features of active strategic readers by consciously adopting a wide variety of reading strategies similar to that of English-native readers in order to attain understanding. Nonetheless, some students have a moderate or low metacognitive reading strategy, as revealed by Meniado (2016), who discovered that EFL students in an all-male government-owned industrial college in Saudi Arabia are strategic readers who use moderate metacognitive reading strategy. In addition, Hong-nam (2014) found that high school students at two suburban high schools in the southwestern United States reported using reading methods moderately.

This study also found that, of the three types of metacognitive reading strategies utilized by students, Problem-solving Reading Strategies were the most often employed, followed by Global Reading Strategies and Support Reading Strategies. This is consistent with the findings of Pammu et al. (2014), who discovered that of the three types of reading

strategies, Problem-solving Reading Strategies are the most frequently employed by students in Indonesia. Alhaqbani & Riazi (2012) also discovered that Problem-solving Reading Strategies were the top choice of Arabic students, followed by Global Reading Strategies and Support Reading Strategies. Moreover, Ahmadian & Pasand (2017) found that Iranian students employed problem-solving methods more frequently than global and support strategies. Yüksel & Yüksel (2012) discovered that the majority of Turkish students who read academic literature employed problem-solving skills. This strategy type is followed by global reading strategies, with supporting strategies being the least utilized strategy type.

The findings of this study also revealed the reading strategies employed most commonly by students. The investigation revealed that the most prevalent strategies were "reading with a purpose in mind" and "repeating the reading when finding difficulties in understanding the text" In contrast, Yüksel & Yüksel (2012) found that 'previewing text before reading' and 'summarizing text material' were the most commonly reported reading strategies. In addition, Madhumathi & Ghosh (2012) found that rereading text when it becomes tough was the most preferred reading approach, followed by visualizing content. Therefore, it may be concluded that the preferred reading strategies of students vary based on their individual qualities.

This research finding provided evidence of students' low reading comprehension at the fifth semester of English Education Department of IAIN Bone. It is based on the mean score of students' reading test which was categorized as poor category. Moreover, among the three levels of reading comprehension, the students found it more difficult to grasp inferential meaning from the text. In contrast, the fifth semester students of Sekolah Tinggi Ilmu Kesehatan Panakukang Makassar possessed the three levels of reading comprehension, and the most improved one is comprehension of inferential meaning (Fachruddin & Akil, 2018).

Reading is most often viewed as a multidimensional construct, as suggested by models of reading that focus on different levels of understanding (Hosp & Suchey, 2014). Thus, this research also analyzed the students' reading comprehension based on the different levels of understanding. The analysis result revealed that the students could understand literal meaning better than the inferential meaning from expository texts. This is supported by Saadatnia et al. (2016) who found that in relation to expository text, literal comprehension significantly outweighed inferential comprehension. Similarly, Jude & Ajayi (2012) concluded that the majority of students can only attain reading for explicit meaning in literal reading comprehension level. These phenomena occurred possibly because inferential comprehension requires higher order thinking than what is in literal comprehension. The mental processes at literal comprehension level later serve to construct inferential meaning (Ulu, 2016).

A metacognitive reading strategy includes the awareness of whether or not comprehension is occurring and the conscious adoption of one or more monitoring strategies. Thus, metacognitive reading strategies likely to influence reading comprehension. The association between students' metacognitive awareness in reading strategy and their reading comprehension was investigated in this study. The investigation revealed that the Pearson correlation coefficient between metacognitive reading strategy and reading comprehension (r) was 0.719 with a significance level of 0.002, which is less than 0.05. It implies a considerable relationship between the two variables. The result also indicates that the correlation is positive, as the correlation coefficient is positive (r = 0.719) Therefore, there is a substantial positive link between the metacognitive reading strategies

of students and their reading comprehension. Students with a strong metacognitive reading strategy are likely to have strong reading comprehension. This finding confirms the association between the two variables as demonstrated by Amani (2017); Rastegar et al. (2017); Sutiyatno & Sukarno (2019).

Metacognitive methods enhance meaning construction, text monitoring, and reading comprehension, as well as the capacity to analyze the text being read (Tavakoli, 2014). It is obvious that metacognitive awareness influences reading comprehension. As a result of this study's findings, van Gelderen et al. (2004) concluded that metacognitive knowledge about reading methods is factored into the cognitive skills necessary to comprehend a text. Memiş & Bozkurt (2013) suggest that students should strengthen their grasp of metacognitive in order to improve their English textbook reading. In addition, Alhaqbani & Riazi (2012) observed that students' awareness of global and problem-solving strategies was substantially connected with their reading skills, despite the fact that the magnitudes of the correlation coefficients were modest. In contrast, no association was discovered between students' awareness of support strategy use and their reading ability.

Contrary to this study's findings, some investigations did not establish an association between metacognitive strategy and reading comprehension. For many subjects, metacognitive strategy has no effect on reading comprehension. Cetinkaya & Erktin (2002), who administered a reading comprehension success test and a metacognitive inventory to 206 students, found no correlation between metacognition and reading comprehension. Similarly, Wahyuni et al. (2018) found that despite students' awareness of metacognitive reading strategies, their reading comprehension achievement was below average, indicating that metacognitive awareness is unrelated to students' reading comprehension.

4. Conclusion

In today's modern educational environment, many students will inevitably have developed a strong metacognitive reading strategy. In this study, it was shown that most students routinely employed reading strategies while reading English material. These strategies included the employment of mental planning, techniques, and actions. Further, metacognitive reading strategy has an effect on reading comprehension since they involve the use of self-awareness and intentional motivation to employ one or more techniques for keeping tabs on how well one is grasping what they are reading. Findings from this study suggest that students who employ metacognitive reading strategy have a greater chance of understanding a text. When compared to students with poor metacognitive reading strategy, those with high metacognitive reading strategy have a greater chance of understanding a text. Thus, it is clear that the two are inextricably linked: metacognitive reading strategies and reading comprehension. The result of this is expected to enrich insights on metacognition, particularly metacognitive reading strategy. Therefore, it can expand knowledge of lecturers in higher education, and take this research result as consideration when lecturing reading skill and comprehension.

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