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EXPLORING THE APPLICATION OF METACOGNITIVE STRATEGIES IN READING COMPREHENSION: A MIXED METHODS STUDY

BY

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Abstract

Metacognitive strategies play a significant role in helping students to stay focused on reading comprehension goals. Through planning, monitoring, and evaluating, readers can effectively organize their approach to achieve their goals. This study aims to determine 1). How do students use metacognitive strategies to improve reading comprehension? 2). Is there a relationship between the level of metacognitive strategy use and students' reading comprehension level? The study involved 30 students from the English Education study program at a campus in East Java. Employing a mixed methods approach, data collection encompassed observation, questionnaires, and interviews. The findings showed that most students realized the importance of metacognitive processes during reading comprehension. In reading comprehension, they followed the steps of metacognitive strategies, namely planning, monitoring, and evaluating. It showed that they were motivated, and students were more active in class.

Keywords: *Metacognitive strategies; reading comprehension; EFL*

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INTRODUCTION

English is used as a lingua franca to communicate between one country and another. A command of the English language is essential because it is frequently utilized as a means of communication and a tool to facilitate communication and education. This is why Indonesia is making a significant effort to promote English. English is being taught once more in elementary schools even though it was removed from the curriculum on a previous occasion. English is not a second language in Indonesia and is considered a foreign language. However, the mastery of English is still emphasized.

Learning a foreign language can be speeded up significantly through reading, which is one of the most efficient methods. When it comes to language skills, having strong reading skills tends to favor other language skills, such as writing, listening, and speaking the target language. Because of this, emphasizing reading skills can also aid in increasing general language abilities (Aripova, 2020). Within the scope of his research, Makaradze (2022) also

highlighted that reading is an efficient approach to acquiring proficiency in foreign languages. In addition to enhancing language skills, it is beneficial to learn a language.

In the effort to increase one's reading abilities in English as a foreign language, it is necessary to have effective learning strategies. Oxford (1990) defines learning strategies as "actions, behaviors, steps, or techniques students use, often unconsciously, to improve their progress in apprehending, internalizing, and using the second language. Within the framework of learning strategies, metacognitive strategies significantly boost students' reading comprehension abilities. O'Malley and Chamot (1990) define learning strategies as approaches and tools that second-language learners employ to remember and organize examples of the second language. Besides, Kökçü. (2023) define Metacognitive strategies as cognitive processes that individuals use to plan, monitor, and assess their understanding and performance during learning tasks, as defined in the research paper.

Research related to using metacognitive strategies in reading skills has been conducted previously. Babashmashi (2022) explains that



metacognitive strategy training improves students' reading comprehension in ESL classes. Students who use metacognitive strategies in the reading process can have a strong foundation for understanding the text.

Faridah (2022) explained that metacognitive strategies help students develop thinking, control, and evaluation skills by making them more aware of their cognitive processes during reading. These strategies also help students exercise control over their reading process by allowing them to choose appropriate strategies to monitor their comprehension and adjust their approach based on the requirements of the text. Lastly, it also aids the evaluation of their reading performance by increasing their self-awareness of their comprehension process. Finally, it improves students' reading performance assessment by increasing their self-awareness of their comprehension process.

Considering the earlier explanation, this research aims to investigate how students use metacognitive strategies to improve reading comprehension and determine a relationship between metacognitive strategies and reading comprehension levels. Knowing how students use metacognitive strategies in reading and the relationship between these strategies and reading comprehension can increase teaching effectiveness. Teachers can design more effective interventions to support students in developing better learning skills and ultimately improve overall learning outcomes.

LITERATURE REVIEW

A. Metacognitive Strategies

1. The Definition of Metacognition

The concept of metacognition has been defined in various ways. The term Metacognition was first introduced by Flavell in 1979. Flavell (1979) defined metacognition as comprising two main components: metacognitive knowledge and metacognitive regulation. Metacognitive knowledge refers to awareness and understanding of one's thinking process. Meanwhile, Oxford (2011) adopted Flavell's concept by emphasizing the integration of metacognitive knowledge and the use of metacognitive strategies. Oxford (2011) asserted that the effective combination of knowledge about one's thinking process and the strategic regulation of these processes leads to optimal metacognitive functioning.

Similar to Oxford, Kluwe (1982) defined metacognition as the human ability to think about and manage one's cognitive processes. It involves reflecting on how one thinks and learns, understanding knowledge gaps, and setting goals to bridge them. Meanwhile, Taylor (1999) defined metacognition as the recognition of one's previous knowledge, together with a correct comprehension of the learning task and the required knowledge and skill, combined with the ability to make appropriate inferences about how strategic knowledge is applied to a particular situation, involving efficient and reliable action. Another definition is suggested by Livingston (1997), who asserts that metacognition is regarded as higher-order thinking in the learning process involving active control over the cognitive process.

Another definition from Padhmanaba (2020) stated that metacognition involves thinking about and analyzing one's cognitive processes. He argued that this reflective process is important because it helps individuals monitor how well they are performing, organize their learning activities, and make predictions about how they can improve their abilities in different tasks. This means that metacognition is not just being aware of one's thoughts but also actively using that awareness to improve learning and performance. In line with this, Lumpkin (2020) argued that metacognition is the ability to think about one's cognitive processes, including knowledge, experience, and the use of strategies in managing and organizing learning and thinking.

Based on the definitions mentioned above, it shows that metacognition plays an important role in successful learning. Metacognition allows learners to be aware of their cognitive processes, regulate and organize their learning activities, and apply strategies effectively to improve learning outcomes. For the purposes of this study, a combination of definitions is used to interpret the data. In conclusion, metacognition generally involves both metacognitive knowledge and metacognitive strategies. Metacognitive knowledge refers to what one knows, while metacognitive strategies refer to how to apply that knowledge. In the context of writing, the entire writing process can be regarded as an operation of metacognitive strategies, through which writers plan, monitor, and evaluate.

2. The Role of Metacognition in Language Learning

It is widely believed that metacognition plays a significant role in describing and explaining the learning process, particularly in the context of language acquisition (Flavell, 1979). Numerous research findings consistently demonstrate the contribution of metacognitive strategies to the development of language proficiency. For example, Wongdaeng (2022) stated that metacognition plays a crucial role in improving English listening skills for university students in Thailand. He argued that metacognition helps students become more aware of their learning processes, allowing them to monitor, control, and regulate their cognitive processes effectively.

Furthermore, research by Kartushina (2023) suggested that metacognition allows individuals to reflect on and evaluate their cognitive processes and performance in language tasks, which affects their self-confidence and task outcomes. This is also supported by Hernberg (2020), who argued that metacognition is very important for language learners in monitoring and regulating their cognitive processes during language learning tasks. Metacognition involves knowledge of one's cognitive processes, experiences, and strategies, which are essential for effective language learning. It plays a vital role in developing language skills, such as reading performance and overall language proficiency.

These findings highlight the importance of integrating metacognitive training into language learning programs. Metacognition, regarded as a critical component of agency, is progressively considered one of the factors directing self-regulated learning, thus assisting students in reaching their goals. Students

need to be aware of their learning and capable of directing their learning activities. They need to become thoughtful about their performance so that in their learning process, they can improve their cognitive performance when they recognize that something needs improvement.

In addition, students need to understand what, why, and how they learn, which requires active participation and continuous reflection and adjustment of strategies to achieve optimal results. Research by Zheng, et, al.(2021) had shown that self-regulated learning strategies significantly impact students' academic self-efficacy, motivation, and achievement. Therefore, metacognition becomes essential, as suggested by Owen and Manning (2023), who argued that it is a form of high-level cognitive processing. In conclusion, metacognition plays a vital role in language learning. It helps students understand how they learn and guides them in making effective decisions about their learning. When educators and students recognize the importance of metacognition and apply it in their teaching and studying, it brings us closer to achieving better language skills and academic success.

3. Components of Metacognition

To achieve a more comprehensive understanding, the following sections will explain the components of metacognition and their interrelation. According to Schraw (2001), metacognition consists of two main components: knowledge of cognition and regulation of cognition. Knowledge of cognition includes declarative, procedural, and conditional knowledge. Declarative knowledge involves understanding oneself as a learner and recognizing the factors that influence one's performance. Procedural knowledge pertains to knowing how to perform tasks, represented through heuristics and strategies. Conditional knowledge involves understanding the "why" and "when" aspects of cognition.

Regulation of cognition, on the other hand, comprises three essential skills that enable students to manage their learning: planning, monitoring, and evaluating. Planning involves selecting appropriate strategies and resources that impact performance. Monitoring refers to the ongoing awareness and assessment of one's understanding and task performance. Evaluating entails appraising the outcomes and efficiency of one's learning efforts. In summary, these metacognitive skills are strategies used to control and regulate cognitive activities effectively. To provide a comprehensive view of the concept of metacognition, the following figure summarizes its two components based on Schraw's (2001) description.

4. Reading Comprehension

Reading is a multifaceted practice that involves various aspects and models. It is not solely about perceiving written language but encompasses social, cognitive, and ecological dimensions. While there is no universally accepted definition of reading, it is generally understood as the cognitive decoding of symbols to derive meaning, involving the interaction between the text and the reader's prior knowledge and experiences (Palmer, 1975). Reading encompasses language acquisition, communication, and sharing

information and ideas, making it a vital skill for acquiring knowledge and expanding horizons (Birch & Fulop, 2020).

Additionally, reading refers to interpreting written or printed material to understand its meaning and content. It involves the process of decoding symbols, letters, and words to comprehend the information presented in a text. Reading can also encompass engaging with and interpreting various literary works, allowing individuals to explore different perspectives, ideas, and narratives. It involves the literal understanding of words and the ability to analyze, interpret, and critically evaluate the text to extract more profound meanings and insights (Harol, 2022).

In conclusion, reading is an essential skill that transcends mere word recognition and comprehension. It plays a crucial role in personal and intellectual development, fostering critical thinking, empathy, and lifelong learning. By understanding and utilizing effective reading strategies, individuals can enhance their ability to navigate complex texts and diverse perspectives, ultimately contributing to academic and professional success.

METHODS

This research uses a mixed approach that combines quantitative analysis of survey data with qualitative observations and interviews. As described by Creswell and Plano Clark (2011), a mixed research design is a research design that has its philosophical assumptions and methods of inquiry. As a methodology, this design includes philosophical assumptions to provide direction for collecting and analyzing data from multiple sources in one study. A mixed approach was needed to answer the research questions mentioned earlier: 1). How do students use metacognitive strategies to improve reading comprehension? 2). Is there a relationship between the level of metacognitive strategy use and students' reading comprehension level?

Researchers conducted interviews, distributed surveys, and observed students to compile their findings. While reading aloud, the researcher observed students plan their reading, check for comprehension, and evaluate their comprehension. In addition, observers also noted students' communication skills, their level of engagement with the reading material, and adherence to metacognition-related instructions.

The following data collection step involved interviews, where the researcher interviewed some student representatives to understand more about their experiences, perceptions, and practices in using metacognitive strategies in their reading. Next, the researcher used the Reading Strategies Questionnaire (MRSQ), developed from a study by Rynearson and Kerr (2004) and distributed to the students. The questionnaire consisted of 22 questions and measured students' use of metacognitive strategies in reading and their perception of the effectiveness of these strategies. Finally, the researcher administered a reading test to the students to measure their reading comprehension level and evaluate the relationship between using metacognitive strategies and reading comprehension.

The collected data were then analyzed quantitatively and qualitatively. The researcher analyzed data from observations and interviews qualitatively by transcribing the interview recordings into written text and recording the observations in detail. The analysis continued with coding, identifying, and assigning codes to relevant parts of the interview and observation results. The final step was to interpret the data descriptively using words. As for the results of the questionnaires and reading tests, the researcher analyzed them quantitatively using SPSS software. The analysis began with descriptive analysis to get an overview of the data distribution, followed by regression and correlation analysis to determine the relationship between the variables and their strength and significance.

FINDINGS AND DISCUSSION

1). How do students use metacognitive strategies to improve reading comprehension?

Based on interviews and observations, various metacognitive strategies students use to improve their reading comprehension were found. These strategies include preparation before reading, techniques during reading, and evaluation after reading. Most students begin the reading process by preparing themselves mentally and strategically. For example, many students reported reading the title and subtitle first to get a general idea of the text. Some students also read summaries or abstracts, if available, which help them understand the context and main focus of the material to be learned.

Sample Interview Answers:

- "Before reading, I usually look at the title and subtitle to get a general idea. I also often read the summary or abstract if available."

Students use various techniques to understand and remember information during the reading process. One strategy that is often used is highlighting and note-taking. Observations show that students usually highlight essential information and write notes in the margins of their notebooks. This strategy helps students to focus on critical points and make quick references during review.

Sample Observation:

- Student A uses text markers to highlight important information and writes notes in the margin.

- Student B frequently stops reading to look up the definition of unfamiliar words using the dictionary app on his phone.

In addition, students frequently use self-monitoring strategies. When they encounter a word or concept they do not understand; they will pause to look for additional definitions or explanations in dictionaries or other online sources. This indicates a high level of metacognitive awareness, where students actively identify and address gaps in their understanding.

Sample Interview Answer:

- "If I find a word I don't understand, I'll look it up in the dictionary. If it's a difficult concept, I will try to reread it or look for additional explanations on the internet."

After finishing reading, students tend to evaluate their understanding through various methods. Some students report that they try to summarize the primary information in their own words and check whether they can explain the content of the text back to others. This essential metacognitive strategy allows students to test how much they understand the material and identify areas that require further review.

Sample Interview Answer:

- "After reading, I try to summarize the main information in my own words and check if I can explain the content of the text back to others."

From the interviews and observations, it appears that students use metacognitive strategies differently. However, some general patterns can be identified. For example, text markers and note-taking are the most common strategies for understanding complex texts. In addition, looking up the definition of unfamiliar words was also a frequent strategy, although observations showed that students summarized information more often.

Overall, students used a variety of metacognitive strategies to improve their reading comprehension. These strategies include preparation before reading, techniques during reading, and evaluation after reading. The findings suggest that awareness and use of metacognitive strategies can be beneficial in improving the effectiveness of reading learning. By understanding how students use these strategies, educators can develop more effective educational interventions to support students' reading skills.

2). Is there a relationship between the level of metacognitive strategy use and students' reading comprehension level?

To answer this research question, the researchers distributed a questionnaire to measure students' metacognitive strategies. The questionnaire asked about the frequency and ways of using metacognitive strategies in reading, such as how students plan before reading, monitor their understanding, evaluate their reading, and reflect after reading. The questionnaires distributed were measured on a Likert scale ranging from 1 meaning never, to 5 meaning always. To assess how often the students used various metacognitive strategies while reading. In addition to distributing questionnaires, researchers also utilized reading tests to assess students' reading comprehension levels. The reading tests allowed the students to measure their ability to comprehend, interpret, and analyze the text.

The researchers then analyzed the data obtained using SPSS. First, we used descriptive analysis to find the data distribution of the MSRQ and reading comprehension scores. Then, the Pearson correlation test measured the relationship between the MSRQ score and reading comprehension score. The following is a table of descriptive statistics and correlation test results.

Table 2. Table Descriptive Statistics

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Pragmatic Scores	33	7	7	14	10.15	.370	2.123	4.508
Analytic Scores	33	18	16	34	26.67	.971	5.577	31.104
Reading Scores	33	10	75	85	80.00	.688	3.953	15.625
Valid N (listwise)	33							

The attached data shows that there are three variable scores, namely pragmatic scores, analytic scores, and reading scores. For pragmatic scores, the mean score is 10.15 with a standard deviation of 2.123, and the range is seven from 7-14. Furthermore, the second score is the analytic score, with a mean score of 26.67, a standard deviation of 5.577, and a score range of 18 from 16-34. The last is reading scores, with an average score of 80 with a standard deviation of 3.953, with a score range of 10 from 75-85.

Pragmatic Scores and Analytic Scores show a significant data spread with a broader range of values, especially Analytic Scores with a more critical standard deviation and variance. Reading Scores had a higher mean and a smaller spread than Pragmatic Scores and Analytic Scores, indicating that Reading Scores values centered more around the mean. All categories have the same sample size of 33.

Furthermore, the correlation calculation was continued after looking for the descriptive statistics. The Pearson correlation test is used to measure the relationship between MRSQ scores and reading comprehension scores. More detailed data can be seen in the table below:

Table 3. Table Correlation

Correlations

		Analytic Scores	Pragmatic Scores	Reading Scores
Analytic Scores	Pearson Correlation	1	.506**	.507**
	Sig. (2-tailed)		.003	.003
	N	33	33	33
Pragmatic Scores	Pearson Correlation	.506**	1	.433*
	Sig. (2-tailed)	.003		.012
	N	33	33	33

Reading Scores	Pearson Correlation	.507**	.433*	1
	Sig. (2-tailed)	.003	.012	
	N	33	33	33

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

* . Correlation is significant at the 0.05 level (2-tailed).

Three variables were tested: Analytics scores, pragmatics scores, and reading scores. In the calculation, Pearson correlation showed the strength and direction of the linear relationship between two variables. At the same time, Sig. (2-tailed) indicated the statistical significance of the relationship. Then, the N symbol is the number of samples, and if the correlation result is significant, it will be marked with ** for a significance level of 0.01 and * for a significance level of 0.05. It can be seen in the data in the table that the Pearson correlation on the relationship between analytics scores and pragmatics scores is .506** with a significance of (Sig.): .003. This means a strong and significant positive correlation at the 0.01 level between Analytic Scores and Pragmatic Scores. As analytic scores increase, pragmatic scores also tend to grow.

Furthermore, the Pearson correlation value on the relationship between Analytic Scores and Reading Scores was .507** with a significance of (Sig.): .003. This meant a strong and significant positive correlation at the 0.01 level between Analytic Scores and Reading Scores. This meant that higher analytic scores were associated with higher reading scores. Finally, the relationship between Pragmatic Scores and Reading Scores had a Pearson Correlation value of .433* with a Significance of (Sig.): .012. This meant a significant positive correlation at the 0.05 level between Pragmatic Scores and Reading Scores. This suggested that reading scores also tend to increase as pragmatic scores increase, although this relationship was less intense than the relationship between Analytic Scores and Reading Scores.

From the data above, it can be concluded that there was significant relationship among all pairs of variables, namely Analytic Scores and Pragmatic Scores, Analytic Scores, and Reading Scores, and Pragmatic Scores and Reading Scores, yet the correlation between

Analytic Scores and Reading Scores is the strongest, followed by the correlation between Pragmatic Scores and Reading Scores. There were two kinds of significance, first the significance at the 0.01 level and significance at the 0.05 level. For the significant 0.01 level, there was 99% certainty that this correlation did not occur by chance (highly significant). While for that significant at the 0.05 level, there was a 95% certainty that this correlation did not occur by chance (significant). This interpretation showed the importance of analytic and pragmatic strategies in influencing students' reading ability. Analytic strategies had a more substantial influence, but both contribute to improving reading ability.

CONCLUSION

The use of metacognitive strategies, such as preparation before reading, techniques during reading, and evaluation after reading, was shown to help improve students' reading comprehension. The findings highlight the importance of awareness and the use of metacognitive strategies in improving the effectiveness of reading learning. Educators can use the results of this study to develop more effective educational interventions to support students' reading skills.

Statistical analysis showed significant positive correlations between all pairs of variables tested. The strongest correlation occurred between analytic and reading scores, followed by the correlation between pragmatic and reading scores. These results indicate that both analytic and pragmatic metacognitive strategies contribute positively to students' reading comprehension. The analytic strategy seems to have a slightly more substantial impact in improving students' reading comprehension.

In conclusion, using metacognitive strategies significantly affects students' reading comprehension levels. Students who frequently use these strategies tend to have better reading comprehension. Therefore, it is essential to encourage the use of metacognitive strategies in educational settings to improve reading skills. The practical implication of this study is that educators can design more effective learning programs by integrating metacognitive strategies into the curriculum or daily learning practices.

While the findings provide valuable insights, the study also has limitations. For example, the research sample may be limited to one school or one level of education only, so the findings should be generalized with caution. In addition, this study only focused on using metacognitive strategies in the context of reading; future research could explore how these strategies can be applied in other learning contexts, such as writing or mathematics. By understanding these limitations, future research can broaden the understanding of the importance of metacognitive strategies in learning.

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