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Examining the Effects of Metacognitive Awareness on the Reading Comprehension Skills of Grade 7 Students

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ABSTRACT

This study examines the effects of metacognitive awareness on the reading comprehension skills of Grade 7 students at Odiongan National High School, Odiongan, Romblon, addressing a crucial gap in existing literature. With reading comprehension skills being fundamental to academic success, understanding the role of metacognitive awareness becomes imperative. Grounded in Flavell's Metacognition Theory, this research aims to investigate the level of metacognitive awareness and its effects on reading comprehension skills with a descriptive-causal approach. Methodologically, a quantitative approach was used, utilizing reading comprehension assessments alongside a modified Metacognitive Awareness Inventory (MAI) adapted from Schraw & Dennison (1994). Using a four-point Likert-type rating scale questionnaire, students rated their metacognitive awareness, divided into Metacognitive Knowledge (MK) and Metacognitive Regulation (MR). Metacognitive knowledge encompasses declarative, procedural, and conditional knowledge, while Metacognitive Regulation involves planning, monitoring, and evaluating. Using stratified random sampling, 198 respondents were selected out of 401 Grade 7 students, preceded by a pilot study with 20 respondents to refine research instruments and assess the validity and reliability. Furthermore, data were collected, processed, and analyzed using a statistical tool called Multiple Linear Regression. The results show that metacognitive awareness is positively correlated with the reading comprehension skills of Grade 7 students. This suggests the pivotal role of metacognitive awareness in enhancing reading comprehension skills.

Keywords: *cognition, metacognition, metacognitive awareness, reading comprehension skills, metacognitive reading strategies*

INTRODUCTION

Reading comprehension is crucial for a student's academic success and overall cognitive development. Furthermore, Cimmiyotti (2013) states that reading is essential at all levels of the educational system, as all subjects in the course require reading. However, reading is about more than just sounding out words. As defined in the study of Elish-Peper (2010), reading comprehension is the process of deciphering or interpreting written materials. However, not all students achieve the same level of proficiency in reading comprehension. According to Bilbao et al. (2016), some students continue to read below proficient levels even with teaching strategies from teachers to improve reading comprehension.

As shown in the study by Juan (2019), Filipino pupils performed worse in reading comprehension than their international peers. The results of the study show that there is a need to address the reading comprehension problem of Filipino learners. The Mother Tongue–Based Multilingual Education program supported by Republic Act 10,523 has been implemented to address these alarming academic conditions. The implementation results have significantly improved student performance, especially in language and reading tests.

Furthermore, while students frequently depend on various learning tactics and study techniques to succeed, metacognition is an often overlooked factor that emerges as a critical aspect of success (Zhou, 2022). Thus, the researcher was inspired to study the impact of metacognitive reading strategies on high school

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students' reading comprehension for further improvement. Therefore, exploring a higher level of metacognition is necessary, as more than utilizing reading strategies might be required to address students' poor reading comprehension. Hence, this is where metacognition comes into play – a term coined by James H. Flavell in 1979.

Due to its increased knowledge and control over the reading process, metacognitive awareness has gained attention in educational research. This is evident in the study of Ngoc (2022), in which several scholars have acknowledged metacognition as a driving force behind learning a second language. According to Flavell (1979), metacognition is cognition about cognition or simply thinking about thinking, and the term metacognitive awareness includes notions similar to metacognition. Moreover, planning before reading, checking understanding while reading, and assessing the reading experience are all part of the metacognitive level of comprehension (Carrell et al., 1998).

Metacognition improves reading comprehension by encouraging awareness, self-regulation, and strategic thinking. While cognitive strategies like using a dictionary, inferring from context, drawing on prior knowledge, summarizing a text, and using context clues may offer the necessary foundational skills, metacognition goes beyond them. Metacognitive reading strategies include planning, observing, and assessing a learning task's effectiveness, considered higher-order performance techniques. (Pressley & Afflerbac, 1995). However, Schraw (1998) contends that although cognitive strategies are essential for completing a task, knowledge of one's performance requires using metacognitive reading strategy awareness. Metacognitive awareness is crucial in reading comprehension, especially when facing challenging texts. This is shown in the study of Muhid et al. (2020), where metacognitive strategies positively affect students' reading abilities.

Additionally, Sinom and Kuswandono (2022) demonstrated quantitatively that academic reading comprehension positively correlates with a higher metacognitive awareness of reading strategies. Furthermore, readers who use metacognitive reading strategies in their reading comprehension are more successful than those who do not utilize this strategy in the reading comprehension process (Reza Ahmadi et al., 2013).

Components of metacognition are examined to understand how metacognitive awareness occurs during the reading process. According to Schraw and Moshman (1995), there are two (2) components of metacognition, namely (1) Metacognitive Knowledge (MK) and (2) Metacognitive Regulation (MR). Metacognitive knowledge is composed of the following : (1) declarative knowledge, (2) procedural knowledge, and (3) conditional knowledge. Meanwhile, Metacognition Regulation consists of the following: (4) planning, (5) monitoring, and (6) evaluating.

Firstly, under declarative knowledge, readers use existing knowledge and realize a gap between what the readers understand and what the text demands. Secondly, conditional knowledge is when a reader selects appropriate strategies tailored to the specific situation to fill the gap. Next, procedural knowledge becomes evident when the reader applies these strategies through execution during the reading process. Meanwhile, in metacognitive regulation, planning occurs when the readers prepare strategies for reading challenges. Monitoring comes into play when readers ensure they are on the right track by monitoring their reading progress. Lastly, evaluation occurs when readers assess the success of their efforts by determining how well they have understood the text.

By understanding how metacognitive awareness affects reading comprehension, readers, exceptionally high school students, will develop an awareness of their reading strategies, comprehension monitoring, and the capacity to regulate and evaluate their strategy when faced with challenging texts.

Summary of the Review of Related Literature

Cognition

According to Zhou et al. (2017), students and educators should strive to discover effective strategies for maximizing learning results and fostering cognitive growth in pursuing academic achievement. Furthermore, the role of general cognitive capacity in metacognitive monitoring is associated with higher intelligence (Karwowski, et al., 2014). However, merely providing instructions for a specific strategy may prove inadequate, as individuals might need more implicit knowledge or cognitive capabilities to execute it proficiently (Nusbaum et al., 2011). On the other hand, researchers are still grappling with the complex interaction between cognition and metacognition, posing ongoing challenges as they rely on and influence each other while sharing processes (Winne, 2018).

Metacognition

According to Norman et al. (2019), cognition on cognition or the reflection and regulation of one's cognitive activities is called metacognition. Additionally, metacognition is linked more to cognitive science and is partly assessed by performance-based tests. (Dinsmore et al., 2008). Moreover, metacognition is a multifaceted phenomenon that involves awareness and regulation of one's cognitions (Flavell, 1979). Also, Roebers (2017) claims that executive function and metacognition play quite similar roles in children’s behavior and cognition.

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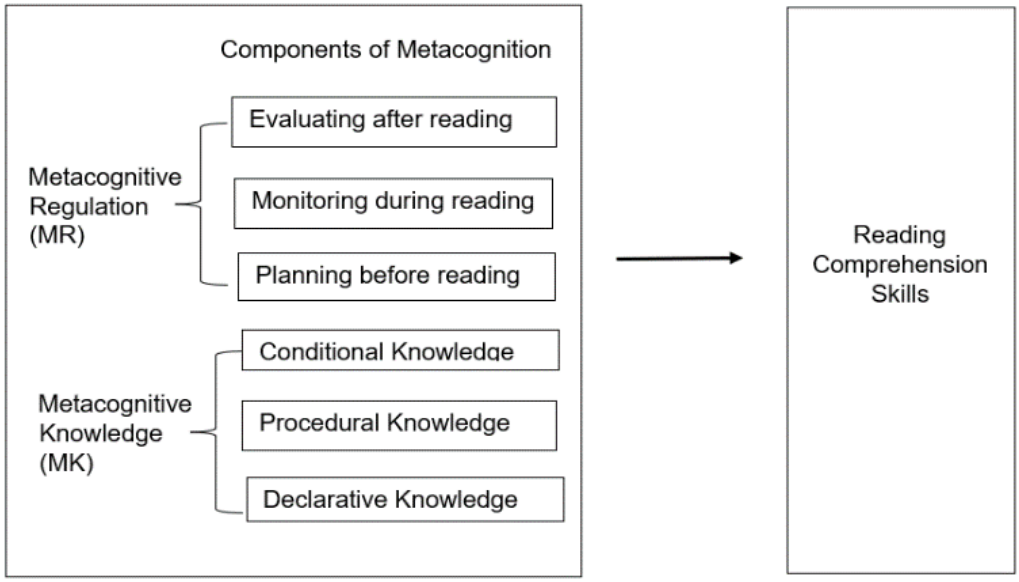

Figure 1. Conceptual Framework

Brown (2017) emphasized the role of metacognition in reading and understanding one's cognitive processes during reading activities. Furthermore, according to Pressley (2002), the theory of metacognition highlights the importance of planning, monitoring, and evaluating strategies for improving reading comprehension. These strategies boost active engagement and help students identify and address comprehension gaps, leading to a deeper understanding of the text. There is still much to be explored involving the development of Theory-of-Mind for the age of 3 to 5 years, followed by the development of metamemory and metacognitive knowledge and skills that continue to develop throughout the lifespan (Roebers & Spiess, 2017).

Metacognitive Awareness

Research suggests that native and non-native readers demonstrate different levels of metacognitive awareness regarding reading strategies, emphasizing the importance of considering these distinctions in evaluation approaches (Sheorey & Mokhtari, 2001). Moreover, assessing metacognitive awareness supports reading research and instruction, emphasizing the significance of metacognitive strategies in assessing comprehension (Mokhtari & Reichard, 2002).

Metacognitive Knowledge (MK)

Metacognitive knowledge comprises explicit task and strategy-related information, regardless of accuracy (Frazier et al., (2021). Furthermore, metacognitive knowledge consists of three types of information regarding tasks and strategies: declarative information that answers the question "What?" (e.g., what type of strategy is appropriated in a particular task?), procedural information that answers the question "how?" (e.g., how to implement different strategies?), and conditional information that answers the questions "when and why?" (e.g., when to use a strategy?) (Pintrich et al., 2000). In addition, metacognitive knowledge is believed to aid monitoring and control processes by providing access to information for more accurate evaluations and informed decisions (Nietfeld et al., 2002). Moreover, metacognitive knowledge at the task level, concerning creative tasks, involves familiarity with problems that demand creative thinking (Duncker et al., 1945). Furthermore, metacognitive knowledge indicates the level of creative expertise, often more specialized within a specific creative domain for those with higher expertise (Kaufman et al., 2009).

Metacognitive Regulation (MR)

According to Afflerbach et al. (2017), the metacognitive regulation of reading is expressed as reading strategies, deliberate, goal-directed attempts to control and modify the reader's effort to decode text, understand words, and construct text meanings. Prior studies indicate that metacognitive regulation, the abilities learners employ to oversee their cognitions, correlates positively with proficient problem-solving (Berardi-Coletta et al., 1995), transfer (Lin & Lehman, 1999), and self-regulated learning (Zepeda et al., 2015).

However, metacognitive regulation has a different number of constructs and different levels of description. Nelson and Narens's (1990) model consists of monitoring and control processes that assess the current state of working memory and use information to regulate and guide subsequent actions. Moreover, Winne and Hadwin (1998) built a model and included additional higher-level metacognitive skills, such as planning and evaluating.

Reading Comprehension

Reading comprehension is the cognitive process shaped by the interaction between the reader, the text, and the context (Flavell, 1979). It involves deriving meaning from text rather than interpreting individual words or phrases (Klingner et al., 2015). Reading comprehension is a complex construct influenced by the reader, the text, and the purpose for reading (OECD, 2019).

León (2003) highlights the significance of inferences in reading comprehension, stating that readers utilize cognitive and metacognitive strategies to construct new propositions from existing information. Furthermore, reading comprehension is crucial for learning as it assigns meaning to text and represents the ultimate objective in reading development (Trainin et al., 2015).

Caballero (2008) identifies two challenges in teaching reading comprehension: the need for teacher engagement with additional strategies to enhance students' reading skills and reluctance to explore strategies requiring more guidance and knowledge. Despite exposure to English text, students need help with comprehension (Muhid et al., 2020). PISA results indicate below-average performance in reading comprehension on the National Achievement Test (DepEd, 2019). Therefore, teachers must provide explicit instruction to students in comprehension strategies because it can help students overcome their problems in understanding the text being read (Graham & Bellert, 2004).

Metacognitive Strategies

A metacognitive strategy refers to a deliberate and conscious effort aimed at comprehension during reading tasks (Burin et al., 2020). Students' awareness of comprehension monitoring is shaped by the metacognitive reading strategies they frequently employ (Falah et al., 2016). In reading, metacognitive strategies involve self-monitoring and self-regulating activities that address the reading process and outcome (Zhang & Seepho, 2013). However, The number of frustrated elementary-level readers remained higher than that of instructional and independent readers during the 2003–2004 school year (Luz, 2007). Educators can enhance students' development by identifying mastered metacognitive strategies and providing support in areas of struggle (Jacobs & Paris, 1987). Differentiated instruction, informed by identifying metacognitive strategies, is emphasized for addressing individual needs and abilities (Baker & Beall, 2009). Implementing metacognitive reading strategies in the reading process fosters strategic competence and cultivates strategic readers (Khellab et al., 2022). Additionally, O'Malley and Chamot (1990) categorized strategies into metacognitive and cognitive, with metacognitive strategies enabling learners to manage, guide, and regulate learning processes. Additionally, students' reading can benefit from metacognitive reading practices in several ways, such as understanding and supporting their educational endeavors (Wang et al., 2009).

Sutiyatno and Sukarno (2019) conducted a study to explore the correlation between metacognitive reading strategies and reading achievement. The findings indicated a significant relationship between metacognitive strategies and reading achievement, with all three sub-categories showing high correlation coefficients. Moreover, the results suggested that improving students' understanding and knowledge of metacognitive strategies can enhance their reading achievement, emphasizing the importance of this skill for comprehending English textbooks.

Reading Comprehension and Metacognitive Awareness

Research shows a positive correlation between employing metacognitive reading strategies and English reading comprehension proficiency (Hammad, 2023). Additionally, using metacognitive strategies has been linked to improved reading comprehension achievement (Muhid et al., 2020). Furthermore, According to Rajasagaran and Ismail (2022), explicit instruction in metacognitive strategies has effectively enhanced reading skills among ESL and EFL learners. In reading, metacognition can identify proficient and incompetent readers. The ability to comprehend literary texts and derive logical conclusions distinguishes proficient readers from less proficient readers. It also allows readers to monitor their understanding and make necessary corrections (Mokhtari & Reichard, 2002).

Studies emphasized the crucial role of metacognition and inferential ability in enhancing reading comprehension (Tantowie et al., 2022). Moreover, the relationship between metacognitive reading strategies and reading comprehension,

Table 1. Levels of Metacognitive Awareness in terms of Metacognitive Knowledge (MK) and Metacognitive Regulation (MR).

Metacognitive Knowledge	N	Mean	SD	Verbal Description
Declarative	198	2.85	.427	High
Procedural	198	2.78	.550	High
Conditional	198	2.87	.487	High
Overall	**198**	**2.83**	**.488**	**High**
Metacognitive Regulation	**N**	**Mean**	**SD**	**Verbal Description**
Planning	198	2.89	.467	High
Monitoring	198	2.75	.471	High
Evaluating	198	2.86	.501	High
Overall	**198**	**2.83**	**.480**	**High**

particularly in first-year EFL students, underscores the importance of metacognitive strategies in developing reading comprehension (Maryam et al., 2019).

According to Nobles and Ortega-Dela Cruz (2020), reading comprehension involves strategic processes such as metacognition and monitoring. However, according to O'malley et al. (1985), learners who do not have metacognitive approaches are not given guidance or the chance to reevaluate their progress, accomplishments, and future courses. On the other hand, Wang et al. (2009) stated that there are several advantages for students' reading comprehension and learning activities when they use metacognitive reading strategies. Additionally, Flavell (1976) consequently claimed that the theoretical framework of the metacognitive reading strategy awareness theory, supported in this study, holds that the key to reading comprehension is self-monitoring and self-regulation.

As shown in Figure 1, metacognition has two components, namely Metacognitive Regulation (MR) and Metacognitive Knowledge (MK), as stated in Schraw & Moshman's (2001) study. Under metacognitive knowledge, the following are the following: First, in declarative knowledge, readers use what they already know and notice how their understanding differs from what the text requires. Second, conditional knowledge involves choosing the right strategies to bridge this gap and adapting them to the specific situation. Next, procedural knowledge becomes evident as readers implement these strategies while reading. Meanwhile, in metacognitive regulation, planning occurs when readers prepare strategies to handle any challenges they might encounter while reading. Monitoring is when readers ensure they are on the right track by checking their progress while reading. Lastly, readers assess how well they have understood the text to evaluate the success of their efforts after reading. These components of metacognition have effects on the reading comprehension skills of readers.

Table 2. Levels of Reading Comprehension Skills using Reading Comprehension Assessments.

Level of Reading Comprehension Skills	Score	F	%
Very High	9 – 10	11	5%
High	7 – 8	34	17%
Average	5 – 6	95	48%
Low	3 – 4	35	18%
Poor	1 – 2	23	12%
Total		**198**	**100%**

METHODOLOGY

This study uses a descriptive-causal approach to examine the effects of metacognitive awareness on the reading comprehension skills of Grade 7 students of Odiongan National High School. A quantitative approach was used to address this study's objectives comprehensively. Specifically, this study used multiple linear regression as the statistical tool because it determines the cause-and-effect relationships and estimates the effect of one or more continuous variables on another variable. Multiple linear regression uses a straight line to measure the relationship between a quantitative dependent variable, reading comprehension, and two or more independent variables, namely metacognitive knowledge and metacognitive regulation.

To measure the levels of metacognitive awareness skills of Grade 7 students, a modified Metacognitive Awareness Inventory (MAI) by Schraw and Dennison (1994) was adopted. However, minor modifications were made to better align the questions with the context of reading comprehension, where a Four-point Likert-type rating scale was used. Questions were based on the two components of metacognitive awareness, namely: (A) Metacognitive Knowledge (MK) and (B) Metacognitive Regulation (MR), where Metacognitive Knowledge includes (1) declarative knowledge, (2) procedural knowledge; (3) conditional knowledge while Metacognitive Regulation includes (1) planning, (2) monitoring; (3) and evaluating. On the other hand, to measure reading comprehension skills, reading comprehension assessments, consisting of multiple-

Table 3. Coefficients for the Multiple Regression Analysis

Predictor	B	SE	β	t	p
Metacognitive Knowledge	1.563	0.309	0.340	5.064	<.001
Metacognitive Regulation	1.380	0.307	0.305	4.489	<.001

choice questions, were given to students after reading the passage. The results of metacognitive awareness and reading comprehension skills were interpreted using the statistical tool Multiple Linear Regression through Statistical Package for Social Sciences (SPSS). This statistical tool quantifies the effects of metacognitive awareness on reading comprehension questions.

Regarding the research methodology, the study implemented a quantitative approach for data collection and analysis with descriptive causal as the approach. Employing a quantitative framework, the sampling process used stratified random sampling to ensure unbiased representation from various grade levels. Data were gathered through reading comprehension assessments, including textual passages consisting of 10 multiple choice questions and a modified Metacognitive Awareness Inventory (MAI) consisting of four-point Likert-type rating scale questionnaires. The results of the metacognitive awareness and reading comprehension skills were interpreted using a statistical tool called Multiple Linear Regressions through SPSS to examine the effects of the metacognitive awareness on the reading comprehension skills of Grade 7 students.

RESULTS AND DISCUSSION

The first component of metacognitive awareness is the Metacognitive Knowledge (MK). Table 1 shows that Metacognitive Knowledge (MK) in terms of declarative knowledge, which involves using prior knowledge to comprehend and interpret written text, the students exhibit a mean score of 2.85 with a standard deviation of 0.427. This suggests a strong comprehension of metacognitive concepts. Similarly, for procedural knowledge, which involves knowing how to apply metacognitive strategies effectively, the students display a mean score of 2.78 and a standard deviation of 0.550, indicating a solid grasp of procedural aspects. Furthermore, conditional knowledge, which encompasses the ability to adapt metacognitive strategies to various contexts and tasks, shows a mean score of 2.87 and a standard deviation of 0.487. This shows the students' adeptness in flexibly employing metacognitive skills across different learning situations. Considering all dimensions of Metacognitive Knowledge (MK) collectively, the students achieved a mean score of 2.83, reaffirming their high level of metacognitive awareness.

Furthermore, the second component of metacognitive awareness is the Metacognitive Regulation (MR). Table 1 shows that Metacognitive Regulation (MR) in terms of planning, which involves the ability to set goals and strategies when reading, students exhibit a mean score of 2.89 with a standard deviation of 0.467, indicating a high level of planning. Similarly, for monitoring, which refers to the capacity to assess one's progress during reading tasks, students achieve a mean score of 2.75 with a standard deviation of 0.471, suggesting strong monitoring skills. Additionally, for evaluating, which involves assessing the effectiveness of learning strategies, students achieve a mean score of 2.86 and a standard deviation of 0.501, indicating a high level of evaluative ability. Considering all dimensions of Metacognitive Regulation (MR) collectively, the students achieve an overall mean score of 2.83, reaffirming their high level of metacognitive awareness in this aspect.

While the two components of metacognitive awareness, namely Metacognitive Knowledge (MK) of awareness, the reading comprehension in Table 2 illustrates the variability in reading comprehension among Grade 7 students of Odiongan National High School. A notable proportion of students demonstrate average comprehension skills, comprising 48% of the total, followed by those with high comprehension skills at 17% and very high comprehension skills at 5%.

Table 4. Correlations Between Metacognitive Awareness and Reading Comprehension

Variable	r	p	N	Result
Metacognitive Knowledge	.340**	<.001	198	Significant
Metacognitive Regulation	.305**	<.001	198	Significant

Table 5. Correlations between Metacognitive Components and Reading Comprehension

Metacognitive Component	r	p	Result
Metacognitive Knowledge			
Declarative Knowledge	.217*	.002	Significant
Procedural Knowledge	.169*	.017	Significant
Conditional Knowledge	.403*	<.001	Significant
Metacognitive Regulation			
Planning	.300*	<.001	Significant
Monitoring	.207*	.004	Significant
Evaluation	.231*	.001	

Additionally, 18% of students exhibit low comprehension skills, while 12% show poor comprehension.

Moreover, in Table 3 the Metacognitive Knowledge and Metacognitive Regulation are significant to reading comprehension with t values of 5.064 and 4.489, respectively. These two independent variables are significant at a 0.000 p-value. This means that metacognitive awareness positively affects the reading comprehension skills of Grade 7 students at Odiongan National High School.

Table 4 shows correlations between metacognitive awareness and reading comprehension. Using multiple regression analysis, the correlation table shows that metacognitive knowledge positively affects the reading comprehension skills of the students with a .340 correlation coefficient value and p-value of .000. The metacognitive regulation also positively affects the reading comprehension skills of the students with a .305 correlation coefficient value and significant at 0.000 p-value.

In addition, significant positive correlations were found between each aspect of metacognitive knowledge (declarative, procedural, and conditional) and metacognitive regulation (planning, monitoring, and evaluating) with reading comprehension, as shown in Table 5. Specifically, conditional knowledge displayed the strongest correlation coefficient ($r = .403$, $p < .01$), followed by evaluating ($r = .231$, $p < .01$), planning ($r = .300$, $p < .01$), declarative knowledge ($r = .217$, $p < .01$), monitoring ($r = .207$, $p < .01$), and procedural knowledge ($r = .169$, $p < .05$). These results suggest that a deeper understanding of metacognitive processes and effective use of metacognitive strategies are associated with higher levels of reading comprehension.

CONCLUSION

In terms of Metacognitive Knowledge (MK), the findings from this study indicate a high level of metacognitive awareness among Grade 7 students of Odiongan National High School in terms of declarative, procedural, and conditional knowledge, showing that students have strong Metacognitive Knowledge in employing metacognitive strategies. Therefore, these students possess knowledge of their own reading skills and comprehension strategies, including declarative knowledge of the reading processes, procedural knowledge of when and how to apply reading strategies, and conditional knowledge of how to execute reading strategies effectively.

Furthermore, concerning Metacognitive Regulation (MR), the findings indicate a high level of metacognitive regulation in terms of planning, monitoring, and evaluating among Grade 7 students of Odiongan National High School. It means that students demonstrate strong abilities in setting goals, assessing progress, and reflecting on learning strategies. Therefore, these students have the cognitive processes of planning, monitoring, and evaluating their reading strategies to optimize reading comprehension and address challenges encountered before, during, and after the reading process.

The findings, showing the level of reading comprehension skills among Grade 7 students of Odiongan National High School, emphasize the importance of recognizing and addressing the variability in reading proficiency. While a considerable number demonstrate strong comprehension skills, the presence of students with lower reading comprehension skills necessitates proactive intervention strategies. Therefore, acknowledging and responding to these differences in skill levels can better support students in developing essential reading comprehension skills, ultimately fostering improved academic success and overall learning outcomes.

This study concludes that Metacognitive Knowledge (MK) and Metacognitive Regulation (MR) are significantly associated with reading comprehension, with conditional knowledge being the most impactful. Planning and evaluating also demonstrate substantial influence, indicating that the ability to plan effective strategies and evaluate one's understanding is critical for reading success. These findings suggest that educational interventions to improve reading comprehension should emphasize developing students' metacognitive skills, notably their ability to adapt to reading strategies based on contextual demands. Enhancing students' planning and evaluative skills can improve reading outcomes. Additionally, while declarative knowledge, monitoring, and procedural knowledge contribute positively to reading comprehension, their impact is less pronounced. Therefore, a comprehensive approach that includes these components, though to a lesser extent, is still beneficial. By fostering a deeper understanding and effective management of metacognitive processes across all dimensions, educators can better support students in achieving higher levels of reading comprehension.

AUTHORS' CONTRIBUTIONS

C.A.V. led the study and analysis of the data. Meanwhile, P.B. advised on the implementation of the study.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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