



# **READING COMPREHENSION IN THE DIGITAL AGE: METACOGNITIVE STRATEGIES, TEACHER READING PRACTICES, AND ONLINE READING HABITS AS PREDICTORS OF SENIOR HIGH LEARNERS' READING PROFICIENCY**

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## **ABSTRACT**

Reading comprehension is a fundamental literacy skill that influences the success of the students in school and in the actual communication. However, many students demonstrate difficulty in understanding written texts, especially in drawing inferences, integrating ideas, and critically evaluating reading materials. This study examined whether metacognitive strategies, teachers' reading strategies, and online reading habits influence the reading comprehension of Grade 12 senior high school participants. The study employed quantitative research design using descriptive and correlational approaches. A sample of 224 Grade 12 participants was selected through systematic random sampling. Data was collected using four adapted research instruments. The collected data were analyzed using descriptive statistics and multiple regression analysis. The findings revealed that participants generally demonstrated a high level of metacognitive strategy use, while teachers' reading strategies were perceived at a moderate level. They also exhibited a high level of online reading habits. In terms of reading comprehension, the participants demonstrated very good level in literal and inferential comprehension, and a good level in vocabulary-in-context comprehension. Furthermore, the data indicated that metacognitive strategies, teachers' reading strategies, and online reading habits significantly influence their reading comprehension. The study suggests that reading comprehension among senior high school students may be supported through greater emphasis on strategic reading behaviors, effective instructional reading practices, and purposeful engagement with digital texts.

**Keywords:** *reading comprehension, metacognitive strategies, teachers' reading strategies, online reading habits*

## INTRODUCTION

Students' ability to comprehend written text is a fundamental literacy skill that supports students' success both in academic and real-life. Reading comprehension is evident when one can create meaning out of the text, tie concepts together, and use the information of written information (Fadila et al., 2024). It promotes achievement in academic activities involving critical reading in academic disciplines and prepares students for activities involving research and assessment of sources (Smith et al., 2021). Consequently, when students struggle to make sense of what they read, their difficulties appear on subjects that rely heavily on text.

Reading comprehension is more than decoding words as it entails incorporating new information into the available knowledge and developing an overall sense of the text (Butterfuss et al., 2020). Similarly, Nouwens et al. (2020) elaborated that reading comprehension is a cognitive abilities and language proficiency that enable the learner to face inferences, assess details, and get the message of the writer correctly. This skill involves literal comprehension, inferential comprehension, and vocabulary in context (Kamagi, 2020). However, evidence suggests that many students demonstrate poor comprehension of written texts, responding to literal questions and not making inferences, combining and analyzing information, and assessing reading (Ramadhianti & Somba, 2023). In another study, students fail to comprehend major points in academic text due to the limited knowledge of vocabulary and the shallow perception of the meanings (Vrhovec & Soršak, 2024).

Globally, studies show that a substantial number of school-age learners are not reading with adequate comprehension. In South Africa, a report found that approximately 81% of learners are unable to read and comprehend by the end of the school year, showing that the entire population is in a severe and systemic reading crisis (Long & Bowles, 2024). Additionally, in Indonesia, the findings showed that 33.2% of students were found to have poor reading comprehension with two-thirds having problems with comprehension at least occasionally (Asdar et al., 2024). In the Philippines, various studies have reported the issue of reading comprehension among students. Phil-IRI pre-test results revealed that Grade 12 HUMSS students at Pampanga demonstrated 75 out of 124 students or approximately 60% of the students were at the frustration level in reading comprehension prior to any intervention (Santos, 2024). Similarly, in Nueva Ecija, a survey found out that students have issues with decoding, poor vocabulary, and low motivation that translated to students being categorized as frustrated or non-readers (Domingo, 2025).

Related studies and literature point that reading comprehension is influenced by learner strategies, teacher practices, and reading behavior. Evidence revealed that students who frequently resorted to strategies like setting reading goals, summarizing

main points and reviewing important points performed better in reading tasks (Xie et al., 2023). According to Latief (2024), using the metacognitive strategy implies planning, organizing, monitoring, and evaluating. It was reported that the students who employ these strategies become more active readers and that they have greater control over the comprehension process because they are continually in control of what they think as they read through a text. However, Vicente and Baldera (2024) found that strategies that help learners to read were not widely used by learners with low metacognitive skills pointing out that these students do not check whether they achieve their purpose in reading, which led to lower comprehension levels. In addition, teachers' reading strategies, as perceived by learners, are the intentional use of methods by teachers that direct learners in the build-up, within, and after reading a text in the classroom (Saori et al., 2024). Roomy (2022) documented the results of teachers planning explicit steps of reading, including, guided reading and practicing with simple texts regularly, have enabled learners with difficulties to develop a more stable basic decoding and understanding. Likewise, Dolba et al. (2022) demonstrated that instructional methods such as identifying the meaning of words in each setting, sequence and prediction are emphasized by teachers so that students can answer comprehension questions with increased confidence.

Online reading habits also emerged in literature as a relevant factor affecting reading comprehension. This involves the frequency and usage of internet reading among students to acquire knowledge in school and leisure purposes (Bana, 2020). Loh et al. (2022) revealed that a substantial number of students read on smartphones and other gadgets, particularly when reading news, brief articles, and school reading materials. However, over-reading on a screen is associated with surface processing and reduced comprehension in a few instances. In a similar way, Vargas et al. (2024) found that in some cases, intensive use of digital reading in academic tasks was associated with low reading comprehension, particularly when students read fast and multitask during online reading. Notably, Rinantanti et al. (2024) reported that students who performed better in their strategies, including previewing, note-taking, and rereading online text, achieved higher comprehension scores.

Previous studies have established reading comprehension and the problems related to it. Specifically, Mercado and Manzano (2024) reported that the reading comprehension performance of students did not have any significant relationship with the metacognitive reading strategies, and Batac (2024) reported that the reading levels of the senior high school learners were two or three grades below the expected levels despite the common use of the strategies. In a similar manner, Meliton et al. (2024) also focused on the importance of online reading habits among students. These pieces of evidence show that no study has been conducted which concurrently considers the combination of metacognitive strategies, teachers' reading strategies, and online reading habits as predictors of reading comprehension among students.

This study is important as present evidence points to common issues which are directly or indirectly affected by poor reading comprehension among students. It is timely as the research aims at producing context-specific evidence explaining the role of metacognitive strategies, teachers' reading strategies, and online reading habits in the

reading comprehension of students in Bukidnon. In this regard, the research supports Sustainable Development Goal (SDG) 4, which aims at providing quality education that is inclusive and equitable to everyone. SDG 4 emphasizes the necessity to improve basic literacy skills as reading is considered a cornerstone in learning.

## Research Questions

This study determined whether the use of metacognitive strategies, teachers' reading strategies, and online reading habits influenced the reading comprehension of Grade 12 senior high school students. Specifically, it sought to answer the following questions:

1. What is the level of students' use of metacognitive strategies in terms of planning, organizing, monitoring, and evaluating?
2. What is the level of teachers' reading strategies as perceived by the students?
3. What is the level of students' online reading habits?
4. What is the level of students' reading comprehension in terms of literal comprehension, inferential comprehension, and vocabulary-in-context?
5. Do the participants' use of metacognitive strategies, teachers' reading strategies, and online reading habits significantly influence their reading comprehension of students?

## METHODOLOGY

This study utilized a quantitative research design, using descriptive and correlational approaches. This research carried out correlation to establish the significance of the relationship among metacognitive strategies, teachers' reading strategies, and the online reading habits of students on their reading comprehension skills. In addition, the study was conducted in one of the secondary schools in the municipality of Libona, Bukidnon, during the School Year 2025-2026. This school provides senior high school programs to students in the locality. It involved 224 student participants chosen based on Tarro Yamane with 5% margin of error and 95% confidence level.

The study procedures were aimed at ensuring that the data collection process was ethical, systematic and in accordance with study objectives. Under the guidance of Belmont Report, especially the principles of respect to the person, beneficence and justice, the researcher submitted the research proposal, research instruments, the consent forms and the data management plan to the research ethics committee for ethics review. With the ethical clearance, the researcher was able to obtain an endorsement letter on the part of the Dean of the Graduate School which was sent to the Schools Division Superintendent to seek approval of the study carried out among students in the selected schools.

Moreover, this study employed four adapted research instruments to collect the necessary data on the variables included in the investigation. All the instruments underwent validation process from expert validators to ensure clarity, relevance, and

alignment with the objectives of the study. To analyze the construct validity of the research tool in greater detail, Confirmatory Factor Analysis (CFA) was used. This was done to check the congruence between the latent variables and the corresponding indicators, as well as evaluate the sufficiency of the measurement model. The findings have ensured that the instruments have acceptable construct validity, indicating that the variables measured in the study were appropriate measures of the intended variables. Pilot testing was also conducted using Cronbach's alpha to determine the internal consistency of each scale before final administration.

For Part 1, the Metacognitive Awareness of Reading Strategies Inventory (MARSII) adapted from Mokhtari et al. (2018), was utilized to measure the planning, organizing, monitoring, and evaluation of strategies when reading academic texts by the students. It was comprised of 24 items. On the other hand, Part 2 used Teachers' Reading Strategies which was adapted from Sari (2021) to measure the perception of students on the strategies employed by their teachers in teaching reading. The instrument had 10 statements, which were used to describe different teaching practices, which include role-play, brainstorming, predicting, generating and answering questions, think-pair-share, and summarizing. For part 3, Online Reading Attitudes and Behaviors Scale by Çifci and Ünlü (2021) was adapted to measure the online reading habits of the students including re-reading, source-checking, understanding, navigation, and research planning. It was based on 14 statements on the frequency of the performance of the actions of online reading by students.

Range	Descriptive Equivalent	Interpretation
4.51 – 5.00	Always	Very High
3.51 – 4.50	Often	High
2.51 – 3.50	Sometimes	Moderate
1.51 – 2.50	Rarely	Low
1.00 – 1.50	Never	Very Low

For Part 4, the Reading Comprehension Test was used to measure the reading comprehension of students. Originally designed by Ratnawati (2006), the test involved eighteen (18) multiple-choice questions based on a set of brief passages. These materials evaluated various comprehension abilities including locating main ideas, contextual interpretation of vocabulary, reference comprehension and simple understandings. For the scoring, each correct answer was assigned one (1) point, while incorrect responses scored zero (0). The total score was counted, which was the basis for categorizing students' reading comprehension levels.

Range	Interpretation
16 – 18	Very Good
12 – 15	Good
8 – 11	Average
4 – 7	Poor
0 – 3	Very Poor

The data analysis was carried out with the assistance of an expert statistician using licensed statistical software. The dataset was checked against completeness and proper coding and adherence to the assumptions before analysis. The levels of metacognitive strategies, teachers' reading strategies, online reading habits, and reading comprehension were measured using descriptive statistics, particularly frequency, percentage, mean and standard deviation. Inferential analysis using correlation and regression analyses was conducted to establish whether reading comprehension is significantly affected by the independent variables.

The researchers have measured self-reported metacognitive strategies, teachers' reading strategies, and online reading habits. The study only included Grade 12 students at the selected school but not the learners of other grades, schools, municipalities, or subject areas. It did not examine long-term reading outcomes and other external factors including parental support, socioeconomic background, and home literacy environment. Although the results were obtained through self-reported responses, which can be affected by honesty and self-awareness, the study may still provide practical information on the factors associated with reading comprehension.

## RESULTS

Table 1 shows the overall use of metacognitive strategies among the participants. The results reveal that the use of metacognitive strategies obtained a mean of 3.65, interpreted as *high*, with a standard deviation of 0.57. This indicates that the participants generally use metacognitive strategies when engaging in reading activities. The relatively low standard deviation further suggests that the students' responses were consistent and clustered near the mean.

**Table 1**  
*Level of Students' Use of Metacognitive Strategies*

<b>Dimensions</b>	<b>Mean</b>	<b>Interpretation</b>	<b>SD</b>
Planning	3.52	High	0.68
Organizing	3.59	High	0.75
Monitoring	3.80	High	0.75
Evaluation	3.70	High	0.74
<b>Overall</b>	<b>3.65</b>	<b>High</b>	<b>0.57</b>

Table 2 presents the frequency, percentage, and mean distribution of the level of teachers' reading strategies as perceived by the participants. The results show an overall mean of 3.48, interpreted as *moderate*, with a standard deviation of 0.69. This indicates that the participants perceived their teacher's use of reading strategies in the classroom as occasional rather than consistent.

**Table 2**  
*Frequency, Percentage, and Mean Distribution of the Level of Teachers' Reading Strategies*

Range	Description	Interpretation	Frequency	Percentage
4.51-5.00	Always	Very High	12	5.69
3.51-4.50	Often	High	91	43.13
2.51-3.50	Sometimes	Moderate	95	45.02
1.51-2.50	Rarely	Low	10	4.74
1.00-1.50	Never	Very Low	3	1.42
<b>Total</b>			<b>211</b>	<b>100.0</b>
<b>Overall Mean</b>			<b>3.48</b>	
<b>Interpretation</b>			<b>Moderate</b>	
<b>SD</b>			<b>0.69</b>	

Shown in table 3 is the frequency, percentage, and mean distribution of the level of online reading habits among the participants. The results reveal an overall mean of 3.71, interpreted as *high*, with a standard deviation of 0.67. This indicates that the participants generally exhibit high level of engagement in reading materials through online platforms.

**Table 3**  
*Frequency, Percentage, and Mean Distribution of the Level of Online Reading Habits*

Range	Description	Interpretation	Frequency	Percentage
4.51-5.00	Always	Very High	24	11.37
3.51-4.50	Often	High	96	45.50
2.51-3.50	Sometimes	Moderate	80	37.91
1.51-2.50	Rarely	Low	11	5.21
1.00-1.50	Never	Very Low	0	0.00
<b>Total</b>			<b>211</b>	<b>100.0</b>
<b>Overall Mean</b>			<b>3.71</b>	
<b>Interpretation</b>			<b>High</b>	
<b>SD</b>			<b>0.67</b>	

Table 4 shows an overall mean of 6.08, interpreted as *very good*, with a standard deviation of 0.94. This indicates that the students are generally able to understand and recall information that is directly presented in the text.

Shown in Table 5 is the level of students' reading comprehension in terms of inferential comprehension. It indicates an overall mean of 3.51, interpreted as *very good*, with a standard deviation of 0.73. This suggests that the participants can infer meanings and explain ideas that are not directly stated in the text.

**Table 4**  
*Frequency, Percentage, and Mean Distribution of the Level of Students' Reading Comprehension in Terms of Literal Comprehension*

Range	Interpretation	Frequency	Percentage
6.00 – 7.00	Very Good	149	70.60
4.00 – 5.00	Good	48	22.80
2.00 – 3.00	Average	10	4.70
0.00 – 1.00	Poor	4	1.80
<b>Total</b>		<b>211</b>	<b>100.0</b>
<b>Overall Mean</b>		<b>6.08</b>	
<b>Interpretation</b>		<b>Very Good</b>	
<b>SD</b>		<b>0.94</b>	

**Table 5**  
*Frequency, Percentage, and Mean Distribution of the Level of Students' Reading Comprehension in Terms of Inferential Comprehension*

Range	Interpretation	Frequency	Percentage
3.51 - 4.00	Very Good	133	63.03
2.51 - 3.50	Good	57	27.01
1.51 - 2.50	Average	18	8.53
1.00 - 1.50	Poor	3	1.42
<b>Total</b>		<b>211</b>	<b>100.0</b>
<b>Overall Mean</b>		<b>3.51</b>	
<b>Interpretation</b>		<b>Very Good</b>	
<b>SD</b>		<b>0.73</b>	

Table 6 shows an overall mean of 5.35, interpreted as *good*, with a standard deviation of 1.30. It means that the participants can determine the meaning of unfamiliar words by using clues in the surrounding text.

**Table 6**  
*Frequency, Percentage, and Mean Distribution of the Level of Students' Reading Comprehension in Terms of Vocabulary In-Context Comprehension*

Range	Interpretation	Frequency	Percentage
6.00 – 7.00	Very Good	102	48.40
4.00 – 5.00	Good	78	37.00
2.00 – 3.00	Average	25	11.90
0.00 – 1.00	Poor	6	2.90
<b>Total</b>		<b>211</b>	<b>100.0</b>
<b>Overall Mean</b>		<b>5.35</b>	
<b>Interpretation</b>		<b>Good</b>	
<b>SD</b>		<b>1.30</b>	

Table 7 presents the results of the multiple regression analysis examining the influence of metacognitive strategies, teachers' reading strategies, and online reading habits on students' reading comprehension among students. The results reveal that the overall regression model is significant [ $F(3, 207) = 6.333, p = 0.000$ ]. With this, the null hypothesis stating that the participants' use of metacognitive strategies, teachers' reading strategies, and online reading habits do not significantly influence their reading comprehension is rejected. This indicates that the three variables significantly influence students' reading comprehension.

**Table 7**  
*Regression Analysis of the Influence of Metacognitive Strategies, Teachers' Reading Strategies, and Online Reading Habits on Reading Comprehension*

	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	13.289	1.108		11.994	.000
Metacognitive strategies	.822	.357	.198	2.304*	.022
Teachers Reading Strategies	-1.013	.270	-.294	-3.745**	.000
Online reading habits	.587	.294	.167	1.996*	.047

**Model Summary**

R = 0.300	R <sup>2</sup> = 0.090	Adj. R <sup>2</sup> = 0.077	F = 6.833**	p = .000
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\*\*significant at 0.01 level

\*significant at 0.05 level

**DISCUSSION**

**Level Of Students' Use of Metacognitive Strategies**

The high level of metacognitive strategy use suggests that generally approach reading in a deliberate and regulated manner. The responses suggest that they do not read passively but like to plan on how they are going to read, organize ideas, keep track of what they read, as well as assess what they have read once they finish the task. This finding is supported by Jacho et al. (2025) arguing that the metacognitive strategies enable learners to gain control of their thinking processes prior, during, and after reading a text. When students use these strategies regularly, they become better at being able to control their understandings and change their reading strategies. In the same way, Xie et al. (2023) noted that students with high frequency of the metacognitive strategy, like goal setting, summarizing of key ideas and reviewing of essential points, have better scores in the reading task since they actively monitor and regulate their comprehension.

## **Level Of Teachers' Reading Strategies as Perceived by Students**

The results show a moderate level of teachers' reading strategies as perceived by the students. This suggests that reading strategies are present in classroom instruction, but not in a highly consistent manner. The responses suggest that students observe that their teachers employ reading strategies like guiding questions, previewing and summarizing, but they might not be applied in all reading activities. This also implies that although there are teachers who offer support before, during and after reading activities; application of such strategies may differ according to the lesson, the activity or the style of teaching practiced by the learners.

This interpretation is further supported by the distribution, as most of the participants have stated that their teachers frequently or even occasionally use reading strategies, and only a few stated that they are always used. This is consistent with what Azizah (2024) described, which is that some of the reading strategies used by teachers are structured, including previewing, asking guiding questions, and encouraging students to summarize information to assist them in focusing on important ideas. Correspondingly, Dolba et al. (2022) reported that students become more confident in responding to comprehension questions and interpreting the text when the teachers openly demonstrate and model reading strategies on the lesson.

## **Level Of Students' Online Reading Habits**

The responses indicate that online reading is already a regular part of participants' reading experiences. Students appear to engage actively with reading materials using online means, either in terms of academic activity, information search, or in terms of access to multiple online tools. This means that websites, online articles, and electronic learning materials have found their way as primary reading materials by many learners. The responses being relatively similar also indicates that there is a high number of participants who have similar online reading habits.

This tendency is also manifested in the distribution of responses among participants, with majority of the participants saying that they regularly read online, and a significant number of participants saying that they do so occasionally. This implies that digital reading has already become part of the daily learning from students, but to some learners it might continue to be based on the needs of the academic curriculum or even for a particular purpose of reading. This observation aligns with the results of Bana (2020) describing that a significant number of students rely on the internet as a major source of reading materials to conduct their school-related activities and seek information. In a similar manner, Loh et al. (2022) found that students often read on smartphones and other devices using digital texts, which showed that technology has entered the reading culture of students and became a part of it.

## **Level Of Students' Reading Comprehension**

Findings reveal that in terms of literal comprehension, the participants can effectively handle the information that is explicitly written in the text. This implies that they

can identify explicit ideas, remember significant facts, and discern the information clearly depicted in the reading matter. This indicates a consistent background in the early reading comprehension, as students with an ability to retrieve mentioned information are more prone to read written texts correctly. This interpretation is also backed by the distribution, as majority of the respondents were at very good and good levels of literal comprehension. It means that a large portion of the students can respond to questions, which are based on the information written directly in the text. This is also in line with Kim and Petscher (2020), as literal comprehension is the capacity to identify and remember concepts that are expressed in a text. Similarly, De-La-Peña and Luque-Rojas (2021) highlighted the fact that literal comprehension is concerned with identifying surface information and overall propositions in a text. The results indicate that the ability of the students to identify explicit details can be taken as the source of further improved levels of understanding.

Looking at the inferential comprehension, participants demonstrated a strong ability to understand ideas that are not directly stated in the text. This means that many of the participants can draw conclusions, use clue from the passage, and interpret implied meanings of the text. This result demonstrates that the students are not entirely dependent on immediate memorization of facts but can also relate concepts and create meaning out of that which is not directly stated. The distribution supports this finding, as most of the participants were also classified under the very good and good levels of inferential comprehension. This is consistent with the findings of Clinton et al. (2020), who described that through inferential comprehension, readers can establish relationships between sentences and paragraphs to form some coherent meaning of the text. On the same note, Hwang et al. (2023) also noted that inference is the process through which the reader can formulate ideas using clues and background knowledge in cases where the information is not directly mentioned. These results indicate that students with the ability to read between the lines are in a better position to comprehend complex texts and form a greater understanding of the texts in the process of reading.

The results of the vocabulary-in-text comprehension points to a generally positive ability to identify meaning of unfamiliar words through textual clues within the text. This suggests that the participants can use nearby words, phrases, and sentence patterns to infer word meanings while reading. This is useful as it will enable the learners to go on with the comprehension of a text even when they encounter unfamiliar vocabulary. Moreover, the distribution also shows that a significant proportion of the participants were classified under the very good and good levels, which means that many of them can apply contextual information in interpreting new words. As supported by Widyaningsih and Ratmanida (2023), context clues help people to guess the meaning of the unknown words using the words and sentences around those words. On the same note, Razak et al. (2022) added that vocabulary acquisition by using the vocabulary in sentences assists learners to select suitable meanings that fit the context of the text. These indicate that the contextual clues are helpful in enhancing the vocabulary comprehension and assist students in better comprehension of the written texts.

## **Influence Of Metacognitive Strategies, Teachers' Reading Strategies, And Online Reading Habits on Reading Comprehension**

The findings suggest that students' reading comprehension was significantly influenced by metacognitive strategy use, teachers' reading strategies, and online reading habits. This indicates that reading comprehension develops with the interplay of multiple reading related conditions. The capability of students to comprehend text is affected by the way students manage their reading, how teachers facilitate classroom reading, and how learners engage with online texts. This outcome is aligned with Chinpakdee and Gu (2021) who pointed out that reading comprehension is facilitated by not only the internal strategies of the students, but also by the reading practices exemplified by the teachers and the methods of interaction with online texts. Within the online context, Habók et al. (2025) noted that online reading strategies were found to have a significant positive impact on reading comprehension. These substantiate the current finding that reading comprehension is formed more effectively when metacognitive regulation, teacher-supported reading strategies, and online reading habits are combined.

Moreover, teachers' reading strategies, as a classroom reading strategy, were considered as the strongest predictor in the model. This suggests that teacher-guided practices are highly relevant to students' comprehension outcomes. One possible implication is that teachers may apply more explicit reading strategies in classes where students already experience comprehension difficulties. This suggests that stronger teacher support may reflect a response to reading problems rather than automatically leading to higher comprehension scores. This is justified by Saori et al. (2024) who explained the reading strategies used by teachers as intentional methods used to guide learners before, during, and after the reading process. In the same manner, Dolba et al. (2022) stated that predicting, sequencing, and vocabulary clarification strategies are found to assist students to respond to the comprehension questions with more confidence.

## **Conclusions**

Reading comprehension among Grade 12 senior high school students is shaped by a combination of both learner-related and instructional factors. It is not determined by one element alone, but the way the students control their individual reading habits, how they are assisted by the teachers when learning to read, and how they interact with digital reading materials. This shows that reading comprehension is a multidimensional skill, which is developed and influenced by personal strategies, classroom practices, and learning environments. The study also leads to the conclusion that effective reading comprehension is supported when students become more strategic and conscious readers. Planning, organizing, monitoring and evaluating are useful in enabling the learners to be more active in constructing meaning from texts. At the same time, teacher guidance remains essential in helping students approach reading tasks in a more structured and purposeful way, while online reading engagement reflects the growing importance of digital contexts in literacy development.

With this, reading comprehension may be better developed when cognitive regulation, instructional support, and purposeful reading engagement are strengthened together. This supports the view that comprehension is improved not only through students' individual effort, but also through the quality of instruction and the reading experiences available to them in both print and digital forms. These results are consistent with the Metacognitive Theory, which suggests that learners whose cognitive processes are well regulated are in a better position to understand texts. Likewise, these findings are aligned with the Social Cognitive Theory, which explains that learning is shaped by the interaction of individual factors, behaviors and environmental influences.

## **Recommendations**

1. Students are encouraged to strengthen their use of metacognitive reading strategies by regularly practicing planning, organizing, monitoring, and evaluating during reading tasks. They could start by establishing clear reading targets, previewing, reading, examining their comprehension as they read and summarizing reading after reading. Moreover, they are suggested to apply structured online reading habits through reading academic articles, online learning portals and learning websites which help in the development of comprehension.

2. Teachers may enhance reading instruction by explicitly modeling effective reading strategies during classroom activities. This might encompass showing how to preview texts, question querying, locate important ideas and track understanding during reading. They may incorporate systematic reading activities like guided reading, think-aloud strategies, and after-reading activities to ensure that students grow to be more strategic readers. The inclusion of meaningful digital reading activities can also contribute to the students becoming more productive online readers.

3. School administrators may support reading development programs by organizing professional development workshops that focus on evidence-based reading instruction and metacognitive strategy integration. In a similar way, they may implement reading enhancement programs, digital reading centers or school wide reading programs that promote reading among students in print and electronic formats.

4. Department of Education officials may strengthen reading development initiatives by providing policy support and training programs that promote the integration of metacognitive reading strategies in classroom instruction. Also, they can increase the availability of digital learning material and reading material that will assist students to acquire both traditional and digital reading skills. Such programs can be used to assist schools to enhance the literacy and reading comprehension of students.

5. Future researchers may conduct further studies that examine additional factors influencing reading comprehension, such as reading motivation, vocabulary knowledge, reading fluency, and learning environments. Specifically, they may consider the field of intervention-based studies that compare the effectiveness of structured metacognitive

strategies training or digital reading interventions while improving student performance in comprehension.

### **Compliance with Ethical Standards**

The researcher certifies that this study complied with the ethical standards in the conduct of research involving human participants. Informed parental consent and student assent were obtained from all participants, and they were clearly informed that participation in the study was completely voluntary and that they could withdraw from the study at any time without any consequence. The respondents remained anonymous, using code numbers rather than personal identifiers, which ensured the confidentiality of the required data and all the information was processed within the framework of the requirements of the Data Privacy Act of 2012 and the related institutional research ethics guidelines. The well-being of the participants was safeguarded throughout the study, and only minimal risk was involved. The researcher declares that no conflict of interest existed in the conduct of the study. Plagiarism was strictly avoided, and all sources used in the study were properly acknowledged. The analysis and interpretation of the results was entirely objective, and no deliberate bias was applied when presenting the results. The findings were used solely for academic and educational research purposes and were not used to label, rank, or disadvantage any student, teacher, school, or community. For full disclosure, AI-based tools were used only to support language refinement, organization of discussion, clarification of statistical interpretation, and checking of citation consistency. However, all outputs were reviewed, verified, and revised by the researcher, and no reported numerical result or final interpretation was based solely on AI-generated content.

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