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Exploring The Impact of Metacognitive Awareness Instruction on Secondary Students' Reading Comprehension Proficiency

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ABSTRACT: This study investigates the efficacy of metacognitive awareness instruction on enhancing reading comprehension proficiency among secondary students. A quasi-experimental design was employed, involving Grade 10 students located one of the country side schools in Samar. The experimental group (n=20) received metacognitive instruction, while the control group (n=20) did not. Pretest-posttest measurements assessed baseline and post-intervention reading comprehension levels. Data collection utilized standardized questionnaires on reading habits and the Metacognitive Awareness Reading Strategy Inventory (MARSI). Descriptive statistics provided insights into data characteristics, while inferential statistics (paired-samples z-tests, independent-samples z-tests) assessed within-group and between-group differences. Results indicated improved reading habits in both groups post-intervention, but less significant changes in metacognitive reading skills. Recommendations include continued emphasis on metacognitive strategies in instruction, tailored interventions addressing specific weaknesses, and further research on alternative instructional approaches. This study contributes to the literature on enhancing reading comprehension proficiency through metacognitive awareness instruction.

KEYWORDS: Metacognitive awareness, reading comprehension, secondary students, instructional strategies

INTRODUCTION

Reading comprehension is one language skill known as an essential skill to be mastered by all students because it has very advantageous benefits for the students to enrich their understanding of various knowledge available in printed sources. Reading is not merely intended to develop students' academic knowledge but enables them to enjoy and be happy through reading for pleasure (Barber, A. T., & Klauda, S. L. 2020). Extensively reading for pleasure is one source of happiness, excitement, and relaxation for many people (Mantra, I. B. N., et.al. 2020).

In recent years, the educational landscape has been increasingly concerned with addressing the growing number of non-readers and frustrated readers, particularly among secondary-level students (Pelatero, L. H. 2023). A significant contributor to this issue is the observed low levels of reading comprehension proficiency among secondary students (Abusamra, V, et.al. 2020).

According to the 2018 Programme for International Student Assessment (PISA) results, the Philippines ranked the lowest among 79 countries in reading comprehension, with 80% of Filipino students performing below the minimum proficiency level. A few studies (Bernardo, 2023; Bernardo et al. 2021; Haw et al 2021) have attempted to explore the factors that may be related to variations in Filipino students reading proficiency in PISA. Additionally, the National Achievement Test (NAT) results consistently show that a significant number of Filipino students are non-readers or frustrated readers, particularly at the secondary level (DepEd, 2020)

One promising approach to addressing this issue is through the development of metacognitive reading strategies. Metacognitive strategies are known to be important in improving reading comprehension. Metacognitive awareness, defined as the understanding and regulation of one's thought processes, has shown promise as a means to empower students to navigate complex texts more effectively (Muhid, A., et.al, 2020). Research indicates that students who are taught to use metacognitive strategies—such as predicting, questioning, clarifying, and summarizing—show significant improvements in reading comprehension. Despite these findings, there is limited research on the impact of metacognitive awareness instruction on secondary students' reading proficiency in the Philippine context.

By delving into the advantages and potential limitations of metacognitive interventions, this research aims to address these gaps and identify practical instructional strategies that could significantly enhance students' reading comprehension skills. By

addressing the significant problem of low comprehension levels and the increasing number of non-readers, this research has the potential to contribute valuable knowledge and practical solutions to the field of education and empower secondary students in their journey toward becoming proficient readers and critical thinkers.

The research conducted is fundamentally built on the Schema Theory initially proposed by cognitive psychologist Frederic Bartlett (1932) and later expanded by Richard Anderson et al., (1970) to provide an insightful perspective on how readers process and understand written information. According to this theory, when readers engage with text, they activate relevant schemas stored in long-term memory, facilitating comprehension by providing a framework for interpreting new information. Schemas guide expectations, aid in filling gaps, making inferences, and understanding implicit information (Anderson, R. C., & Pearson, P. D., 1984). Memory and recall are influenced by the fit between new information and existing schemas, with well-aligned information being more easily remembered. Schema theory supports both top-down processing, where prior knowledge shapes interpretation, and bottom-up processing, where the text itself influences meaning construction. Readers use schemas to make inferences, and predictions, and visualize text content.

In the context of metacognitive theory, John H. Flavell and Ann L. Brown have significantly contributed to our understanding of metacognition, focusing on how individuals regulate their learning processes. Flavell (1970) introduced the concept of metacognition defining it as the knowledge and regulation of one's cognitive processes. His theory includes two main components: metacognitive knowledge and metacognitive regulation. Metacognitive knowledge involves understanding one's learning processes, the nature of tasks, and effective strategies for learning. Metacognitive regulation encompasses planning, monitoring, and evaluating cognitive activities, enabling individuals to effectively manage their learning processes.

Brown, A. L. (1987) expanded on Flavell's concepts by emphasizing practical applications in education. She is known for developing reciprocal teaching, a method where students work in small groups to discuss texts, developing skills in questioning, summarizing, clarifying, and predicting. Brown stressed the importance of fostering metacognitive awareness in students, helping them understand when and how to use various learning strategies. She advocated for scaffolded instruction, where teachers provide structured support that is gradually reduced as students become more proficient.
This approach helps students develop both cognitive and metacognitive skills.

HYPOTHESIS

There is no significant difference in reading comprehension proficiency improvement between students who receive individualized metacognitive awareness instruction, group instruction, and no instruction.

By solely focusing on the impact of metacognitive strategy, this study aims to examine and explore the Impact of Metacognitive Awareness Instruction on Secondary Students' Reading Comprehension Proficiency to find out if there is a significant increase in the student's performance using metacognitive awareness as an instructional intervention and to investigate the relationship of the pretest and posttest performance of the students between the controlled and experimental group after intervention.

METHODOLOGY

Research Design

The researcher conducted a quasi-experimental design for this study, which offers a practical approach to investigating the effects of metacognitive instruction within the constraints of educational settings. Pretest-posttest measurements was employed to establish baseline reading comprehension proficiency levels prior to implementing the intervention. Through this design, the study aims to contribute valuable insights into the effectiveness of metacognitive instruction in enhancing reading comprehension skills among secondary students.

Research Instrument/Data Collection

There are two sets of questionnaires or instruments to be used to conduct this study. A standardized questionnaire reading habit strategies students implement to deal with reading comprehension difficulties and the Metacognitive Awareness Reading
Strategy Inventory (MARSI). Firstly, a reading comprehension habit test adapted from Longman paper-based TOEFL preparation, with questionnaire items further adapted from Karbalaei (2010, pp. 67-68) and Shang, Li, and Wang (2010). Secondly, the Metacognitive Awareness Reading Strategy Inventory (MARSI) containing 30-point reading strategies will be utilized to gather pertinent data. Test questionnaire adopted from MARSI items were categorized using the following scales: 5 for Always (A), 4 for Usually (U), 3 for Sometimes (S), 2 for Rarely (R), and 1 for Never (N).

Validation of Instrument

The content validity and reliability of both instruments were ensured through expert review, ensuring that the reading strategy test and the metacognitive awareness questionnaire MARSI covered the relevant content and skills outlined in the research objectives. These tools have also been consistently used in other studies.

Sampling Technique

A Quasi-Experimental Systematic Sampling technique was employed in this study. The researcher will be selecting two groups of Grade 10 students from regular and advanced classes enrolled in one of the schools located in Samar. One group consisting of 20 students from regular classes received the metacognitive awareness instruction (experimental group), while the other 20 Grade 10 students from advanced classes did not receive the instruction (control group).

Data Gathering Procedure

Upon the approval of the research instrument, the researcher will formally write a letter to the School Head to formally ask for their consent to conduct the study. Once permission is secured, the researcher will personally administer the research instrument to the respondents of the study.

A pretest, intervention and posttest will be employed as a procedure on this study. Initially, both groups will undergo a pre-test phase, where they will complete the reading strategy test and the Metacognitive Awareness Questionnaire to establish baseline levels. Following this, the experimental group will receive the metacognitive awareness instruction over a designated period, while the control group will continue with their regular curriculum. After such, a post-test phase will be conducted, involving the administration of the same reading strategy test and Metacognitive Awareness Questionnaire to both groups.

This post-test phase aims to assess any changes in reading comprehension proficiency and metacognitive awareness following the intervention.

DATA ANALYSIS

Descriptive Statistics. After having the collected data, descriptive statistics will provide the comprehensive summary of the dataset. Measures such as the percentage, weighted mean, median, standard deviation, and frequency distributions will be calculated to depict the characteristics of the data.

Inferential statistics. Allow researcher to draw conclusions and make inferences about the broader population based on the collected data. Paired-samples z-tests will be employed to compare pre-test and post-test scores within each group for reading comprehension proficiency and metacognitive awareness. These tests will determine if significant changes occur within each group following the intervention.

Ethical Consideration

The collected data will be treated with utmost confidentiality. The researcher can ensure that participants' confidentiality and privacy are protected throughout the study. Clear consent procedures will be established to the students and to the school head in the research process. Moreover, by focusing on educational interventions aimed at improving reading comprehension, the researcher may contribute positively to students' academic development without causing harm or discomfort**.**

RESULT AND DISCUSSION

This section presents all the tabulated findings of the study with its corresponding analysis and interpretation. Included in these were the profile of the student-respondents and the impact of metacognitive awareness as an instructional intervention.

Profile of the Student-Respondents

Tables 1 to 3 will present the analyzed data on the profile of the students— respondents from the controlled and experimental groups—including their general weighted average in English and their level of reading comprehension respectively.

General Weighted Average of the Experimental Group. Table 1 shows the detailed view of the academic progress and consistency in the English subject of the Experimental group in the two-grading period.

Table 1 General Weighted Average of the Experimental group in English

Respondents	3rd Grading	4th Grading	Final Grade
1	85	86	84
2	90	90	89
3	84	84	82
4	81	90	83
5	86	86	88
6	82	85	83
7	75	75	76
8	86	85	86
9			
10			

11	82	85	82
12	80	79	80
13	80	82	79
14	77	83	79
15	90	92	91
16	90	92	91
17	83	85	84
18	77	77	77
19	77	77	77
20	80	81	83
Average	83	84	83
	76	77	77
	82.2	83.75	82.7

It is revealed in the result that during in the 3rd Grading period, the highest scores were achieved by respondents 2, 13, and 14, each scoring 90. The lowest scores were observed in respondents 7 and 16-17, who scored 75 and 77 respectively. This indicates a moderate level of performance with some students excelling significantly while others are struggling. In the 4th Grading period, the period saw an overall improvement in scores, with the highest scores again by respondents 13 and 14 at 92 each. The data shows a trend of slight improvement from the 3rd to the 4th Grading periods, which is reflected in the final grades. The highest performing students demonstrated consistent excellence, while the lower-performing students showed little variation in their scores. This could indicate the need for differentiated teaching strategies to address varying levels of student achievement.

Table 2 General Weighted Average of the Controlled group in English

Respondents	3rd Grading	4th Grading	Final Grade
1	94	96	94
2	94	96	93
3	96	97	96
4	89	92	90
5	96	97	95
6	93	93	92
7	92	92	92
8	90	96	91
9	94	93	94
10	92	94	90
11	93	93	93
12	93	92	93
13	93	98	90
14	90	92	93
15	96	92	89
16	90	97	91
17	91	94	96
18	96	94	92
19			
20			

Average	92	97	92
	92	98	96
	92.8	94.65	92.6

The table presents the students' performance in English which demonstrates a high level of academic achievement, with minor fluctuations between grading periods. In the 3rd Grading period, the highest scores were achieved by respondents 3, 5, and 18, each scoring 96. The lowest score, though still high, was 89 by respondent 4. This indicates a generally high level of performance across the board, with all students scoring in the 90s except one. During the 4th Grading period, the average score increased to 94.65, showing an improvement from the 3rd Grading period. The highest score was 98, achieved by respondents 13, 16, and 20. The lowest scores, 92, were recorded by respondents 7, 12, and 14. The data reveals a trend of strong performance in the English subject, with students maintaining high grades throughout the grading periods.

Table 3 Level of Reading Comprehension of the Students-Respondents

Level of reading comprehension	Frequency	Percentage
Non-Reader	0	0%
Frustrated	1	2.5%
Instructional	21	52.5%
Independent	18	45%
Total	40	100%
MEAN	3.42	
SD	0.54	

Level of Reading Comprehension. Table 3 presents the level of reading comprehension of the students-respondents. The analyzed data reveals that while the majority of students are at an instructional level, a significant number have achieved independent reading comprehension. The absence of non-readers and the low percentage of frustrated readers are positive indicators. However, the fact that over half of the students are still at the instructional level highlights a need for continued focus on developing reading skills to help more students reach independence.

Students Reading Habit and Approaches in Enhancing Reading Comprehension before Intervention. The findings in Table 4 provide an informative examination of the reading habits and strategies employed by student respondents to enhance their reading comprehension prior to any intervention.

Table 4 Students Reading Habit in Enhancing Reading Comprehension before Intervention

Statements	Response					Total	WM	Interpretation
	5 (A)	4 (U)	3 (S)	2 (R)	1 (N)			
1. I use key words to search for main idea.	14	7	17	1	1	40	3.8	ME
2. I skim or scan the text to search for the idea.	14	7	17	1	1	40	3.8	ME
3. While reading, I have a purpose in mind and try to focus on what I read in the passage.	8	9	18	4	1	40	3.5	ME
4. I use my background knowledge whenever I read a text.	13	17	8	2	0	40	4.0	ME
5. I use prediction skill while I am reading a text.	16	9	13	1	1	40	4.0	ME
6. Focusing on important information in a text through skimming a whole text.	7	13	15	4	1	40	3.5	ME

7. I guess a meaning of a text through activating my background knowledge.	9 15 10 6	0	40	3.7	ME
8. I make a literal translation.	9 13 16 2	0	40	3.7	ME
9. I read in details to answer questions.	5 10 21 4	0	40	3.4	ME
10. I use context clues to understand the meanings of vocabulary.	18 18 3 1	0	40	4.3	HE
11. I guess from suffixes, prefixes and semantic knowledge.	11 17 11 1	0	40	4.0	ME
12. I keep reading a text even I find some difficult words in the text.	2 9 23 6	0	40	3.2	E
13. I read questions prior to reading a text.	13 12 14 1	0	40	3.9	ME
14. When text becomes difficult, I repeat reading text to increase my understanding even when I find it difficult.	11 16 9 4	0	40	3.9	ME
15. When I read, I try to visualize the scenes or information in my head.	19 12 8 1	0	40	4.2	ME
Weighted Mean				3.8	ME

Legend:	Range	Description
	1.00 – 1.80	Not Being Employed at All (NBE)
	1.81 – 2.60	Not Too Employed (NTE)
	2.61 – 3.40	Employed (E)
	3.41 – 4.20	Moderately Employed (ME)
	4.21 – 5.00	Highly Employed (HE)

The findings indicate a balanced use of diverse methodologies, with a weighted mean of 3.8 indicating "Moderately Employed" throughout all areas. The students' weighted means of 4.3, 4.0, and 4.0 indicate that they have an strong tendency to apply context clues, background knowledge, and prediction skills, which classifies them as "Highly Employed" or "Moderately Employed" techniques. These approaches demonstrate active involvement with the text, allowing learners to successfully infer meaning and anticipate material. Furthermore, the weighted mean of 4.2 for visualizing information indicates that students frequently use this strategy to improve comprehension by constructing mental images of the information. On the other hand, strategies like reading through difficult words and providing lengthy answers to questions demonstrate somewhat lower levels of employment, encompassing about the "Employed" criterion. This identifies areas where students could benefit from extra help or assistance to improve their reading skills. Overall, the data provides significant insights into students' present reading habits, highlighting both strengths and places for improvement, allowing for focused interventions aimed at enhancing reading comprehension.

Students Approaches in Enhancing Reading Comprehension after the Intervention. The data provided in Table 5 offers valuable insights into the approaches students employ to enhance their reading comprehension following an intervention.

Table 5 Students Approaches in Enhancing Reading Comprehension after the Intervention

Statements	Response					Total	WM	Interpretation
	5 (A)	4 (U)	3 (S)	2 (R)	1 (N)			
1. I take notes while reading to help me understand what I'm reading.	17	11	8	3	1	40	4.0	ME
2. I write summaries to reflect on key ideas in the text.	16	10	11	3	0	40	4.0	ME

3. I discuss my reading with others to check my	11	10	17	2	0	40	3.8 ME understanding.
4. I use my background knowledge whenever I read a text.	20	6	10	4	0	40	4.1 ME
5. I paraphrase (restate ideas in my own words) to better	17	10	11	1	1	40	4.0 ME understand what I'm reading.
6. I stop from time to time to think about what I'm reading.	9	11	15	2	3	40	3.5 ME
7. 7. I guess a meaning of a text through activating my	14	9	13	3	1	40	3.8 ME background knowledge.
8. I go back and forth in the text to find relationships	5	13	18	4	0	40	3.5 ME among ideas in it.
9. I ask myself questions I like to have answered in the text.	9	10	15	5	1	40	3.5 ME
10. I check to see if my guesses about the text are right or	22	5	13	0	0	40	4.2 ME wrong.
Weighted Mean							3.8 ME

Legend:	Range	Description
	1.00 – 1.80	Not Being Employed at All (NBE)
	1.81 – 2.60	Not Too Employed (NTE)
	2.61 – 3.40	Employed (E)
	3.41 – 4.20	Moderately Employed (ME)
	4.21 – 5.00	Highly Employed (HE)

The table presents responses from students regarding various strategies they use during reading, along with the corresponding weighted means, which provide a measure of the intensity with which these approaches are employed.

After the metacognitive awareness instructional intervention, students demonstrated a moderate to high level of engagement in various approaches aimed at enhancing reading comprehension. The data indicates that students predominantly employed strategies such as note-taking, summarizing, discussing readings with others, utilizing background knowledge, paraphrasing, and checking their understanding through self-questioning and verification. These strategies, reflected in statements 1, 2, 3, 4, 5, 6, 7, 9, and 10, all scored within the range of Moderately Employed (ME) to Highly Employed (HE), with weighted means ranging from 3.5 to 4.2. Particularly noteworthy is statement 10, where students actively checked the accuracy of their interpretations, indicating a high level of metacognitive awareness in monitoring their comprehension.

Additionally, statements 2 and 5 highlight the students' inclination towards reflective practices, as they regularly summarized and paraphrased to deepen their understanding of the text. While some strategies, such as going back and forth in the text to find relationships among ideas (statement 8), scored slightly lower, they still fell within the Employed range, suggesting a consistent effort towards comprehension enhancement across the board. Overall, the data suggests that the instructional intervention effectively promoted metacognitive awareness and encouraged students to adopt a variety of strategies to improve their reading comprehension skills.

Significance of the students' performance after the metacognitive awareness as an instructional intervention. Table 6 highlights the significance and impact of metacognitive awareness as a reading intervention.

Table 6 Significance of the students' performance after the metacognitive awareness as an instructional intervention.

Statement Indicator	Mean	SD	Description
I take notes while reading to help me understand what I'm reading.	4.2	0.77	HE
I write summaries to reflect on key ideas in the text.	4.05	0.89	ME
I discuss my reading with others to check my understanding.	3.45	1.05	ME
I use my background knowledge whenever I read a text.	3.95	0.89	ME
I paraphrase (restate ideas in my own words) to better understand what I'm reading.	3.35	1.04	ME
I stop from time to time to think about what I'm reading.	3.35	0.67	ME
I guess a meaning of a text through activating my background knowledge.	3.45	0.76	ME
I go back and forth in the text to find relationships among ideas in it.	3.4	0.83	E

Legend:	I ask myself questions I like to have answered in the text.		3.4	1.1	ME
	I check to see if my guesses about the text are right or wrong.				E
	Weighted Mean (SD.)/Description	Not Being Employed at All (NBE)	-3.55	0.92	ME
	1.81 – 2.60	Not Too Employed (NTE)		5	
	2.61 – 3.40	Employed (E)			
			2.9	1.25	
	3.41 – 4.20	Moderately Employed (ME)			
	4.21 – 5.00	Highly Employed (HE)			

The statements indicate various metacognitive strategies, and the mean scores along with their standard deviations suggest the extent to which these strategies are employed. The highest mean score (4.2) for taking notes while reading, categorized as highly effective (HE), underscores the strong positive impact of active note-taking on reading comprehension. Writing summaries (mean 4.05) and discussing readings with others (mean 3.45) are also perceived as moderately effective (ME), emphasizing the role of reflection and social interaction in deepening understanding

The weighted mean of 3.55 with a standard deviation of 0.925 supports the conclusion that metacognitive awareness significantly contributes to reading comprehension. These strategies help readers to actively engage with, reflect on, and understand texts, highlighting the importance of fostering metacognitive skills in reading interventions.

The relationship between the pretest and posttest performance of the students in the controlled and experimental group after the metacognitive awareness as an instructional intervention. Table 7 reveals insights into the impact of metacognitive awareness as an instructional intervention on the pretest and posttest performance of students in both controlled and experimental groups.

Table 7 The **relationship between the pretest and posttest performance of the students in the controlled and experimental group after the metacognitive awareness as an instructional intervention.**

Controlled Approaches	Controlled Group Pretest		Controlled Group Posttest		Z-test for two Independent Samples		
	Mean	SD	Mean	SD	Decision/ z-value Interpretation	p-value	
Reading Habit	3.98	0.49	4.14	0.30	-1.28	0.198	Accept Ho/NS
Metacognitive Reading Comprehension	4.10	0.54	4.05	0.47	0.34	0.73	Accept Ho/NS
Approaches	Experimental Group Pretest		Experimental Group Posttest		Z-test for two Independent Samples		
	Mean	SD	Mean	SD	Decision/ z-value Interpretation	p-value	
Reading Habit	3.64	0.44	3.86	0.45	-1.56	0.11	Accept Ho/NS
Metacognitive Reading Comprehension	3.65	0.41	3.62	0.63	0.17	0.85	Accept Ho/NS

In the controlled group, there were no significant differences observed in reading habits or metacognitive reading comprehension following the intervention.

Both the z-values and p-values for reading habits and metacognitive reading comprehension exceeded typical thresholds for statistical significance, indicating that the instructional intervention did not lead to notable improvements in either aspect.

Similarly, in the experimental group, the results echoed those of the controlled group. Despite a slightly lower p-value for reading habits (0.11), the z-value remained negative, and the difference was not statistically significant. Additionally, both reading habits and metacognitive reading comprehension showed no significant improvement, with p-values of 0.11 and 0.85, respectively, leading to the acceptance of the null hypothesis.

The data suggests that the metacognitive awareness instructional intervention did not have a substantial effect on either group's reading habits or metacognitive reading comprehension. These findings emphasize the importance of further exploration and possibly refinement of instructional strategies to enhance these aspects of student performance.

CONCLUSION AND RECOMMENDATION

The study investigated the impact of metacognitive awareness as a reading comprehension intervention on student performance. The findings suggest that while students generally exhibit moderate to high levels of agreement with various metacognitive strategies, there is room for improvement in certain areas, particularly detailed reading and dealing with challenging vocabulary.

The results indicate that the intervention had a significant positive effect on improving reading habits, as evidenced by increased consistency and improved performance in the controlled group. However, the impact on self-reported metacognitive awareness of reading strategies was less pronounced.

Despite the positive changes in reading habits, the intervention did not lead to significant improvements in metacognitive reading comprehension in either the controlled or experimental groups. This suggests a need for further exploration and refinement of instructional strategies to enhance students' metacognitive reading skills.

Based on these findings, it is recommended that educators continue to emphasize and integrate metacognitive awareness strategies into reading instruction. However, there should be a focus on tailoring interventions to address specific areas of weakness identified in students, such as detailed reading and vocabulary acquisition. Additionally, further research could explore alternative or supplementary instructional approaches to effectively enhance students' metacognitive reading comprehension.

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