

# Improving Reading Comprehension Ability Through Optimizing Metacognition (Metcomprehension) and Inferential Ability Using Bigbook Digital

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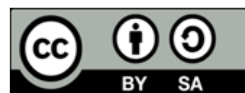
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## ABSTRAK

Kurangnya pemahaman guru mengenai cara meningkatkan kemampuan membaca siswa dan kurangnya perhatian terhadap pengukuran hasil bacaan siswa, sehingga siswa tidak memiliki kesadaran terhadap hasil bacaannya sendiri. Tujuan penelitian ini yaitu untuk menganalisis korelasi antara kemampuan membaca pemahaman, komponen metakognitif, dan kemampuan inferensial dengan menggunakan buku bigbook digital. Metode penelitian ini menggunakan desain analisis faktorial karena bertujuan untuk melihat peran variabel metakognitif dan kemampuan inferensial terhadap kemampuan membaca pemahaman. Penelitian ini melibatkan 200 siswa sekolah dasar dari 4 sekolah. Sampel diambil secara acak. Metode pengumpulan data yang digunakan adalah tes, sedangkan instrumen pengumpulan data keterampilan metakomprehensi siswa diukur menggunakan skala kesadaran membaca ESCOLA yang umum digunakan pada siswa usia 10-15 tahun. Skala pengukuran kesadaran membaca terdiri dari 55 soal pilihan ganda untuk menilai 3 dimensi metakomprehensi yaitu perencanaan, pemantauan, dan evaluasi. Analisis data yang digunakan dalam penelitian ini adalah analisis Bonferroni. Peneliti memilih data yang diperoleh dari skala kesadaran membaca, tes pemahaman membaca, dan perolehannya sebelum dilakukan analisis. Hasil penelitian menunjukkan bahwa kemampuan membaca pemahaman individu dapat memprediksi tingkat akurasi metakomprehensi. Implikasi dari penelitian ini adalah guru dapat mempertimbangkan aspek-aspek tersebut sekaligus mengoptimalkan peran variabel-variabel tersebut untuk meningkatkan keterampilan pemahaman membaca siswa.

## ABSTRACT

Teachers' understanding of how to improve students' reading skills and the lack of attention to measuring students' reading results, which causes students to need more information on their reading results. This study analysed the correlation between reading comprehension ability, metacognitive components, and inferential ability using digital big books. This research method uses a factorial analysis design to see the role of metacognitive variables and inferential ability on reading comprehension. This study involved 200 elementary school students from 4 schools. The sample was taken randomly. The data collection method used was a test. In contrast, the data collection instrument for students' metacomprehension skills was measured using the ESCOLA reading awareness scale, commonly used in students aged 10-15. The reading awareness measurement scale consists of 55 multiple-choice questions to assess three dimensions of metacomprehension, namely planning, monitoring, and evaluation. The data analysis used in this study was the Bonferroni analysis. The researcher selects the data obtained from the reading awareness scale, reading comprehension test, and its acquisition before analysis. The results showed that individual reading comprehension ability can predict metacomprehension accuracy. This study implies that teachers can consider these aspects while optimizing the role of these variables to improve students' reading comprehension skills.

## 1. INTRODUCTION

A phenomenon that illustrates that the level of metacomprehension of students in Indonesia is still low is that there are still many students who study hard but have not been able to achieve their targets, for

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example passing exams satisfactorily or passing college entrance exams (Alasim, 2020; Ardasheva et al., 2019). This phenomenon occurs because the teacher has not conveyed how to read and at the same time measured the students' reading results, so that students have awareness of their own reading results. This has been investigated by several previous studies. The main goal of learning to read is to achieve a good level of metacomprehension and develop methods or interventions to improve students' reading abilities. There have been several previous studies that examined various methods to improve reading ability. However, in this study, researchers focused on two aspects of readers' metacomprehension (Al-Khreshah & Alruwaili, 2023; Lee et al., 2020). An efficient reader is aware of what they already know and what they don't when reading new information. It is then that readers understand specific actions that can optimize the efficiency of their understanding of new information (Hadianto et al., 2021; Mohseni et al., 2020). Awareness of this process is called metacognitive, which is the most important aspect in supporting the success of the learning process. The teacher's ability to monitor the learning process is an important point of metacognition so that the teacher can find out the level of students' understanding of the material being studied whether it meets the criteria or not (Alasim, 2020; Dellisse et al., 2021). When individuals know their shortcomings, they will be better able to regulate their own actions to optimize their understanding.

A skilled reader knows when the reader has gained sufficient knowledge from the text. If the reader understands that their level of understanding of a text is inadequate, the reader will be involved in the next process, namely the monitoring stage and the control stage. This stage is the most important stage in reading metacomprehension. Metacognitive strategies can be said to be effective if readers have a proper understanding of their level of understanding of a text. When readers reach this level they have reached a high level of metacomprehension (Jozwik et al., 2019; O'Reilly et al., 2018). However, when readers do not yet have a poor level of metacomprehension, readers will not be able to organize their efforts appropriately. For example, a student who has poor metacomprehension abilities, when facing an exam they may spend a lot of time studying, but they are unable to measure their level of understanding or mastery of the topic or material studied, so they are not confident in their abilities. This can also happen to students who are too confident when studying, so that during exams they get bad results because they are unable to measure the adequacy of their learning. Metacognition consists of two fundamental aspects, namely monitoring and control. Other research strengthens the concept of metacognition as inclusive of two dimensions, namely cognitive knowledge and cognitive regulation (Parks et al., 2022; Slattery & Yates, 2018). There is several knowledge involved in the metacognition process, including declarative knowledge which is used as an introduction to learning strategies, procedural knowledge as necessary steps, and conditional knowledge.

Cognitive regulation is the process of monitoring and controlling learning. Cognitive regulation includes planning processes, information management, debugging strategies, evaluation, and monitoring students' level of understanding (Hao & Conway, 2022; Kim et al., 2023). In this study, researchers focused on the regulatory sub-process of monitoring understanding (metacognitive). Monitoring this understanding involves the skills of monitoring learning tasks and controlling learning activities to achieve goals accurately and efficiently. Monitoring and regulating learning activities becomes a reciprocal process in the learning context. In this study, cognitive monitoring accuracy is defined as the level of desire to know (Hadianto et al., 2022; Mohseni et al., 2020). Students can be assessed through assignments, tests or exams as a prospective assessment to predict student performance in the future. Global or holistic measurements are an alternative that can be used to interpret students' metacognitive monitoring abilities. The conformity of an individual's assessment of his own performance with the student's original abilities is known as monitoring accuracy or comprehension accuracy, while the discrepancy between self-assessment and student performance is called metacomprehension bias. What causes metacomprehension bias is overconfidence or lack of confidence (Bernardo & Mante-Estacio, 2023; Hao & Conway, 2022). The accuracy of this metacomprehension which is used to measure cognitive monitoring is assessed using absolute and relative assessments to obtain detailed assessment results. So, researcher can conclude that to measure the level of reading ability, comprehension must include text components as well as the relationships between these components. When comprehension assessments focus on specific material, the relationship between prediction and performance decreases. Metacomprehension can also be influenced by the length of the text. Long texts will make it difficult for readers to make accurate predictions regarding their understanding and cause a low level of metacomprehension accuracy. These studies used a relative accuracy index, whereas in this study measurements were carried out using absolute accuracy.

Cognitive monitoring is widely used in several domains. However, in this study, researcher focused on reading ability. Reading comprehension skills are adequate mental representation skills produced through text and used to understand reading (Mohammadi et al., 2020; Mohseni et al., 2020). Reading comprehension involves various cognitive aspects, including understanding words, relationships between sentences and paragraphs, as well as the ability to understand the meaning of the text as a whole. When students process text, they enter two levels, namely basic (text-based) understanding and inferential understanding. The success of this stage depends on the ability to connect ideas in the text. Through this

process, students elaborate on previous knowledge to understand new meanings in the text (Bezerra et al., 2022; Scagnelli et al., 2021). Metacomprehension in reading involves metacognitive processes to optimize the level of understanding of the text. Readers evaluate their level of understanding and adjust it to the level of coherence of mental representations produced through the reading process. Although, several previous studies provide evidence of the benefits of metacognitive knowledge, its relationship with reading comprehension skills is still unclear (Dennis & Somerville, 2023; Elsner & Großschedl, 2023; Noushad et al., 2024). Previous research, including research on the role of verbal instructions to see the relationship between metacognition and reading strategies, is still unclear and has no impact. Additionally, other studies have found that interventions used to improve metacomprehension do not have a significant impact on reading comprehension abilities. Therefore, through this study, researcher studied the absolute accuracy of metacomprehension, self-reported reading strategies, and reading performance outcomes. Other studies have found that the relationship between reading comprehension tests and reading awareness tests is weak (Hao & Conway, 2022; Kim et al., 2023). These studies still do not clearly describe the role of metacomprehension in reading comprehension.

Based on the preliminary explanation and theory above, the difference between this research and previous research is the researcher focuses on studying the role and relationship of metacognitive knowledge with the reader's level of understanding at various levels, namely the linguistic, text and situation levels. By focusing on the research object, the researcher formulated this research in two studies, namely the role of metacognition (planning, monitoring and evaluating) on reading comprehension skills at the text-based and inferential levels. The second study looked at the role of reading comprehension performance on the absolute level of accuracy. metacomprehension. Based on this background explanation, the researcher formulated several objectives for this research, including a) investigating the role of metacognition (planning, monitoring and evaluation) carried out by students on the level of student understanding at the textual and inferential levels using digital bigbooks, b) identifying differences in the role of metacognition in level of comprehension at textual and inferential levels using digital bigbooks, c) investigate the role of reading comprehension in predicting absolute metacomprehension accuracy, d) and identify the relationship between absolute metacomprehension accuracy and reading comprehension performance based on inferential and textual question types. This study implies that teachers can consider these aspects while optimizing the role of these variables to improve students' reading comprehension skills.

## 2. METHOD

This research method uses a factorial analysis design because it aims to see the role of metacognitive variables and inferential abilities on reading comprehension abilities. The variables studied include the role of metacognition (planning, monitoring and evaluation) carried out by students on the level of students' understanding at the textual and inferential levels using digital bigbooks, b) differences in the role of metacognition on students' levels of understanding at textual and inferential levels using digital bigbooks, b ) differences in the role of metacognition on the level of understanding at the textual and inferential levels at the inferential level using digital bigbooks, c) the role of reading comprehension in predicting absolute metacomprehension accuracy, d) and the relationship between absolute metacomprehension accuracy and reading comprehension performance based on the types of inferential and textual questions by using a digital bigbook. This research involved a sample of 200 elementary school students with 100 female students and 100 male students taken from 4 schools in the Bandung City area, Indonesia. The students' ages were in the range of 10-15 years ( $M=12.05$ ,  $SD=1.35$ ). The schools involved in this research were public and private schools. The students selected in the sample are students who have relatively similar or close national exam scores. The data collection method used in this study was a test, while the instrument used was a multiple choice test sheet.

Students' metacomprehension skills were measured using the ESCOLA reading awareness scale which is commonly used on students aged 10-15 years. The reading awareness measurement scale consists of 55 multiple choice questions with 3 answer choices to assess 3 dimensions of metacomprehension, namely planning, monitoring, and evaluating. This measurement scale was adopted to measure students' metacognitive competence by giving students the opportunity to assess themselves. Questions on the planning dimension are used to determine the choice of reading strategy, the monitoring dimension to determine the ability to adjust attention and effort while reading, and the evaluation dimension to determine whether the student's level of understanding meets the criteria or not. The reading awareness measurement dimension is related to the concept of regulation when reading, while the evaluation dimension is related to self-assessment regarding reading comprehension. Reading awareness measurements have been tested for reliability and validity. The reliability test was empirically conducted on students, while the validity test was carried out through expert judgment carried out by 6 doctor-

qualified reading experts. From the test results, it was obtained that Cronbach's internal consistency reliability coefficient met the criteria for use with a value of ( $\alpha = .70$ , Planning; .73, Monitoring; .75, Evaluation: 76). The reading awareness measures for each dimension are presented in [Table 1](#).

**Table 1. Measurement of Reading Awareness for Each Dimension**

Dimention	Question
Planning	What do you do before reading?
	a) I don't plan anything before reading. [0 points]
	b) I consider the important points of the text before reading. [2 points]
Monitoring	c) I choose a comfortable place and position to read. [1 point]
	What do you do while reading a book when you encounter a difficult passage?
	a) I pause and think about the passage to understand it [2 points]
Evaluation	b) I stopped reading because there were parts I didn't understand. [0 points]
	c) I keep reading and delay understanding the passage at the end. [1 point]
	Is evaluation important in carrying out reading activities:
	a) I think it is useful to assess the extent of my understanding. [2 points]
	b) I think evaluating understanding is good but it should be done by the teacher [1 point]
	c) I think that evaluating does not improve my understanding. [0 points]

The level of understanding of students' reading results was evaluated using texts about social phenomena in this research. Discourse is created by collaborating with discourse experts and validated by expert judgment. Questions to measure understanding use the construction-integration model. This model is used to classify questions. The questions consist of 20 questions with a composition of 10 basic text-based questions and 10 inferential questions. For text-based (textual) questions, the answers are contained in the text explicitly. However, inferential questions, the answers require the ability to draw appropriate conclusions because they are not stated explicitly. Researcher use a rubric to assess correct answers. Score range starts from 0-2. 0 for a wrong answer, 1 for a correct but incomplete or weak answer, 2 for a correct and complete answer. Average text length is 450 words. The total score range obtained is 0-40. Each student gets a score according to their reading performance, namely being able to answer textual and inferential questions. Students who are mentally coherent during or after reading will be better able to solve inferential questions. However, students who are only able to answer textual questions have a limited level of understanding. The Cornbach's reliability coefficient value meets the criteria with values: textual questions: 0.75; inferential questions: 0.84. The validity and reliability of the instrument uses empirical tests and expert judgment. Based on the results of validity and reliability tests, the instruments used met the criteria for use in research.

Research was carried out with permission from the relevant institutions. After obtaining permission, data collection began by first completing a reading awareness test which lasted 50 minutes. After that, students receive an expository text about social phenomena. Students get 50 minutes to read. After the reading process is complete, a reading comprehension test is carried out. The results of this test are then processed and presented in the form of descriptive statistics in the results. The data analysis used in this research is Bonferroni analysis. The researcher selected deviant data obtained from the reading awareness scale, reading comprehension test, and evaluated them before the analysis was carried out. This deviation analysis found 14 deviations (6 in the planning stage, 8 in the evaluation stage of the reading awareness scale). This deviation is identified through casewise diagnostics in regression by determining standard residuals outside the three standard deviation components. From the number of samples assessed, researcher eliminated deviant data and then carried out data analysis on 186 other results. The data is then tested for normality, homogeneity and linearity. Descriptive statistics are presented using the reading awareness scale and reading comprehension performance which are presented in [Table 2](#) in the results section. To answer the first problem formulation, the researcher calculated the zero order Pearson correlation coefficient and the results are presented in [Table 3](#). To answer the second problem formulation, a series of simultaneous tests or standard least squares regression was carried out. Comprehension performance was recorded on each component of metacomprehension in proportion to variance.

### 3. RESULT AND DISCUSSION

#### Result

To answer the first problem formulation, descriptive statistics are presented on students' reading comprehension results using the reading awareness scale. The research findings show that the order of the

average metacognition dimension values from highest to lowest is the planning dimension, followed by the monitoring dimension, and finally the evaluation dimension. This indicates that almost every student plans when reading. The role of metacognition (planning, monitoring and evaluating) in reading comprehension results is shown in Table 2. The reading results tested with textual (M=8.82) and inferential (M=10.80) questions illustrate that the role of metacognition in reading comprehension is very has a significant impact on improving inferential comprehension reading abilities because through metacognition readers can control their reading abilities before, during and after reading.

**Table 2. Descriptive Statistics of the Reading Awareness Scale and Reading Performance of Textual and Inferential Comprehension**

Variable	M	SD	Minimum	Maximum	Skew	Kurtosis
Reading Awareness						
Planning	39.35	6.80	28.00	50.00	-0.23	-0.43
Monitoring	24.76	5.52	17.00	33.00	-0.39	-0.47
Evaluation	19.62	4.82	15.00	28.00	-0.32	-0.30
Reading Comprehension						
Text Based	8.82	5.24	3.00	14.00	-0.43	-1.15
Inferential	10.80	5.42	0.00	19.00	-0.50	-0.61

Study 1. N = 200

To answer the second problem formulation, the correlation between variables is explained as shown in Table 3. The correlation between variables shows a positive correlation. It is interesting that the metacognitive component of planning correlated more strongly with questions to test inferential understanding than with textual questions. Based on the results of simultaneous regression, it shows that the metacognitive components (planning, monitoring and evaluating) are strong predictors of inferential understanding  $F(3,213) = 8.41, p = 0.001, R^2 = 0.13$ , but not strong predictors of textual questions  $F(3,241) = 2.31, p = 0.07$ . Textual questions are influenced by the monitoring dimension. The monitoring dimension has a significant impact on textual reading comprehension results ( $p = 0.08$ ) as shown in Table 4. Based on the simultaneous regression results, the monitoring and evaluation dimensions are significant predictors of inferential understanding, but the strongest predictor is the evaluation dimension. Questions about students' self-evaluation are effective in predicting students' inferential understanding abilities.

**Table 3. Correlation Matrix Between Question Types and Metacognition Dimensions**

Variables	1	2	3	4	5
1. Text-based	-	0.65**	0.17*	0.18*	0.20*
2. Inferential		-	0.26*	0.12	0.35**
3. Planning			-	0.44**	0.37**
4. Monitoring				-	0.28*
5. Evaluation					-
Skew	-0.41	-0.42	-0.50	-0.78	-0.53
Kurtosis	-1.10	-0.51	-0.06	0.36	0.50

Study 1. N = 200; \*  $p < 0.05$ ; \*\*  $p < 0.01$  (one-tailed)

**Table 4. Regression of Reading Standards for Textual and Inferential Comprehension Based on Cognitive Dimensions**

Predictors	B+ (CI95%)	$\beta$ -	T	p
Text-Based Performance				
Planning	0.05 (-0.10, 0.17)	0.08	0.81	0.51 ns
Monitoring	0.14 (-0.06, 0.32)	0.17	1.53	0.17 ns
Evaluation	0.14 (-0.08, 0.34)	0.13	1.30	0.24 ns
Inferential Performance				
Planning	0.17 (0.04, 0.32)	0.18	3.04	0.051
Monitoring	-0.06 (-0.28, 0.21)	-0.06	-0.42	0.80
Evaluation	0.51 (0.21, 0.73)	0.32	3.61	0.003

To answer the third and fourth problem formulations, the metacomprehension accuracy scores of each text are presented. Descriptive statistics for reading comprehension are presented in Table 5. Based on Table 5, it is found that the type of text greatly influences the type of textual (text-based) questions. The

metacomprehension accuracy scores for each type of question and type of text are presented in Table 6. Pearson's zero order correlation coefficient is presented in Table 7. The relationship between reading results and metacomprehension accuracy shows a negative correlation as stated in Table 7. This shows that the reading comprehension ability is good. both greatly impact the accuracy of metacomprehension. The higher the reading comprehension ability, the lower the calibration error. This is one of the functions of the method used, namely calculating absolute metacomprehension accuracy. The correlation coefficient value in Table 7 explains that metacomprehension accuracy is very closely related to the type of question, both inferential and textual. Text-based (textual) reading performance has a stronger correlation with metacomprehension scores compared to inferential reading performance. Based on standard regression results, inferential questions in social inequality texts are a significant predictor of metacomprehension accuracy with a value of  $F(5,15) = 45.21, p = 0.001, R^2 = 0.56$ . The performance of textual questions on social inequality texts was able to predict metacomprehension accuracy, but it was not very significant with a value of  $(F=5,17) = 27.14, p = 0.001, R^2 = 0.40$ . This pattern is also shown in natural disaster texts. Inferential question performance can better predict students' metacomprehension accuracy. Performance on inferential questions has a value of  $F(5,15) = 33.52, p = 0.001, R^2 = 0.44$ , while performance on textual questions has a value of  $F(5,21) = 30.41, p = 0.001, R^2 = 0.52$ . The results of the standard regression model are listed in Table 8.

**Table 5. Performance Descriptive Statistics Based on Question Type and Text**

Question Type	Natural Disasters				Social Inequality			
	M	SD	Skew	Kurtosis	M	SD	Skew	Kurtosis
Inferential	1.80	1.24	0.72	0.31	1.89	1.34	0.31	0.05
Text-based	2.45	1.56	0.12	-0.89	3.14	1.62	-0.32	-1.06

Study 2. N = 100

**Table 6. Descriptive Statistics of Metacomprehension Accuracy Based on Question Type and Text**

Question Type	Natural Disasters				Social Inequality			
	M	SD	Skew	Kurtosis	M	SD	Skew	Kurtosis
Inferential	2.20	1.17	0.53	0.23	2.24	1.23	0.17	-0.61
Text-based	1.72	1.17	0.42	-0.51	1.62	1.34	0.91	1.04

**Table 7. Correlation Matrix of Reading Comprehension Performance and Metacomprehension Accuracy Based on Text Type and Question**

Variables	1	2	3	4
1. Natural Disasters Performance	-	0.23	-0.75	0.03
2. Social Inequality Performance	0.95	-	-0.10	-0.51
3. Natural Disasters	-0.65	-0.58	-	-0.08
4. Social Inequality	-0.67	-0.81	0.42	-

Based on Table 7, students' reading comprehension abilities depend on whether their level of understanding is deep or not yet optimal. To answer the fourth problem formulation, from Table 7 we can see that the relationship between the results of reading comprehension and metacomprehension accuracy shows a high correlation on inferential level questions  $r_{\text{value}} = 0.51-0.95$ . This pattern does not occur on textual questions. The relationship between reading comprehension results and metacomprehension accuracy on textual questions is lower with a value of  $r = 0.08-0.067$ . Based on the accuracy index, a high value means having a larger calibration error and a negative correlation shows that the higher the comprehension performance, the lower the calibration error. Based on the results One-way MANOVA test on reading comprehension ability of Natural Disasters and Social Inequality texts found that the type of textual or inferential questions had a significant effect on students' reading results with a value of  $F(3,273) = 19.41, p < 0.001, \eta^2 = 0.182$ . The increase in reading ability based on the type of question includes 1) the results of reading comprehension in the text Natural Disasters obtained a value of  $(1,275) = 17.82, p < 0.001, \eta^2 = 0.089$ , while the results of reading comprehension of the text and Social Inequality obtained a value of  $F(1,175) = 33.20, p < 0.001, \eta^2 = 0.172$ . Students' reading comprehension performance on textual questions on both texts (Natural disaster (M = 2.63, SD = 1.40) and social inequality (M = 3.15, SD = 1.62) was superior to students' comprehension performance on the inferential questions (natural disaster, M = 1.80, SD = 1.07; social inequality, M = 1.89, SD = 1.20). To answer the fourth problem formulation, the following is also presented in table 8 of the calculation results of the standard ability regression test reading students' understanding of each type of question and both types of text.

**Table 8.** Standard Regression Results of Textual and Inferential Reading Comprehension Performance on Both Texts

Predictors	B+ (CI95%)	β-	T	p
Textual Absolute Accuracy				
social inequality Performance				
Inferential	0.12 (-0.08, 0.28)	0.10	1.32	0.27 ns
Textual	-0.51 (-0.58, -0.34)	-0.64	-7.89	0.001**
Natural disaster Performance				
Inferential	-0.10 (-0.32, 0.15)	-0.10	-0.95	0.51 ns
Textual	-0.54 (-0.71, -0.44)	-0.68	-7.34	0.001**
Inferential Absolute Accuracy				
social inequality Performance				
Inferential	-0.75 (-0.92, -0.63)	-0.80	-9.63	0.001**
Textual	0.02 (-0.14, 0.16)	0.17	0.23	0.89 ns
Natural disaster Performance				
Inferential	-0.75 (-0.91, -0.54)	-0.72	-7.72	0.001**
Textual	0.06 (-0.14, 0.23)	0.06	0.45	0.81 ns

Study 2. N = 100 ; \*p < 0.05; \*\*p < 0.01; ns=Non-significant; B+ = Unstandardized regression coefficients and their 95% confidence interval (CI95%); β- = Standardized regression coefficients

Based on the results of the metacomprehension test, question type (textual and inferential) has a significant impact on metacomprehension accuracy in all multivariates with a value of  $F(3,251) = 8.72, p < 0.001, \eta^2 = 0.114$ . Based on the results of the univariate test, the type of question also has a significant effect on the Natural Disasters text with a value of  $F(2,271) = 11.89, p = 0.001, \eta^2 = 0.072$  and Social Inequality text  $F(2,271) = 12.14, p = 0.001, \eta^2 = 0.073$ . When compared between the two texts, students' metacomprehension accuracy in the textual type (Natural Disasters,  $M = 1.72, SD = 1.21$ ; Social Inequality,  $M = 1.64, SD = 1.23$ ) is higher than in the inferential type. Based on these findings, it can be concluded that students' metacomprehension accuracy on textual question types is consistently better than their metacomprehension accuracy on inferential question types. This pattern is found in both texts.

### Discussion

The first research findings included the level of knowledge in evaluating students' reading which was assessed by reading awareness and there was a significant relationship with students' ability to answer inferential type questions. These findings show that evaluative understanding of reading which includes (planning, monitoring and evaluating) is an important aspect in supporting students' level of reading comprehension, especially in increasing inferential understanding. This finding relates to the knowledge of reading strategies used by students which greatly influences understanding (Bernardo & Mante-Estacio, 2023; Scagnelli et al., 2021). This reading strategy can be applied at each phase of metacognition (planning, monitoring and evaluation) so that students' level of understanding of the text is optimal. Planning is included as a significant predictor of inferential understanding performance. These findings indicate that students need skills in planning strategies before reading is carried out in order to understand texts more deeply, especially in complex texts and texts that require inferential understanding (Dennis & Somerville, 2023; Noushad et al., 2024). So, it can be concluded that readers who have high reading planning skills can produce quality or deeper understanding and conclusions about texts than students who do not plan reading.

Global absolute metacomprehension accuracy showed different performance relationships across textual and inferential question text types. Metacomprehension accuracy on inferential questions shows a higher relationship than on textual questions (Alasim, 2020; Sutherland et al., 2023). Students who are better at answering inferential questions and have absolute global comprehension accuracy tend to have better cognitive abilities (Johann et al., 2020; Liu & Gu, 2020; Shadiev & Huang, 2020). This indicates that students' reading comprehension ability depends on their ability to process the text. This finding is in accordance with the level of disturbance theory from Dunlosky, (2002). Students gain reading comprehension based on the level of interference they experience. Therefore, students who get many conclusions from reading the text, these students can estimate their level of understanding based on their ability to make these conclusions (Burin et al., 2020; Trudell, 2019). However, readers who were unable to make many conclusions (less skilled reading ability) rated their level of understanding at different levels. Metacomprehension is carried out so that students are aware of their own level of understanding (Miyamoto et al., 2019; O'Reilly et al., 2018). Therefore, adequate inferential abilities are needed for students to be able to predict their own level of reading success. It can be concluded that in the first study,

based on monitoring the global absolute assessment, inferential abilities and students' level of distraction had a significant influence on students' metacomprehension.

The differences in performance on metacomprehension accuracy prove that there is a use of different cues in assessing one's own level of reading comprehension. Based on level of interference theory, readers predict their level of comprehension based on cues from disruption of reading flow, inferential assumptions, accuracy of assumptions, and representation of assumptions (Dellisse et al., 2021; Oakhill, 2020). Apart from that, interference can also occur at the level of text representation. If interference occurs at a certain level, the reader's assessment of metacomprehension accuracy tends to be based on the textual level rather than conclusions that require quality reasoning abilities (Jozwik et al., 2019; Ober et al., 2019). So, readers who have better textual comprehension reading skills tend to understand texts based on the explicit information contained in the text and the relationships between adjacent ideas in the text. However, textual readers also have limitations because explicit information also involves several dimensions, for example detailed explicit ideas that require a high level of understanding (Ardasheva et al., 2019; Sutherland et al., 2023).

Other research that strengthens these findings is that students' internal factors are very strong predictors of students' metacomprehension accuracy (Elsner & Großschedl, 2023; Maguet et al., 2021). Inferential readers understand reading texts using more sophisticated cues such as self-explanation and elaboration. So, it can be concluded that mental representation with good inferential understanding performance involves a coherent text representation so as to produce harmony between performance assessments and actual student performance (better metacomprehension accuracy) (Chen et al., 2021; Inácio et al., 2020; Watter et al., 2022). Metacognitive abilities greatly influence the reading process and the results of students' reading comprehension (Dennis & Somerville, 2023; Jakobson et al., 2022). Metacognition plays an important role in selecting information that is relevant or not with appropriate text representation. Cohesive text is helpful for less skilled readers but an obstacle for skilled readers (Heyne et al., 2023; Ribaldi et al., 2021). This finding is very interesting because it proves that metacognition greatly influences the results of reading comprehension and the specific metacognition students use can be different depending on the ability of the reader, as was the finding in this study. The research results prove that inferential readers have less accurate monitoring of explicit information and this makes them difficult to gain access to inferential representations of text (Hammad Al-Rashidi et al., 2023; Kim et al., 2023). This research has several limitations, including that the sample was taken from elementary and junior high schools, so it needs to be tested on a sample of upper secondary level students, it does not pay attention to gender, the initial reading ability research was not measured, so the progress of students' reading ability is not visible in detail. In addition, the measurement of metacomprehension accuracy is carried out through self-reporting, which may result in students being dishonest and not assessing metacognition as objectively as possible. Despite several shortcomings of this study, researcher believe that this research contributes to teaching reading to be more effective. Based on the limitations of this research, future research should pay attention to the recommended variables, namely paying attention to gender, measurement should not only involve self-reporting, can be complemented by reporting by parents or friends, deeper qualitative analysis.

#### 4. CONCLUSION

Reading evaluation abilities are strongly supported by students' inferential abilities because these abilities are a sign that students have good metacognitive abilities. Students with good metacognitive skills can adapt mental representations of text to their level of understanding. Readers with good metacognitive abilities also show better metacomprehension accuracy at the level of inferential understanding. So, inferential, metacognitive, reading strategy and evaluation abilities greatly influence students' level of understanding of the text. A reader must have regulatory skills so that they can guide their reading skills and can help students continue to excel in the future. The implication of this research is that teachers must emphasize inferential reasoning abilities in the learning process because these reasoning abilities not only help in understanding text or material but also improve metacomprehension abilities. Students who have the ability to monitor their own learning tend to be more independent and successful in the future. Interventions that can train students' inferential and metacognitive abilities are recommended in reading learning.

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