

Investigating Senior High School Students' Metacognition in Indonesian Learning Reading Comprehension: Does it Have a Positive Impact?

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Abstract

Metacognition and reading comprehension skills are believed to influence students' academic success. However, many studies report that students' understanding of texts is still low even though they have been able to read fluently. This study aims to investigate and describe students' metacognitive awareness in reading comprehension learning activities and the effect of metacognition on reading comprehension skills. The research method used is a mixed-method by utilizing the descriptive and quantitative correlational analysis results. The research subjects involved were 280 students and eight Indonesian language teachers from eight senior high schools. The research data was obtained from the observations of reading learning activities, interviews, distributing questionnaires, and reading skills tests. The results showed that most students did not know the right reading strategy for themselves. Overall, students have not been able to conclude the goals and benefits of learning to read comprehension for their lives, behave passively in learning, and have not been able to identify solutions to face reading comprehension difficulties according to their characteristics. Based on the results of correlational calculations, metacognition was positively correlated with students' reading comprehension skills. This study recommends that teachers and curriculum designers emphasize the components of metacognitive awareness activity for improving students' reading comprehension skills.

Keywords: Reading comprehension; language learning; metacognition; self-regulation; literacy; reading skills

Introduction

Metacognition and reading comprehension skills are very important for students to achieve learning success and respond to the dynamics of the times. This is based on the nature of metacognition and reading comprehension activities which are both thought processes. In short, metacognition is the process of thinking about thinking. Metacognition relates to knowledge or beliefs about oneself and others as cognitive agents regarding tasks, actions/strategies, and interactions to influence the outcome of any kind of intellectual activity/effort (Flavell, 1979; Gourgey, 2001; Fleming & Frith, 2014). In line with that, reading comprehension activity is also a cognitive activity to interpret the text. The cognitive process in reading comprehension is translating written code into meaningful language units and making these units a meaningful and coherent mental representation (Kendeou, et al., 2014; Hale, 2014; Yunisah et al., 2023). Reading comprehension includes the process of extracting and constructing meaning through interaction with written language to understand: words/sentences comprehensively, sociocultural aspects of the text, and the author's goals (Tindale, 2003; Woolley, 2011; Clarke et al, 2014). This implies that in the process of interpreting the text, students need to relate the results of interpretation based on linguistic aspects with non-linguistic aspects. In other words, the process of understanding the text is an active and constructive process which is determined by the combination of what is stated directly in the text and the students'/reader's prior knowledge about the topic of the text (Scanlon, Anderson, & Sweeney, 2010; Harris, 2014). The process of interpreting the text makes a reader/student able to summarize, conclude, repeat, and apply what has been read. Furthermore, students can achieve four levels of reading ability, namely literal, inferential, critical, and creative levels (Westwood, 2001; Anderson, 2008). The combination of reading comprehension skills supported by good metacognition skills will enable the ability to identify main ideas, understand implied and explicit information, evaluate, and develop texts that are read fluently.

Metacognition ability has the potential to increase students' interest in reading and reasoning so that they can improve their reading skills. Furthermore, good reading skills are very beneficial for students to learn various fields of study as in the learning curriculum (Jhonson, 2008; Mason, et al., 2013; Guthrie & Klauda, 2014; Li, Beecher, & Cho, 2017). This is supported by the fact that learning materials in schools are presented in text form. Students are not only required to focus on understanding texts explicitly and implicitly, but also have to master critical thinking skills and develop texts. The complexity in the reading comprehension process is following the nature of critical thinking which includes activities to assess something complex, solve problems, decide things, identify potential problems, and formulate alternative solutions (Goad, 2002). The process is suitable for the characteristics of high school level students belonging to the cognitive level of formal operations, namely being able to make scientific observations to connect; interpret, analyze, evaluate, and conclude something (Sternberg, 2008; Facione, 2011). Of course, reading comprehension activities are an opportunity to develop these cognitive aspects. However, in reality, some factors hinder reading comprehension skills. One of them is the difference in their ability to carry out the function of self-regulation in reading, understanding the function of the text, and knowing the purpose of reading (Snow, 2002). This is closely related to students' metacognitive abilities.

In the context of reading comprehension activities, metacognition refers to students' self-regulation abilities so that they can know and evaluate the reading process with an effective learning style. Metacognition aspects that exist in reading comprehension activities are the ability

to know what has been understood and not understood and use this knowledge to monitor the understanding of text content (McNamara & Magliano, 2009; Forrest-Pressley & Waller, 2013). When reading the text, students think about the content/information and how to read it according to their characteristics. During the reading process, ideally, students are carrying out a metacognition process. The activity is a thought process asking how they read, how they position themselves in the process, whether they understand the text they are reading, and how they can read more effectively. Students who consistently carry out the metacognition process will increase their reading ability. In other words, an increase in metacognitive ability is positively correlated to improving students' reading ability because they are aware of their shortcomings, regulate their behavior, and improve their understanding (Hacker, Bol, & Bahbahani, 2008; Gutierrez & Schraw, 2015; Mohseni, Seifoori & Ahangari, 2020). This is because they have been able to evaluate themselves to increase their reading competence. Thus, the role of metacognition is very important in determining the success of text comprehension.

The students' metacognitive ability towards reading comprehension activities needs to be studied and analyzed to ensure that they understand what they should do to understand the text. That way, it can be seen the things that are supporting and inhibiting factors for students in understanding the text.

Many related studies indicate the importance of metacognition and reading comprehension. These studies can be classified into two groups based on the focus of the study. First, research on the general study of metacognition and the relationship between metacognition and reading comprehension. This research concludes that students' metacognition and other factors (such as anxiety and the form of reading material) can affect reading comprehension skills, especially in making text inferences (Soto, et al., 2019; Delgado & Salmeron, 2021; Teng & Zhang, 2021;). Second, research on interventions to improve metacognition and reading comprehension skills. This second group research resulted in a conclusion that the clarity of the conceptual framework regarding students' cognitive capacity, the authentic assessment framework (Gunawan, Faizal & Wulandari, 2024), and the orientation of the implementation of learning based on student characteristics are things that need to be in the intervention/learning reading comprehension (Hartman, 2001; Perry, Lundie, & Golder, 2007). 2018; Andrews & Karlin, 2019; Bae & Kwon, 2019; Thongwichit & Buripakdi, 2021) and a recent research on cognitive issues on presentation skills (Tong, 2024). However, research on the search for students' metacognitive abilities related to reading comprehension and self-regulation in learning reading comprehension has not been done much. To fill the gap in the previous research, this study raises the issue of adolescent students' metacognition in the context of reading comprehension activities in their daily lives and in learning to read in class. This is expected to be a reference in diagnosing students' reading comprehension difficulties related to metacognitive awareness. In addition, this research is expected to be a reference for follow-up plans in formulating curriculum content and effective learning practices to improve students' reading comprehension skills.

Research method

Design of the study

This research uses mixed methods. This method involves analyzing quantitative and qualitative data in one study (Teddlie & Tashakkori, 2003; Cresswell, 2012). The quantitative data for this research are students' reading comprehension scores. Meanwhile, qualitative data consists of observations of reading learning activities, interviews, and the distribution of questionnaires to students. The two data are contrasted to obtain conclusions. This is as seen in the figure-1 below.

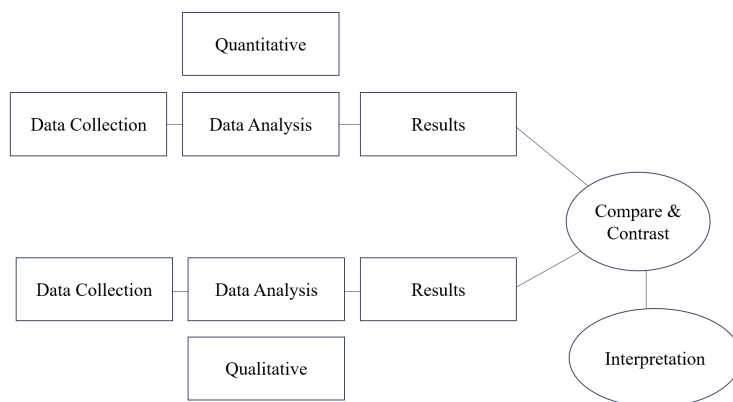


Figure 1. Mix method design (Creswell, 2012)

Research participants

This study involved 280 students as the main research subjects and eight Indonesian language teachers. The subjects of this study came from eight public and private schools. Each school took 35 eleventh-grade students and one teacher who taught in that class as research subjects. Class selection is done randomly or by lottery. In other words, in one school there is one class (consisting of teachers and students) that is used as the research subject as shown in table 1.

Table 1. Research subject

Schools	Class	Teachers	Students
School-1	XI-A	1	33
School-2	XI-B	1	34
School-3	XI-C	1	35
School-4	XI-D	1	32
School-5	XI-E	1	35
School-6	XI-F	1	36
School-7	XI-G	1	35
School-8	XI-H	1	35

Research instrument

The instruments used in this research were test questions, open questionnaires, interview guidelines and observation guidelines. The question instruments are test questions to measure literal, inferential, critical and creative reading comprehension abilities. The questionnaire used in this research contains open questions related to students' metacognition in reading comprehension activities. Meanwhile, interview and observation guidelines were used to obtain information regarding student behavior related to metacognition in reading comprehension learning activities.

Procedures of data collection

The data of this research is about the level of students' metacognition towards activities and learning to read comprehension and students' reading comprehension skills. The data was obtained from the results of tests with quantitative procedures and search results with qualitative steps. Information about students' metacognition in reading and learning activities was obtained by using

observation techniques, distributing questionnaires/questionnaires, and interviews. Qualitative data. The results of the observation note, namely write a description of what was observed in the field (Lodico, Spaulding, & Voegtle, 2006). The observations and questionnaires were distributed to students and teachers during reading-learning activities. Observations were made by observing without manipulation of the environment of the research subject with the position of the researcher as a bricoleur (Denzin & Lincoln, 2009; O'Reilly & Kiyimba, 2015). The interviews were conducted with teachers who teach in the observed class. Meanwhile, information about the level of metacognition and students' reading comprehension ability was obtained by giving test questions and questionnaires to students. The stages of this research are divided into two parts, namely the stages of searching for qualitative and quantitative data. The qualitative data search stage is carried out in the following stages.

In the first stage, the research activity begins with general observations of the condition of each school to obtain clear information regarding student and teacher profiles related to the issue of reading comprehension ability. At this stage, the determination of the class that will be carried out based on the approval of the school by lottery is also carried out. The draw is carried out based on groups of students per class to minimize the natural conditions of organizing activities related to students' metacognition and reading ability in classroom learning.

The second stage is an interview with the teacher regarding the condition of students' reading comprehension and metacognition in the class to be observed. At this stage, recording, and recording of interview data were also carried out. Interviews were also conducted with two of the observed class-representative students.

The third stage is learning observation activities. At this stage, recording, and observations regarding student and teacher activities related to metacognition and reading comprehension during learning were also carried out.

The fourth stage is the activity of distributing questionnaires related to students' reading comprehension and metacognition skills. At this stage, students are given special time to fill out the questionnaire to be more focused and avoid the error aspect (filling in carelessly or missing one of the questions) filling out the questionnaire.

The fifth stage, namely grouping, analyzing, and processing data from observations and interviews. At this stage, checking and confirming data on research subjects are also carried out. In other words, if discrepancies or doubts are found from the results of data analysis, the researcher can return to the previous stage to confirm the validity of the data again.

Next, the stage of obtaining quantitative data is by conducting a reading comprehension test. In addition, questionnaires or instruments were also distributed to determine the level of students' metacognition toward reading comprehension and reading learning activities in the classroom. Obtaining a reading ability test score and the results of grouping students based on metacognition level were then correlated with statistical tests (one-way ANOVA test).

Data analysis

Data analysis in this study was conducted by examining qualitative and quantitative data. Qualitative data analysis was carried out by reviewing field notes, recorded interviews, and observations. Next, the student's answers were grouped because of distributing the questionnaires. The answers are processed into percentage form to make them easier to present and understand. The percentage of students' answers was then confirmed/relevant to the concept of metacognition and reading comprehension ability. In this case, it can be seen the level of students' metacognitive ability towards reading comprehension activities. The student's answer data is also relevant to the

results of the observation of learning activities. Thus, in addition to students' metacognitive abilities in reading comprehension, researchers can also describe how reading comprehension learning activities in class are associated with students' metacognitive abilities. Meanwhile, quantitative data analysis was carried out by conducting a correlation test on the results of the student's reading ability test with the results of grouping students based on high and low metacognitive abilities. The results of the analysis of these two types of data are then described and relevant to the formulation of the problem so that a comprehensive and representative research conclusion is obtained to answer the formulation of the research problem.

To obtain the research data validity, triangulation was also carried out, namely the use of fixed reference points arranged in triangles to produce clarity regarding the reliability and validity of the research (Cohen, Manion, & Morrison 2007; Thomas, 2013). In this case, in addition to data from observations, efforts were also made to obtain data through interviews with relevant sources. This study also involved Indonesian language teachers from each school who were observed as interview sources to obtain comparative data. Triangulation was also carried out with double observations, namely observations of the curriculum documents for reading learning and learning practices in the classroom. Thus, through this technical information can be known about students' metacognition in reading comprehension activities, both shown through questionnaire answers and in students' activities (responses or attitudes) during reading comprehension learning.

Results

Based on the results of processing questionnaire data, interviews, and field observation notes, information was obtained regarding metacognition and student habits in reading comprehension activities, students' metacognition towards reading comprehension learning activities in class, and other things that have the potential to affect students' metacognition in participating in reading comprehension learning. As confirmation of the answer to the formulation of the research problem, a correlation test was also conducted to determine whether there was a significant relationship between students' metacognition levels on reading comprehension activities and reading comprehension skills.

Student's habits in reading text activities

In this study, students were given open-ended questions that sought to explore their knowledge of the reading strategies used before, during, and after reading the text, such as predicting and verifying, previewing, setting goals, asking themselves, drawing from background knowledge, and summarizing (Mikulecky, 1990, 1997; Vaughn & Edmonds, 2006; Johnson, 2008; Meldawati et al., 2023). This questionnaire assesses students' awareness of the readiness strategies and strategies of students in dealing with texts. Based on the results of a search through a questionnaire, information was obtained that the majority of students did not know and did the activity steps before, during, and after reading the text. As many as 88% of the total students who were involved as research subjects did not know the activities that should be carried out in reading activities to obtain effective understanding (as shown in chart 1). Students tend to interpret reading activities in a basic way, namely as an activity to interpret graphic forms/symbols.

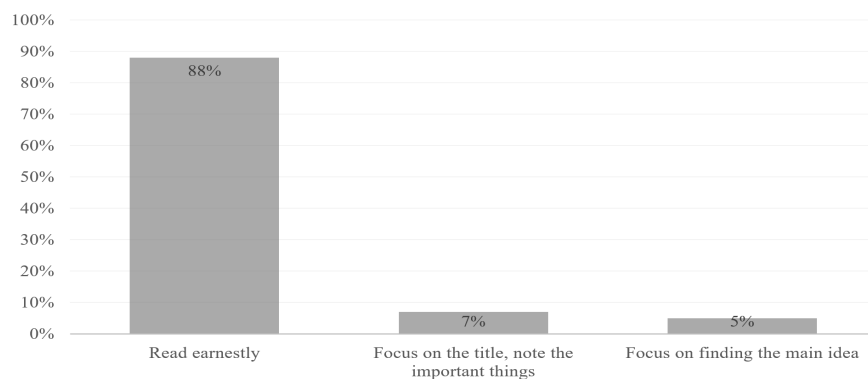


Chart 1. Students' reading habits to understanding texts

Students' understanding of reading comprehension activities has not focused on success in interpreting the contents of the text by involving linguistic and non-linguistic aspects. Students understand reading activities as activities that focus on interpreting linguistic aspects, whereas reading activities involve understanding linguistic and non-linguistic aspects in the form of the context in the text (Scanlon, Anderson, & Sweeney, 2010; Harris, 2014). This has the potential to cause students to find it difficult to explore the implied message in the text. In reading activities, students only focus on factual information contained in the text.

Based on a search through a questionnaire related to pre-reading activities, it is also known that students are not familiar with predicting text activities. The majority of students gave information that they immediately carried out reading activities without reviewing and predicting the contents of the text first. Predicting the content in reading activities can accelerate the understanding of the meaning of the text content (Mikulecky, 1990, 1997; Johnson, 2008). However, some students also responded that predicting the text seems to be a waste of time so they tend to want to read the words or sentences in the text as a whole. By reading the text sentences in full, students are of the view that more information will be obtained from the reading results.

Regarding the purpose of reading activities, the majority of students stated that they did not have a specific goal in understanding the text. In the context of reading comprehension to understand learning material, students place reading activities as ceremonial activities or simply memorize certain facts and technical terms. In gathering information about the purpose of reading, it is also known that students do not have specific goals as a result of their reading activities.

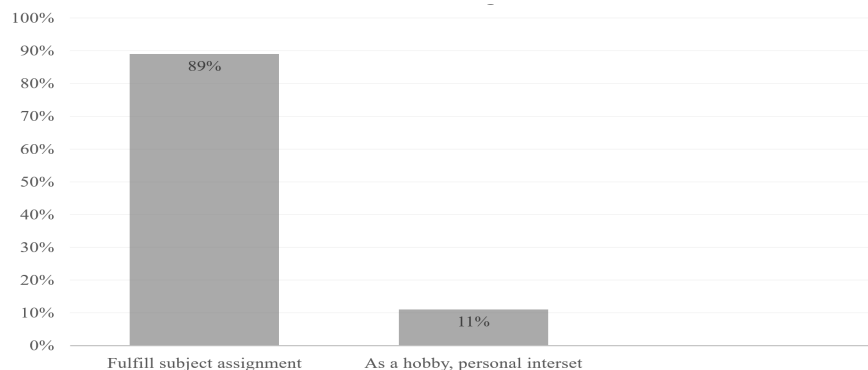


Chart 2. Students' reading goals

As shown in chart 2, as many as 89% of students stated that reading comprehension activities were often carried out to meet the demands of school assignments or academic activities, for example only when texts/tests were about to be carried out or when they received orders from the teacher. Only a few students stated specific goals regarding their inner urges. This is like an excuse to carry out reading comprehension activities such as related to ideals or interests in certain fields/topics that require them to read. In this case, the majority of students have not placed reading comprehension activities as something that has an important purpose and special contribution to their lives.

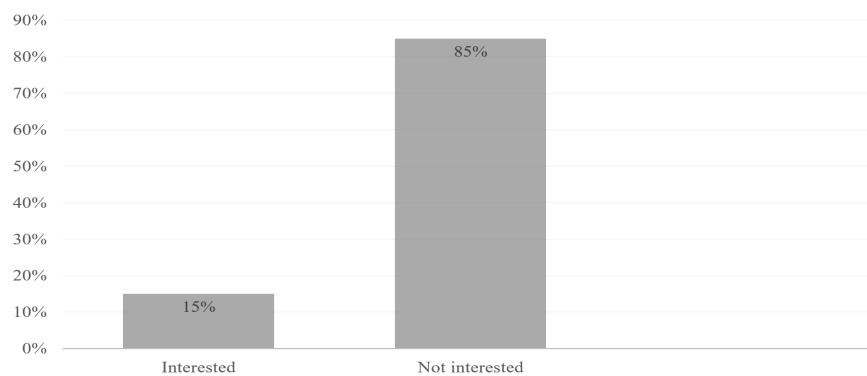


Chart 3. Students' reading interest

Furthermore, regarding extracting information related to a personal interest in reading comprehension activities, 15% of students stated answers that indicated a personal interest in reading comprehension activities (as in chart 3). Based on the results of the analysis of the answers to the questionnaire, the interest and positive impression were identified for several reasons such as the type of book/reading, the complexity of the content, language features, the type of language such as a foreign language, regional language, or Indonesian language, and the topic of the text. The rest of, the students stated that they were normal, were more interested in other activities such as watching videos/television, or did not have a special interest in reading activities.

Regarding the estimated reading time, the majority of students stated that they did not at all plan a specific duration for reading activities (as shown in chart 4). Students tend to view reading as an activity that just goes on without the need for consistent time planning or daily reading schedules.

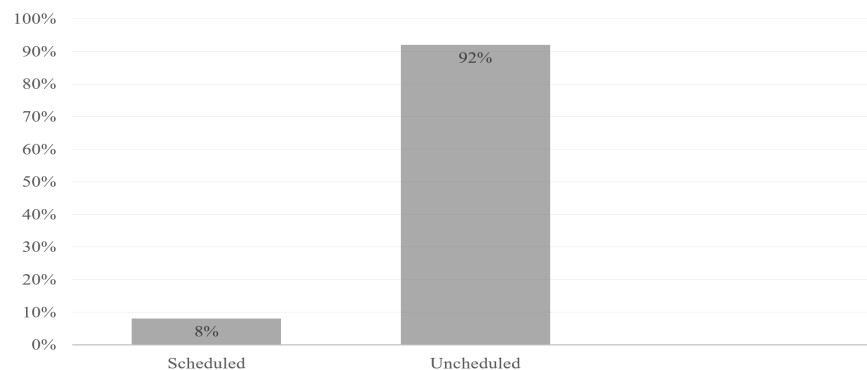


Chart 4. Students' reading time consistency

The results also show that many students have not been able to determine strategies and ways of reading that are suitable for their characteristics. The majority of students answered that they did not know or did not explain specifically about the right way to read for themselves.

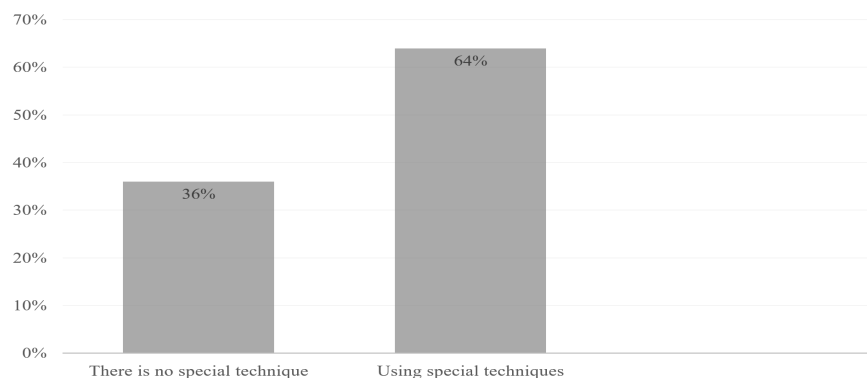


Chart 5. Students' understanding

The reading habits are carried out by browsing all pages, reading sentences, and repeating reading if something is not known or there are doubts/forgotten things about the contents of the reading. However, as many as 36% of students responded by explaining a special trick that is usually done while reading (as in chart 5). These include reading while listening to music, reading by focusing on images that are usually in the text, and reading while underlining sentences that are considered important.

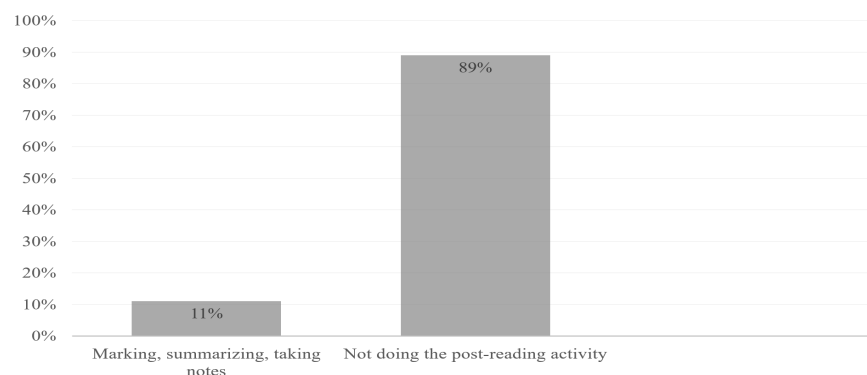


Chart 6. Students' habits after reading

Based on the questionnaire of extracting information about what to do after reading the text (as in chart 6), as many as 11% of students indicated the following alternative actions: taking notes/summarizing, trying to remember the contents of the text, and immediately ending the reading activity without doing activities relevant to the activity. understand the text. In this case, few students know what to do after reading.

Students' reading difficulties

In order to reading difficulties, the students' answers related to recognizing the difficulties in reading comprehension that they faced, namely the duration of time, speed of understanding, understanding, recognizing foreign words used, recognizing messages, and finding important parts of the text for keys.

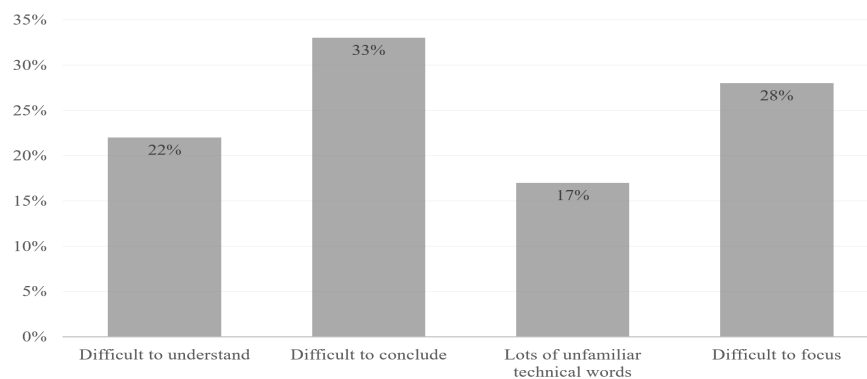


Chart 7. Students' reading difficulties

Based on the search and grouping of students' answers regarding the perceived barriers to reading comprehension (as in chart 7), the things that were often found were still related to difficulties in organizing and interpreting information comprehensively, minimal word understanding, and getting tired quickly when looking at sentences. Sentences that are dense/many in the text because they are not used to it. As many as 33% of students when giving responses were confused about writing down the main idea or the most important thing in the text. However, at least metacognitively, students know themselves in understanding the text.

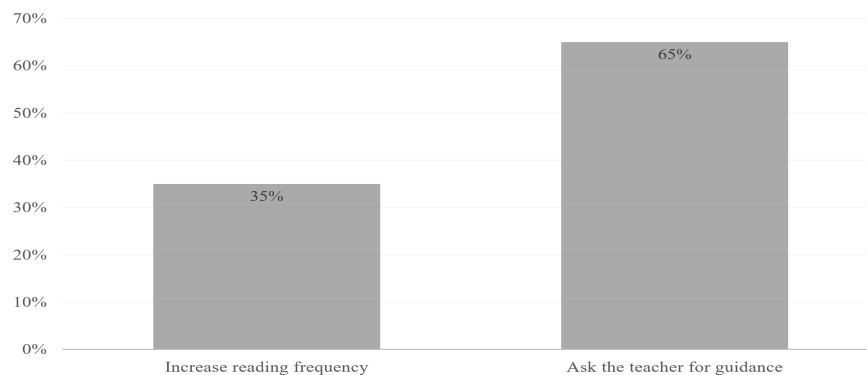


Chart 8. Students' techniques for overcoming reading difficulties

In the answer related to awareness to formulate alternative solutions to overcome the obstacles in reading comprehension experienced, the majority of students do not know it. As in diagram-8, as many as 65% of students responded with answers that were not specific to the problem-solving/impaired reading comprehension they experienced. This implies that the group of students does not know for sure what efforts must be made to overcome the obstacles/difficulties in reading that they are experiencing. However, some students stated solutions such as rereading repeatedly, getting used to reading a lot, and asking the teacher for help.

Student metacognition to reading comprehension activities in the classroom

This section is the result of distributing a questionnaire regarding readiness, meaningfulness, obstacles, and how to overcome problems in learning to read that students experience in class.

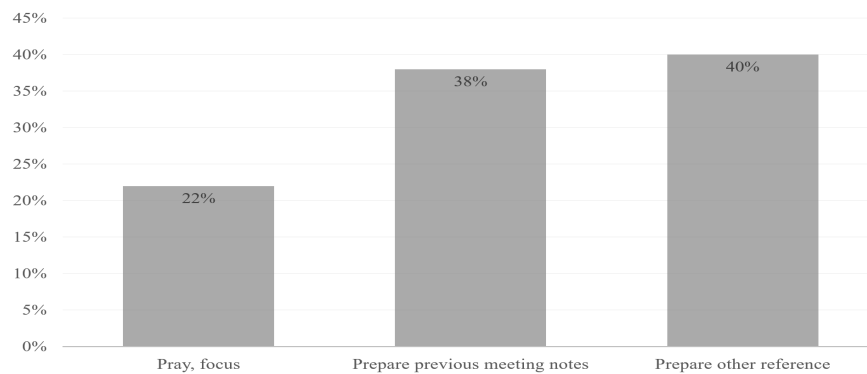


Chart 9. Students' preparation before reading learning

Questions about readiness in participating in reading lessons (as in chart 9) were responded to by students with statements oriented towards readiness which are generally carried out in all learning activities. These include praying before starting the lesson, focusing, and preparing notes from the previous meeting. Rarely do students who respond to answers prepare books or references that will be recommended to teachers so that they can be read/used in learning Indonesian in class.

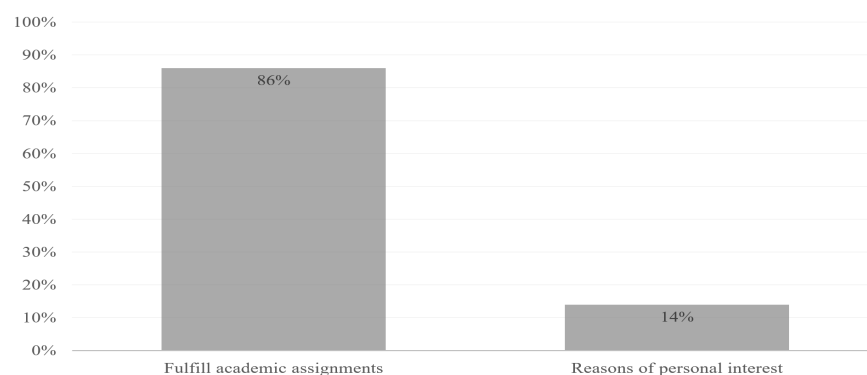


Chart 10. Students' motivation to take reading learning

Regarding the purpose of learning reading comprehension, 86% of students have not clearly stated their purpose in participating in reading learning in class (as in chart 10). In this case, the student's answers focus a lot on the demands of learning assignments, graduation/subject completion requirements, and simply carrying out the teacher's orders.

Many students have not been able to find reasons related to the purpose of participating in reading comprehension lessons for themselves. However, some students stated their purpose/motivation in participating in reading learning more specifically for their self-development. These include responses to answers regarding the goal of wanting to be skilled at understanding science and as supporting skills to achieve their goals.

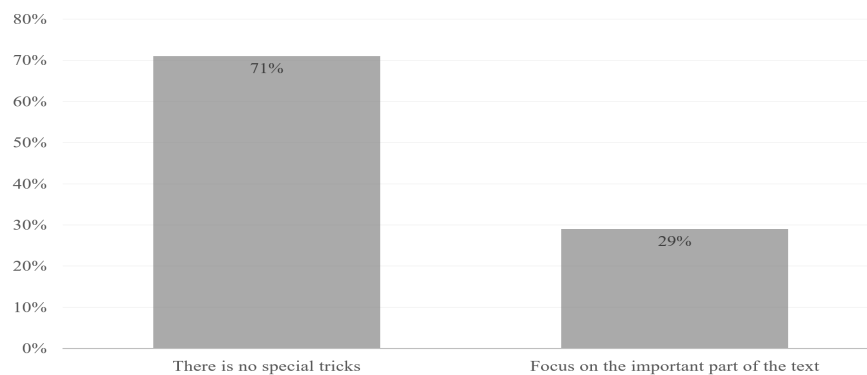


Chart 11. Students' reading techniques during learning

Regarding the question of how special strategies/methods and actions are involved in participating in classroom learning, the majority of students answered that they did not have a specific strategy or method. The student's answer leads to an effort to fully follow what the teacher is instructed during the lesson as much as they can. In other words, students' responses are oriented towards positioning themselves as passive subjects in learning activities (as chart 11). Although only a few, there were also students who stated specific strategies in participating in reading learning. This can be seen from several variations of the answers to the questionnaire, namely trying to record things that are not understood during learning, trying to get the courage to ask questions, and marking sentences that are considered important on text sheets/reading materials in reading activities in class. This group of students can be said to be able to position themselves as subjects/individuals who seek to be actively involved in the learning process.

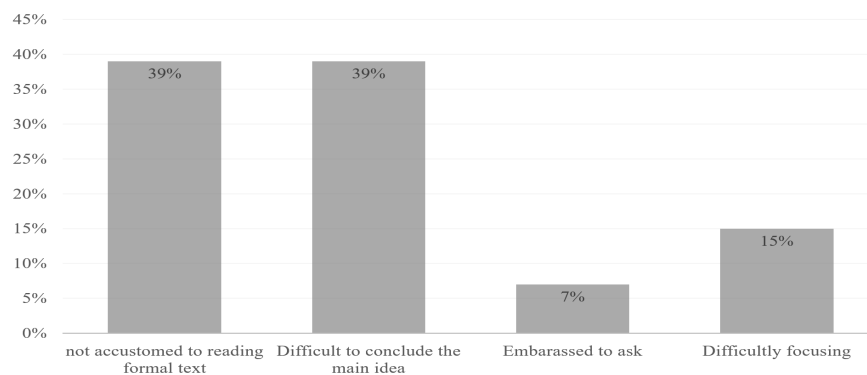


Chart 12. Students' difficulties during the reading learning

As shown in chart 12, concerning the ability to identify barriers and weaknesses when participating in reading lessons, the majority of students gave responses related to reading difficulties because they were not accustomed to reading large amounts of writing. Meanwhile, other groups of students answered with orientation to the following obstacles: (1) difficulty understanding the scientific vocabulary that is rarely used in daily life, (2) difficulty finding important things or main ideas in texts (because of the tendency to assume that all things in the text are important), and (3) the difficulty in determining the essence, summary, and conclusion of the content of the text that is often asked/assigned by the teacher.

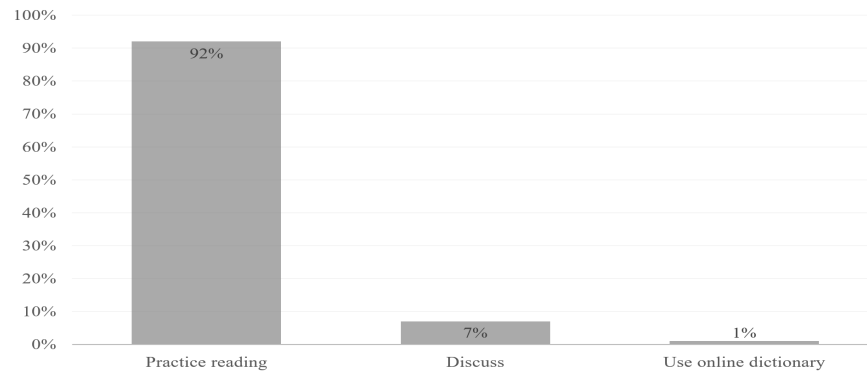


Chart 13. Students' efforts to overcome reading barriers during learning

Furthermore, regarding the questionnaire on the ability to identify potential solutions to problems encountered during the learning process (as in chart 13), the majority of students responded with answers that were not specific to their unique needs. Students' answers were dominated by statements similar to those of studying harder, and more focused on listening to the teacher when attending class. These answers indicate the tendency of students to place themselves as passive subjects in learning activities in class. This has the potential to cause low active participation in learning, especially during discussion activities, debating problems, and formulating solutions in certain texts which are usually always present in reading comprehension learning.

Students' metacognition observed during learning activities in the classroom

In addition to searching for metacognitive evidence on students' reading comprehension activities through questionnaires, this study also utilizes learning observation data. Based on the results of observations, information was obtained about student activities that showed metacognition in participating in reading comprehension learning. These include the frequency with which students respond to questions or teacher statements, the ability to ask questions, active participation in task work, and the ability to correct errors (revise assignments or answers to certain questions). Of the eight classes from different schools each consisting of 33 s.d. 36 students, obtained information that the ability of students to control and position themselves as active subjects who must participate in learning is still low. In this case, there are only three out of eight classes that show an active learning atmosphere with quite communicative student responses. In this class group, several students look active and dare to propose, ask questions, and provide recommendations for solving certain problems based on text which is stimulated by the teacher during learning activities. The existence of this group of students makes their classmates also listen and respond to the stimulus questions from the teacher. The types of students who are active as in the three observed classes make the learning atmosphere more lively but still conducive to avoiding anxiety in learning. The teachers in these three classes seem to be trying to create moderate, communicative reading learning, and deliberately create a lively atmosphere by discussing the results of reading informational texts.

In contrast to students in the three classes with active participation in learning, students in the other five classes tended to be passive in learning. In these five classes, it was seen that students rarely communicated with the teacher. Students must follow the teacher's instructions to read and answer the prepared questions. The discussions are still oriented towards the teacher as the main truth holder in the classroom. Students are reluctant to respond or comment. This is influenced by

the lack of stimulus from the teacher to students to discuss certain issues from students' reading results.

The questions asked by the teacher are oriented towards factual answers so that they are not possible to be discussed in a more in-depth discussion. This condition also causes students' low awareness of reading comprehension activities in class. In this class activity, students' critical and creative thinking skills are not trained. Metacognition which includes self-monitoring to always be motivated in learning, the desire to participate, and solve problems of limited self-ability in learning is not shown by students. One of the potential causes of the low metacognitive ability of students is related to the lack of stimulus for students to achieve, study hard, and enjoy every learning activity.

The results of interviews with teachers who were involved in teaching in the studied class showed a tendency to answer related to the low ability of students. The concern of students on active participation (discussion, doing assignments, and revising answers/tasks) in learning is less visible or only a few students obey it. The teachers (who were involved as resource persons) are of the view that this makes students' reading ability low. The majority of teachers stated that the students who were observed/researched lacked the motivation to be skilled at reading comprehension. Based on the teacher's narrative, their students tend to feel they can read fluently, and assume that their reading comprehension ability will increase due to the desire/internal factors of the students themselves.

The effect of metacognition on students' reading comprehension skills

To determine the effect of metacognition on reading comprehension ability, a reading ability test was conducted and a metacognition questionnaire was distributed to 280 students. The results of the correlational test series with the help of the SPSS program obtained the following information.

Table 2. Reading skills score based on students' metacognition level

Reading Skills Test Score	Descriptives							
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
High Metacognition students	72	80.42	2.012	.237	79.94	80.89	80	90
Low Metacognition students	208	70.24	1.535	.106	70.03	70.45	70	80
Total	280	72.86	4.757	.284	72.30	73.42	70	90

In table 2 it can be seen that there are two groups of students, namely students with high and low metacognitive abilities. The mean score of the group of students with high metacognition is greater than that of students with low metacognition. Likewise, the acquisition of reading ability test scores also shows the same thing. The minimum/lowest score in the group of students with high metacognitive ability is greater than that of students with high metacognitive ability. In line with that, the maximum score obtained by students with high metacognitive abilities is also greater than students with low metacognitive abilities. This implies that there is an influence between metacognition and students' reading comprehension ability. Furthermore, to ensure that there is a

relationship between metacognition and students' reading comprehension ability, a correlation test was conducted. As a prerequisite for the correlation test, the homogeneity of the data is checked first.

Table 3. Homogeneity test of students' reading skills score

Test of Homogeneity of Variances			
Reading Skills Test Score			
Levene			
Statistic	df1	df2	Sig.
2.359	1	278	.126

Based on table 3, it is known that the data is homogeneous, that is, it is marked by a significance value of 0.126 which is greater than the significance of $= 0.05$. This shows that the data can be analyzed by using the one-way ANOVA correlation test.

Table 4. Correlation test (One-way ANOVA) metacognition and students' reading skills

ANOVA					
Reading Skills Test Score					
	Sum of		Mean		
	Squares	Df	Square	F	Sig.
Between Groups	5538.805	1	5538.805	1985.591	.000
Within Groups	775.481	278	2.789		
Total	6314.286	279			

The results of the ANOVA correlation test as shown in table 1 show a significance value of 0.00 which is smaller than the significance value of $= 0.05$, so it is said that H_a is accepted, that is, there is a significant difference between the reading ability scores of students with high metacognition and students with low metacognition. If it is associated with the results of the acquisition of reading skills scores, students with high metacognitive abilities have good reading comprehension skills, which are marked by the acquisition of high reading skills scores. Meanwhile, students with low metacognitive abilities have low reading comprehension abilities. This implies that the higher the level of students' metacognition towards reading comprehension activities, the higher the potential for increasing their reading comprehension skills. Thus, it can be said that there is an influence or relationship between metacognitive ability and reading comprehension skills

Discussion

As explained in the previous section, the results of the study show that there is a relationship between the level of metacognition and the ability to read comprehension. In this regard, three important things need to be explained related to students' metacognition, reading comprehension, and learning, and the teacher as the organizer of learning. Some previous research has also indicated that learning based on metacognition strategies has been proven to increase students' ability to understand reading (Thongwichit & Buripakdi, 2021). Thus, these three things will be very related.

The results showed that the level of students' metacognitive ability in reading comprehension activities and reading comprehension learning in the classroom was still low. This has the potential to cause students' reading comprehension skills to be difficult to improve. Important issues regarding the low ability of metacognition and reading comprehension observed from the results of this study were the students' thinking habits, the supportive environment for activating metacognition in the classroom, and the teacher's teaching skills in building students' metacognitive awareness in reading comprehension activities.

Students' internal factors in the form of desire, encouragement, and motivation to participate in learning or carrying out reading comprehension activities are the determinants of activating metacognition. Although this factor does not seem to be easy to trace or reveal clearly and clearly, some representative action indicators regarding metacognition in reading can be observed. Action indicators that show concern, enthusiasm, and special attention can be used as guidelines for diagnosing students' metacognition levels in carrying out reading comprehension and learning activities. This can also be relevant to external factors as well as the reality of learning conditions in the classroom. In a condition in the classroom, it is almost common to find groups of students who meet curriculum expectations and groups of students who are not following the demands of the curriculum. In other words, some students have been able to control themselves to consistently behave according to the demands of the curriculum and some are not. In a class, it is common to find students with high metacognition and some with low even seem to have no motivation to learn to read at all. In response to this, teachers need to realize that the two groups of students interact with each other for a relatively long period or at least during the learning activities. This interaction can also give rise to a positive or negative influence on metacognition and reading comprehension ability. As the results of the study, students who have high metacognition towards learning in the classroom cause other students to be encouraged to follow the actions of these students. In a class, when some students dare to ask questions, respond to the teacher's stimulus, and show seriousness in participating in learning, other students are indirectly encouraged to take similar actions. This implies that in one particular class there is a need for a group of students with good metacognitive abilities as figures/examples for other students. As a follow-up to this phenomenon, the placement of students in a class needs to consider the distribution of students' diverse abilities. A certain series of psychological selection tests related to students' metacognitive abilities seems very important to be carried out to place students in certain classes in school. Of course, if all students in one class have low metacognition, it will be very difficult for them to improve their competence. In addition, with the condition of an unbalanced teacher-student ratio, for example, one Indonesian teacher teaches at one level of education, namely class XI, this makes it even more difficult to activate students' metacognition in learning reading comprehension. However, the internal and external factors as stated above will be interrelated. Therefore, conditioning, class members/students and manipulating classroom arrangements that are comfortable and suitable for the process of activating students' metacognition is very important.

Instead of focusing on exploring internal and external factors related to students, teacher actions also need to be considered to improve students' metacognition. Since metacognitive knowledge is generally positively related to student learning, it is necessary to explicitly teach metacognitive knowledge to facilitate its development (Pintrich, 2002). Likewise, with the evaluation system, it is also necessary to align goals, instructions, and assessments that take into account the role of metacognitive knowledge in the classroom. However, in some cases, the learning of metacognitive abilities is hampered by the extra cognitive demands of metacognition,

the difficulty of its application, its veiled nature, and inadequate teacher preparation (Chiu & Kuo, 2009). Therefore, the key to the success of implementing metacognition learning is the teacher's expertise in managing to learn.

In the context of reading comprehension and learning, students are required to perform high-level cognitive activities. However, it is necessary to reflect on the extent to which the teacher facilitates reading comprehension learning. In teaching students to have metacognition, teachers need a complex understanding of both metacognitive concepts and metacognitive thinking strategies (Wilson & Bai, 2010). Furthermore, it is necessary to explore how the stimuli, methods, strategies, and learning techniques are given by the teacher to students in the classroom. One of the things that teachers can do to improve students' metacognition through learning is to implement active processing methods so that students participate in activities designed to encourage questions (Williams & Atkins, 2009). It is intended to improve questioning skills and increase students' vocabulary by generating as many and varied questions as possible. Of course, these learning practices need to be adapted to the characteristics of students' cognitive development, aspects of students' personalities (which in this case are adolescent students at the formal operational stage), as well as visionary needs-oriented to students' ideals. The suitability of what is to be taught and what students want is the main key in addressing this metacognition issue. Teachers must strive so that students understand themselves completely, know what their strengths and weaknesses are, and can provide a stimulus to identify potential solutions to problems they face in the learning process of reading comprehension.

The deepening of reading concepts, texts, and language in learning to read comprehension is important but the most important thing is to build students' awareness so that they find reasons to take part in learning. The metacognitive strategies that can be taught by teachers as part of reading comprehension instruction are teaching students to recognize strategies to plan, monitor, and regulate reading and learning processes (McElvany, 2009). Thus, teachers need to teach several reading strategies that students can choose from, and help students find weaknesses and strengths in reading activities. The ultimate goal of this metacognition search is for students to be able to follow the lesson with full sincerity and enthusiasm based on full motivation from within themselves.

As the result of the correlation test in this study which states that there is a significant relationship and difference between metacognition and students' reading ability, it is necessary to follow up on formulating learning based on activating metacognitive awareness and text understanding strategies. This is because efforts to increase students' metacognition towards reading comprehension activities cannot be separated from how to organize learning with good formulations. Many empirical studies have shown that teaching metacognitive skills can increase students' sense of awareness, and this will lead to an increase in their motivation to learn (Buehl & Alexander, 2001; Anderson, Hattie, & Hamilton, 2005; Eisenberg, Valiente, & Eggum, 2010). This implies the importance of improving the quality of reading comprehension learning by focusing on the needs and characteristics of students. Teachers can start by carrying out pre-reading, reading, and post-reading activities inconsistent and integrated learning. In this case, learning to read does not only command students to read for a certain duration of time without clear and varied stages.

In reading learning activities, students are not always instructed to read the text, but they need to be trained how to read the text. Students need to be trained in the ability to recognize their strengths and weaknesses in understanding texts. The steps of learning to read such as predicting the content of the text, observing the pictures on the cover of the book, marking sentences, making

semantic associations, compiling mind maps based on the content of the text, discussing, and presenting need to be cultivated in the classroom. For starters, the teacher can first make statements related to some aspects of the reading and then the students respond to them. This is because understanding is an interactive process that occurs not only when students read the text but also after (Tindale, 2003). Therefore, reading comprehension activities need to be followed by making conclusions, using critical thinking skills to answer questions related to the text, and developing text ideas.

Conclusion

The presentation of the research results and discussion confirmed the relationship between metacognition and students' reading comprehension ability. The results of the study also showed the low ability of students' metacognition towards learning reading comprehension. Students' metacognition is related to reading comprehension activities, reading comprehension ability, and learning is closely related to students' metacognition. The findings of the students' low knowledge about the best strategies for reading for themselves, the barriers to reading comprehension they have, and the ability to formulate solutions to problems they face in a reading implies follow-up steps that must be taken by the teacher. Adjustment of learning strategies or methods based on the analysis of student characteristics needs special attention.

This study did not consider gender and social aspects such as ethnicity, ancestry, or domicile of students. This can be an opportunity for those interested in the field of metacognition and reading comprehension to develop similar research involving these aspects. In addition, as a gap in the development of this research, observers in the fields of metacognition and reading comprehension, education, and literacy practitioners can consider this research in developing action-based research or direct intervention to students.

Declaration of conflicting interest

This research is objective, neutral, and free from conflicts of personal interest. The authors declare that there is no conflict of interest in this work.

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