The Interplay Between Meta-Cognitive Strategy and Self-Regulation in English Reading Comprehension

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Abstract- **The purpose of this study was to find out the influence cognitive and metacognitive strategies and self-regulation on English reading comprehension learning. This study used a quantitative approach with experimental methods. It used a treatment pattern by level 2 x 2 design. The process of collecting data used questionnaires, tests, observations, and documentation. The data analysis technique is 2-way variant analysis. The results showed that students who have a good level of self-regulation, they do not have difficulty in learning and are in accordance with the implementation of metacognitive strategies. While students with low levels of self-regulation in learning are more suited using cognitive strategies. Metacognitive strategies build student's thinking more broadly in understanding the contents of reading texts and students who learn with cognitive strategies only follow the instructional set by the teacher.**

Keywords: cognitive, english reading, metacognitive, self-regulation

I. INTRODUCTION

Reading English books has not become a good habit for students at Islamic State University Mataram. Students tend to look for references in Indonesian even though every book used by teachers uses English books. This is a problem that is quite difficult by teachers because students have a weak level of understanding the contents of the text of reading books in English. The problems arise especially in reading subjects. Reading activities are not only useful in understanding the contents of the text, but also makes students able to develop the ability to analyze the problems both faced during learning or everyday life. The process of reading comprehension impacts on the development of a critical thinking.

Reading is interactive process between reader, text and author's perspective that has delivered the message. In here, the reader has to comprehend the meaning with the right context. It means that everyone not only understand the literal meaning in the text but also the context meaning. How is the meaning has relationship with the real life. Oakhill, et.al., stated reading comprehension is important, it is not just for comprehending the meaning of text, but also for broader activity like as learning, success in education, and employment. Reading comprehension has similarities in understanding life. Because the ability of reading understand can be used for activities related to social life such as the use of email, reading material, and social networking sites. Reading comprehension is a complex task, which requires many different cognitive skills and abilities.[1]

According to Wooley, reading comprehension is the process of creating meaning from a text. The goal is the message contained in the text can provide learning because the process of understanding meaning cannot be done separately.[2] For most lecturers, reading comprehension is what they say about reading skills. That is the end of the reading process and what happens when all components interact successfully. Openly, it can be said that reading comprehension is the process of managing all the information, feelings and thoughts that are desired to be transferred because they have no cause for misunderstanding and without leaving clarity.[3] The learning process of reading comprehension consists of three elements. The first element is the text which consists of various types of reading with the construction of the message to be conveyed. Second, readers are influenced by factors that originate from students. These factors influence the mindset of students in constructing meaning. Third, is an activity that can be done individually or in groups. Reading comprehension activities can be done in schools, homes or workplaces. These three elements are also influenced by socio-cultural conditions and context.

The real conditions of observation and interviews conducted with lecturers and students of the English Language Education Study Program at UIN Mataram in 2016/2017 years that the learning outcomes of reading subjects had not shown the results of reading as expected. The odd semester data analysis shows the number of students who passed reading courses were 14 people or 46.7%. This means that there are 53.3% or 16 people who have not graduated. While the results of even semester data analysis showed that students who passed reading courses were 33% or 10 people. This means that as many as 67% or 20 students have not passed the reading course. Based on the results of the data analysis of the initial findings, the researcher concluded that the problems faced in reading course came from two sources, namely students and lecturers.

The problem of reading comprehension learning originating from students, among others; (1) students are still having difficulty interpreting the meaning of the text in the reading caused by a) literal or context identification of words and sentences; b) synthesizing words, phrases or sentences into the exact meaning desired by the author's context; c) difficult to identify the subject matter in the text; d) difficult to determine conclusions in the text. (2) Reading resources are less varied; (3) there are still many students who have low grades and do not meet the minimum standard of graduation of 56-65 (2.00-2.75) to pass a course.

The problem of reading comprehension learning originating from lecturers is the application of learning strategies that are not maximal. During this time the lecturer has used a task-based learning model. This learning model should provide flexibility to students in understanding reading. However, in reality it is known that the results of the implementation of task-based learning have not been achieved. Students tend to be more silent and less active in class. The exercises given were not completed. In addition, students also experience many difficulties in understanding the context of the reading content. In the class, there are two group of students, namely the student who can regulate themselves during learning process, and there are the students just wait the procedure of learning from the teacher.

Therefore, the teacher has to create the appropriate strategy of English reading comprehension learning. The self-regulation closes with the cognitive and metacognitive strategy. Metacognition plays a very important role in enhancing students' learning. John Flavell originally coined the term metacognition in the late 1970s to mean "cognition about cognitive phenomena," or more simply "thinking about thinking".[4] Metacognition is the ability to think about our own thinking or "cognition," and, by extension, to think about how we process information for various purposes and manage. Flavell in Vandergrift & Goh describes it as "one 's knowledge concerning one' s own cognitive processes and . . . active monitoring and consequent regulation and orchestration of these processes in relation to cognitive objects or data which they usually have in the service of some concrete goals or objectives. "This means that one's knowledge of the cognitive process and active monitoring of this process is related to cognitive objects or data that they bear, usually in serving several concrete goals or targets.[5]

Cognitive strategies are often implemented in learning activities that have different learning steps or problem-solving that require direct analysis, transformation, or learning synthesis. Examples of cognitive strategies are inference, or guessing the meaning of context, and elaboration, or linking new information with other concepts in memory.[6] Bachman and Palmer define cognitive strategies as mental processes that are directly related to

processing information to obtain, store, retrieve, or use information in learning or assessment. This strategy involves language learners to connect new information and is already known to facilitate mental restructuring of information.[7] So, cognitive strategy is a strategy in language learning. Cognitive strategies are united by functions such as seminal or the transfer of target language by students. This strategy is often found in the learning process of listening. Listening learning help the students to collect information in understanding the text.

Many studies conducted in English reading comprehension but there is still a lack of solving problem in reading comprehension learning, like as students cannot understand about meaning after reading process. Aksan & Kisac[8] illustrates the relationship between reading comprehension and cognitive skills. Awareness of cognitive abilities helps individuals getting meaning using individual knowledge in understanding reading. In addition, Olmez[9] was known that cognitive skills involved various of the process comprehension, the ability to read with the process of reading comprehension and the factors that influence it. From the results of the study, it is known that reading comprehension is a complex process because it involves the experience and knowledge of the students themselves in interpreting the reading text. The research conducted relates to the process of understanding the text itself and the factors that influence derive from the learner's experience. Zhussupova & Kazbekova[10] conclude that metacognition means thinking about thinking and it is a relatively new field that is concerned with a learner's awareness of her/his own knowledge, cultural ideas and thoughts. From the results of this study we summed up that the participants acquired metacognitive reading strategies and their perceptions revealed important implications about the development of reading comprehension through short stories. Hence, cognitive and metacognitive refers to monitoring and self-regulation. The self-regulation process can be defined as making a plan, monitoring that plan, making changes to stay on track, and reflecting on what worked and what could be improved the next time.[11] Self-regulation refers to a learner's ability to self-structure his or her activity in order to attain his or her goals. As Linnenbrink and Pintrich[12] suggest, these goals may take one or more forms. They may include goals to complete an activity or task; life goals (e.g., for superiority or happiness); and achievement goals (learning and performance goals); task goals and performance goals; or mastery or performance goals.

Thus, this research is addressed to implementation of cognitive and metacognitive strategy with self-regulation on English reading comprehension. Self-regulation refers to the process of making new concept in learning. It means that, the students will create their learning style and they can find the new

way in comprehending of text. Self-regulation pertains to the capacity to guide one activities over time and across changing circumstances. In here, each activity has relationship with the other. Karoly defined self-regulation as "those processes, internal and or transactional, that enable an individual to guide his/her goal-directed activities over time and across changing circumstances (contexts). Regulation implies the modulation of thought, affect, behavior, or attention via deliberate or automated use of specific mechanisms and supportive meta-skills." According to Vohs and Baumeister, self-regulation "refers to the exercise of control over oneself, especially with regard to bringing the self into line with preferred (thus, regular) standards." Vancouver and Day defined self-regulation as "processes involved in attaining and maintaining (i.e., keeping regular) goals, where goals are internally represented (i.e., within the self) desired states."[13] Thus, self-regulation is central to know students' self and his relationship with the other component of human purposes. Its perspective sees the main control in all activities of human. Because the concept of self-regulation is relevant with the human phenomenon. It shows thought, emotion, attention, behavior, impulses, desires, physiological processes, and task performance. In regards to work motivation, self-regulation has been most commonly used to try to understand how goals are set, the processes by which goals influence behavior, the reasons for goal attainment or nonattainment, and how goals are revised or new goals are set. So, the self-regulation is available for the metacognitive strategy concept. Because in this strategy, the students can regulate themselves in learning.

Thus, this study aims to know the influence of metacognitive and cognitive strategy and self-regulation on English reading comprehension learning. This study will analyze the concept of metacognitive strategy and cognitive strategy in each level of self-regulation that has been had by students.

II. METHOD

The research was conducted in the fourth-semester students of 2017/2018 academic year who got the Reading Subject in English Education Program UIN Mataram. The study used experimental research using factorial group design two 2x2. The sample technique used the multistage cluster random sampling. In this study, there were two classes that divided to be experimental class and control class. Each group of class had the high self-regulation and low self-regulation. The process of rated of high and low self-regulation used Guilford's theory. The experiment and control group consisted of 22 students. Here is the treatment of research.

Table 1. Treatment of experimental research

Self-Regulation (B)	Learning Strategy (A)	
	Metacognitive (A1)	Cognitive (A2)
High (B1)	A1B1	A2B1
Low (B2)	A1B2	A2B2

The research had two instruments, these were for Reading Comprehension test using multiple-choice, and self-regulation using questionnaire. Here is the component of reading comprehension test;

Table 2. Indicator of reading comprehension test[14]

Component	Indicators	Account point
Literal comprehension	- Identify word meaning - Meaning context	13
Inferential comprehension	- Identify the main idea - Identify relation in the text	10
Critical comprehension	- Analyzing process of text	7

While self-regulation level is in questionnaire. The questions is arranged used these indicators, here is the table of self-regulation indicators;

Table 3. Indicator of Self-Regulation Questionnaire

Component	1	2	3	4	5
Plan					
1. I plan out projects that I want to complete.					
2. If an important test is coming up, I create a study plan.					
3. Before I do something fun, I consider all the things that I need to get done.					
4. I can usually estimate how much time my homework will take to complete.					
5. I have trouble making plans to help me reach my goals. (N)					
Monitor					
6. I keep track of how my projects are going.					
7. I know when I'm behind on a project.					
8. I track my progress for reaching my goal.					
9. I know what my grades are at any given time.					
10. Daily, I identify things I need to get done and track what gets done.					
11. I have trouble remembering all the things I need to accomplish. (N)					

Component	1	2	3	4	5
Control					
12. I do what it takes to get my homework done on time.					
13. I make choices to help me succeed, even when they aren't the most fun right now.1					
14. As soon as I see things aren't going right, I want to do something about it.					
15. I keep trying as many different possibilities as necessary to succeed.					
16. I have difficulty maintaining my focus on projects that take a long time to complete. (N)					
17. When I get behind on my work, I often give up. (N					
Reflect					
18. I think about how well I'm doing on my assignments.					
19. I feel a sense of accomplishment when I get everything done on time.					
20. I think about how well I've done in the past when I set new goals.					

The study had two ways in process of research validity, these were controlling internal validity and controlling of external validity. Technique of data analysis used 2 ways variance analysis with the significance level $\alpha = 0.05$ and $\alpha = 0.01$. If the results of data analysis found an interaction, the researcher continues to analyze the data with the Dunnet t-Test. The normality test uses the Liliefors test, while the homogeneity test uses the Bartlett test at the level of confidence $\alpha = 0.05$.

III. FINDINGS AND DISCUSSION

A. Findings

The result of analysis concluded that metacognitive strategy has high score than cognitive strategy. It means that in each group has received the experiment using metacognitive is different with the cognitive strategy. The average score shown that metacognitive strategy is 87,6 and cognitive strategy is 77,5. The metacognitive score is higher than cognitive score. It is because the students in cognitive strategy just learn using the standard procedural that has managed by teacher in the class.

While the average score of high self-regulation is 82,3 and the low self-regulation is 73,7. While the result of hypothesis test are;

1) Fcount (R) > Ft (0.05) = 62.3>4,085, so Ho is rejected, there are significant differences between row. This means that there are differences of students' English reading comprehension who are taught with metacognitive and cognitive learning strategies.

2) Fcount (C) > Ft (0.05) = 14> 4.0185, so Ho is rejected, there are significant differences between columns. This means that there are differences of students' English reading comprehension between students who have high and low self-regulation.

3) Fcount (i) > Ft (0.05) = 6.8> 4.0185, so Ho is rejected, there is an interaction between column and row factors. This means that there is an influence of interaction between meta-cognitive strategy and self-regulation.

4) The influence of independent variables on the dependent variable is large. The influence of meta-cognitive strategy, self-regulation, and interaction on English reading comprehension.

Effect of metacognitive and cognitive strategy is positive. The learning strategy can explain 53.7% of the variation in students' English reading comprehension. While the type of self-regulation can explain 38.8% of the variation in students' English reading comprehension. It is had different result with the interaction. The interaction of meta-cognitive strategies and types of self-regulation can explain 7.32% of the variation in students' English reading comprehension. Then, the next analysis used one-way ANOVA to know the four treatment of group.

From the results of 2-way ANOVA analysis, it has been obtained: JK (AB) = 121, JK (A) = 1674.7, JK (B) = 766.1, RJK (D) = 29. Here is the result of hypothesis analysis.

F0> Ftab means Ho is rejected. Thus, there are differences in the average score between the four treatment groups. Furthermore, further tests were carried out with the Dunnet t-test with t-tab = t (α; d (D)) = t (0.05; 40) = 2.021

a) The difference in groups A1B1 and A2B1:

Hypothesis:
H0: $\mu A1B1 \le \mu A2B1$

H1: $\mu A1B1 > \mu A2B1$

Because to = 6.22> t tab = 2.021 then Ho is rejected, so students' English reading comprehension that taught with metacognitive learning strategies is higher than students taught with cognitive learning strategies, which have high self-regulation.

b) The difference in groups A1B2 and A2B2 :

Hypothesis
H0: $\mu A1B2 \ge \mu A2B2$

H1: $\mu A1B2 < \mu A2B2$

Because to = 9.38> t tab = 2.021 then Ho is rejected, so students' English reading comprehension that taught with metacognitive learning strategies is lower than students taught with cognitive learning strategies, which have lower self-regulation

c) The difference in groups A1B1 and A1B2:

Hypothesis
H0: $\mu A1B1 \leq \mu A1B2$

H1: $\mu A1B1 > \mu A1B2$

Because to = 3.58 > t tab = 2.021 then Ho is rejected, so students' English reading comprehension that have high self-regulation is higher than students who have low self-regulation are taught with metacognitive learning strategies

d) The difference in groups A2B1 and A2B2:

Hypothesis
H0: $\mu A2B1 \geq \mu A2B2$

H1: $\mu A2B1 < \mu A2B2$

Because to = 4,066 > t tab = 2,021, Ho is rejected, so students' English reading comprehension that high self-regulation is lower than students who have low self-regulation who are taught with cognitive learning strategies.

B. Discussion

The results of the study concluded that the implementation of metacognitive and cognitive strategies in English reading comprehension learning had a significant increase. The level of students' ability to understand texts varies according to the level of self-regulation during learning in the classroom and outside the classroom. It can be understood that the success and achievement of the reading learning process comes from the students themselves, namely through a balanced process of self-regulation. Self-students structure build all of component what they do in the class. Learning, goals of life, goals of material, achievement, task, and motivation is be one to get new meaning in learning. It means that self-regulated learning will help the students to get what their goals of learning. Therefore, students are active in learning. They have to find or to develop the materials that had given by the teacher. Then, the students feel the meaning of learning because it comes from their thinking.

This process had close relationship with the meta-cognitive strategy. In this study, the researcher has concluded that the student got the treatment using metacognitive knowledge can find their metacognitive knowledge to understand the text through regulate their cognitive ability. The process of regulation which used the right ways help them to manage their metacognition. Therefore, this requires maturity of thinking in understanding English texts. So that metacognitive and cognitive strategies and a regular process of self-cultivation during the learning process are very important. It has proven by researcher Mohamed[15] . In his study has found young children with better performance on executive function had higher scores on false-belief tasks. This result is also consistent with the previous literature which supported the argument that children who had better performance on several cognitive measures of self-regulation also had better on theory-of-mind tasks. Further research studies are needed to explore the direction of relationship between ToM and metacognition. This research is important either in relation to revise the existing models of metacognitive development or delineating the effects of the preschool metacognitive achievements on potential development.

Thus, the finding in this research has an important role to build their performance as learning process. Self-regulation must be harmony with the learning strategy. It also consistent with the previous research Every reading comprehension process highly demands the integration of readers' ability, schemata, other self-characteristics, and strategized action to achieve goal. The implemented strategies and deep cognitive activities embedded in the process, are thus able to increase the students' reading comprehension performance. Through students' self-exploration and teacher's guiding role as the main elements in constructivism learning.[16]

English reading comprehension is an interactive process between reader with the text, and reader and author's perspective. Readers' awareness, monitoring and regulating of these strategies while reading are called as metacognitive. It means that students' knowledge about the text and control their thinking process and learning activities in the class has function as concept of metacognition. This is appropriate with the implementation of metacognitive strategy. Because this concept build students' self-awareness, comprehension, and memory technique. That of course, these needs the regulating process when they are learning. Thus, students are able to set the objective and goals in understanding English reading comprehension. It is appropriate with the previous literature that Studies on metacognition and reading comprehension reveal the strong relation between the uses of strategies, awareness and reading comprehension as Brown, Paris & Oka description.

This research is not only oriented towards the implementation of cognitive and metacognitive strategies and self-regulation in learning. But the implementation of the strategy also builds meta-cognitive awareness. Self-regulation in learning not only influences the success of learning strategies but also builds learning desires through meta-cognitive awareness. the level of metacognitive awareness stimulates students' thinking to improve their learning abilities or performance, especially for students who have learning problems. This has been proven in previous studies.[17] Another research shows that there is significant relationship between personality traits and metacognitive awareness. These findings are interpreted to provide a better understanding of the importance of personality traits, especially the Big-Five personality traits, in students impressions of

their metacognitive awareness in learning a second or a foreign language (L2).[18] as it knows that self-regulated learning is a part of personality trait which gave the influence on student's learning. For students who have low levels of self-regulation to be motivated from the implementation of learning steps using meta-cognitive strategies. Moreover, the application of this strategy is equipped with digital learning media so that the process of reading comprehension becomes more enjoyable. Some students spend their time to read the text using electronic media. From this proven, the research has implemented digital reading media to support the implementation of meta-cognitive strategy, then the learning is more interesting. It is been proven by Chen & Chen.[19]

IV. CONCLUSION

Learning strategy and self-regulation has positive impact on English reading comprehension. It has a good interaction. Each group that has received the treatment had the different average score. Metacognitive and cognitive are be basic to read text. Each one can comprehend the meaning text as whole. These strategy needs thinking process, controlling their idea, and management of knowledge. This study has limitation on English reading comprehension from metacognition and cognition knowledge with the learning regulation. It is yet explore the social understanding in learning. The next study can encourage the independent learning using students' self-regulative learning in understanding of the text.

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