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The Effectiveness of RMS Learning Model in Improving Metacognitive Skills on Science Basic Concepts

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ABSTRACT

This study aimed at: 1) Examining the effect of RMS learning model to metacognitive skills. 2)Examining the effect of different academic abilities against metacognitive skills. 3) Examining the effect of interaction between RMS learning model and different academic abilities against metacognitive skills. This study is quasi experiment which employed pretest and posttest non equivalent group design. The instrument of this study was essay test with high level of reliability 0.712. Descriptive analysis and ANACOVA statistical analysis were applied to analyze the obtained data. The results showed that RMS learning model effectively improved metacognitive skills and able to aligned students' metacognitive skills in different academic abilities. The highest indicator metacognitive skills are shown on the indicator planning with descriptions set goals with a value of 90%. The impact of RMS learning models was 51.5% higher than conventional models on metacognitive skills.

Keywords: Metacognitive Skills, RMS Learning Model, Science Basic Concepts.

INTRODUCTION

a) the Importance of Metacognitive Skills and Problem in Students

The improvements in education system keep continuing in order to achieve optimal educational goals. The improvements may include curriculum improvement, quality of teachers, and the quality of the learning process. Education is important in creating qualified and competitive human resources.

Quality of human resources is a challenge for 21st century and for the upcoming centuries. A challenge with there is no time and state of origin boundaries. The countries equipped with superior human resource will win the global competition. Higher-level of thinking is one of the skills needed in the 21st century. It includes metacognitive skills, problem solving, critical thinking, analytical thinking and evaluation (assessing possible alternatives, assessing arguments, weighting evidences, considering different opinions, finding cause/effect relationships, evaluating possibility), creative thinking and innovativion, and capable of producing new ideas from old ideas (Riechman & Simon, 2013).

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Metacognitive skills is one of the high level of thuman thinking skills about their thinking process itself (Greenstein, 2012). Thinking awareness associated with one's awareness of what is known and what will be done (Syaiful, 2011). The metacognition occurs in the usage of prior knowledge to plan strategies to do chores, take the necessary steps to solve the problem, reflect and evaluate the outcome (Teal, 2010).

The components of metacognitive skills are metacognitive knowledge and metacognitive skills (Syaiful, 2011). The metacognitive knowledge is cognition knowledge. In general it is same with the awareness and someone's cognition knowledge. The metacognitive knowledge consists of three aspects, namely: strategic knowledge, cognitive tasks knowledge, including contextual and conditional knowledge, and self-knowledge (Krathwohl, 2002). The metacognitive skills are related in planning skills, prediction skills, monitoring skills, and evaluation skill (Sarac et al., 2014).

The metacognitive skills associated with general intelligence of human that can be used as reference or indicator of successful learning which is being able to explain the academic achievement coverings the intelligence and performance in learning (Gomes et al., 2014; Sarac et al., 2014). The metacognitive skills can be taught and developed through basic concepts in science subject. As the matter of facts, students' metacognitive skills related to basic concepts in science subject at PGRI Semarang University is less optimal as shown by the low criteria of overall metacognitive skills value (49%) (Muhlisin, *et al*., 2016).

Empowerment of the metacognitive skills in learning context is performed to create independent learners (Corebima, 2009). It needs planning process, implementation, monitoring, and good evaluation (Haribhai, 2012). Having the metacognitive skills will ease someone to be able to regulate and control the learning process (Veenman et al., 2014), select the goals, select a strategy (Mir, 2015), understand how people learn, understand the capabilities and own learning modalities, and understand the best learning strategies for effective and efficient learning (Romli, 2012; Mursinah, 2013), so that success in learning will be used to solve daily life problems. In this reality, it is teacher's responsibility to be able to transfer any information and knowledge deals with common problems in daily life (Cepni et al., 2017).

The metacognitive skills empowerment in the learning process is affected by method or the learning model (Saglam&Sahin, 2017) and the variety of students' academic ability (Muhlisin et al., 2016). The methods or learning models used at the basic concepts in science subject are less empowers metacognitive skills. The learning process is less able to improve student thinking in planning, choosing a strategy, controlling, and evaluating. Castro & Morales (2017) mentioned that learning should be able to involve learners through keeping active and motivate in learning to spontaneouslyenable finding success and difficulty in learning.

The metacognitive skills is second-order cognition that has a mining of thinking about thinking, knowledge of knowledge, or a reflection about actions (Weinert&Kluewe, 1987). The metacognitive skill is a way for students to rearrange their way of thinking by reviewing the goals, how to achieve them, how to overcome obstacles, and evaluation. Learning suggesting the meaningfulness could foster high level thinking. The increase in the metacognitive skill in sciences learning, according to Iskandar (2014), could be developed in various ways such as by giving a space for learners to be able to plan an approach for the given assignments, monitoring the understanding, and evaluating the progress in the assignment completion. The metacognitiveskillsis an ability to think where the object of the thinking is the thinking process occurs in oneself.

Another study in developing college students' metacognitive skill is by giving them problems during the learning process since solving problems means that the students are able to learn and process information. Thus, select an appropriate strategy in accordance with the

problems faced and monitor the progress in learning as well as correct any mistakes occur during concept understanding and analyze the effectiveness of the selected strategy (Iskandar, 2014). A meaningful and real experience-related learning activity could improve the metacognitive skill of college students (Danial, 2010). "Group investigation strategy" is used to train in synthesis, analysis, and evaluation. Thus, it able to improve the metacognitive skill (Slavin, 2005).

The learning process is also putless attention to the variety of students' academic level. The division of the group based on the students' willingnessin which resulting homogenous group. It means that only one group consists of high academic memberand the othersconsist of low academic members. The process of preparinggroup paper is often dominated by the high academic abilityof students(Muhlisin et al., 2016). The method or model of learning becomes important to be able to accommodatethe gap between high and low academic ability students.

b) Purpose

This study aimed at: 1) Examining the effect of RMS learning model to metacognitive skills. 2) Examining the effect of different academic abilities against metacognitive skills. 3) Examining the effect of interaction between RMS learning model and different academic abilities against metacognitive skills.

A research on metacognitive skill is based on a research by Danial (2010) stated that learners tended to be passive at class in receiving lessons, they were more silent, and they were listening, writing, memorizing however, they could feel bored and in turn, they were not conscious during the learning process.

The current situation of college students is havinglow metacognitive skills,S not know their group members and their group presentation schedule, less independent in performing discussions without lecturer's supervision, and often late in delivering the assessment (Muhlisin, et al., 2016).

c) Metacognitive Skills

Metacognition is thinking about something with all details (Greenstein, 2012). Metacognitive awareness related to someone's thinking about the thinking process itself. Awareness of thinking associated with one's awareness of what is known and what is to be accomplished (Syaiful, 2011). The metacognition is anabilityof a person to use previous knowledge in planning strategies do chores, take necessary steps to solve the problem, reflect on and evaluate the results (Teal, 2010).

Metacognitive skills classified among the higher cognitive abilities because it includes several elements such as analysis, synthesis, and evaluation. The metacognitive skills are very important for training learners to think critically and be able to plan, control, and reflect all the activity of thinking that has been performed (Iskandar, 2014). Anderson & Krathwohl (2001) defined three indicators of metacognitive skills as planning, evaluation, and monitoring. Indicators and description of metacognitive skills can be seen in Table 1.

Table 1. *Indicators and Descriptions of Metacognitive Skills*

No	Indicator	Description
1.	Plan	• Setting goals • Enabling relevant resources • Choosing the right strategy
2.	Evaluation	• Determine the level of understanding of a person • How to choose the right strategy
3.	Monitoring	• Checking one's progress • Choose the appropriate improvement strategies when the chosen strategy does not work.

Source: Anderson & Krathwohl (2001)

Efforts to improve learning outcomes can be made by improving metacognition of learners. Coutinho (2007) have uncovered a positive relationship between metacognitive skills and academic achievement. The learning achievement of someone who has a high metacognitive level would be better if compared to those with low metacognitive level.

Learners are routinely being asked to think about how to bring the knowledge and skills, writing about what they know and want to know, appreciate how they understand, and consider how they can monitor and manage their thoughts and actions (Greenstein, 2012: 86).

d) RMS (Reading Mind mapping, and Sharing) and Conventional Learning Model

RMS (*Reading Mind mapping, and Sharing)* learning model that includes learning phase, the activities of lecturers, and student activities can be seen in Table 2.

Table 2. Activities in Learning Model RMS

Instructional Design of RMS
Learning procedures **Phase One: Introduction** 1. Greet the students and ask them to pray before the learning begins. 2. Checking students' attendance. 3. Communicate/state the learning objectives, expected final abilities, and rules in learning. 4. Motivate and stimulate the students' curiosity about the related topics. 5. Distribute and explain the instructions in the students' worksheets 6. Assign the students to work as instructed in the students' worksheets **Phase Two: Main Activities** **Reading** 1. Students read the related topics or particular material critically by analyzing the purpose and content of reading passages. **Mind mapping** 1. Students make a mind mapping related to the results of reading individually. 2. Students make mind mapping in a collaborative group. **Sharing** 1. Students present the results of the group mind mapping in front of the class. 2. Students give feedback/questions related to the work of the group who present their work results. 3. Lecturer confirms/strengthens related to the topics/material/concepts learned. **Phase Three: Closing** 1. Facilitate each group for reflection and evaluation of the learning instruction in order to be able to identify strengths, weaknesses, and choice in learning. 2. Ask the students to pray and partings.

In this research, conventional learning model was used as the learning modelfor the lecture on the basic concepts of science with or without adopting a particular instructional model. In each lectures, students in groups are required to prepare papers, presenting papers, and frequently asked questions according to process of conventional learning model

METHODS

This research is quasi experimental research which conducted on November 2014 to August 2015. It was conducted in basic concepts in science subjecton PGRI Semarang University.

a) Research Design

The quasi-experimental research design was adopted with a 2x2 factorial nonequivalent group design version. Nonequivalent quasi-experimental pretest-posttest control group design procedure is further shown in Table 3.

Table 3. *The Procedure of Experimental Research Implementation*

Pretest	Treatment	*Posttest*
O1	A1BI	O2
O3	A1B2	O4
O5	A2B1	O6
O7	A2B2	O8

Notes: O1, O3, O5, O7: pretest scores
O2, O4, O6, O8: posttest scores
A1: lecturing by using RMS learning model
A2: lecturing by using conventional learning model
B1: a group of students with higher academic ability
B2: a group of students with lower academic ability

b) Sampling

The study groups were determinedaccording to academic ability which was based on students' Grade Point of odd semester of academic year 2014/2015 that divided into three items, namely high ability (HA), moderate ability (MA), and low ability (LA). The students in high ability and low abilitygroups were examined in this research. The high ability student group was considered as 33.3% of the students on the top of the list based on the Grade Point (GP). The low abilitystudentgroup was considered as 33.3% of the students on bottomof the list based on the Grade Point (GP).

The character of college students in the research before the implementation of RMS learning model was that they were unable to do planning in preparing themselves in the learning. The students were less able in monitoring on the assignments given and in evaluating themselves in their learning achievement. this can be seen from the readiness of students in learning who do not know what material to learn and often late in collecting assignments.

The college students were students of the first semester in the lectures structure in Indonesia. The average age of the students was 18 years old. At that age, students should have developedmetacognitive skill needed for the success of study during their undergraduate degree program before they could go to the next level.

The participants of this study were students who receive the basic conceptsof science subject. There were 418 studentswhich divided into 9 classes. Cluster random sampling technique was applied andchosen two classes at random as participants:

1. 2A class (class control/conventional class) consisted of 45 students where 15 students wereat high academic ability (HA) and 15 students wereat low academic ability (LA), and
2. 2C class (experimental class/classroom learning using RMS model) consisted of 48 students where 16 students wereat high academic ability (HA) and 16 students wereat low academic ability (LA).

c) Instrumentation

The research instruments were observation sheet, student observation sheet, and metacognitive skills test. The observation sheet was used to measure if the learning process ran well or not. The student observation sheet was used to observe the students' activity.The metacognitive skills test consisted of 18 questions that integrated to metacognitive skills

indicators such as planning, monitoring, and evaluation (Krathwohl, 2002). The level of reliability of the test was 0712. Metacognitive skills rubric consisted of seven scale (0-7) which includes: (1) the answer in his own words, (2) the order of a coherent answer, (3) the grammar or language, (4) the reason (analysis/evaluation, creation), and (5) answer (right/less/not really/blank) (Corebima, 2009).

d) Data Analysis

The data analysis techniques were descriptive statistics and inferential statistics techniques for parametric data distribution. The research data from the results of the metacognitive skills tests were then analyzed by the Anakova test which was preceded by the normality test and homogeneity test. The results of the normality test and homogeneity test are seen in Table 4.

Tabel 4. Normality Test and Homogeneity of the Value of Metacognitive Skills Test

Test	*df*	*P Value*	Criteria	Conclusion
Test of Normality	62	0,200	$\rho \geq 0,05$	Normal
Test of Homogeneity of Variances	60	0,751	$\rho \geq 0,05$	Homogen

Based on the calculation of Table 4 on the test of normality, the significance value is greater than 0.05, which is 0.200, which means that the data is normally distributed. In the test of homogeneity of variances, the significance value is greater than 0.05, which is 0.751, which means that the data is homogeneous. The descriptive analysis was used to describe the data of students' metacognitive skills. The parametric inferential statistics analysis techniquewas applied to examine the data of students' metacognitive skills using ANCOVA (covariance analysis) analysis with SPSS 20 for Windows.

FINDINGS

The students' metacognitive skills score was obtained from the pretest and posttest. Tests were essay that consisted of 18 questions forboth control class (conventional learning models) and the experimental class (RMS learning model) as well as for high and lowacademic ability students. The recapitulation of the metacognitive skillsscore can be seen in Figure 1.

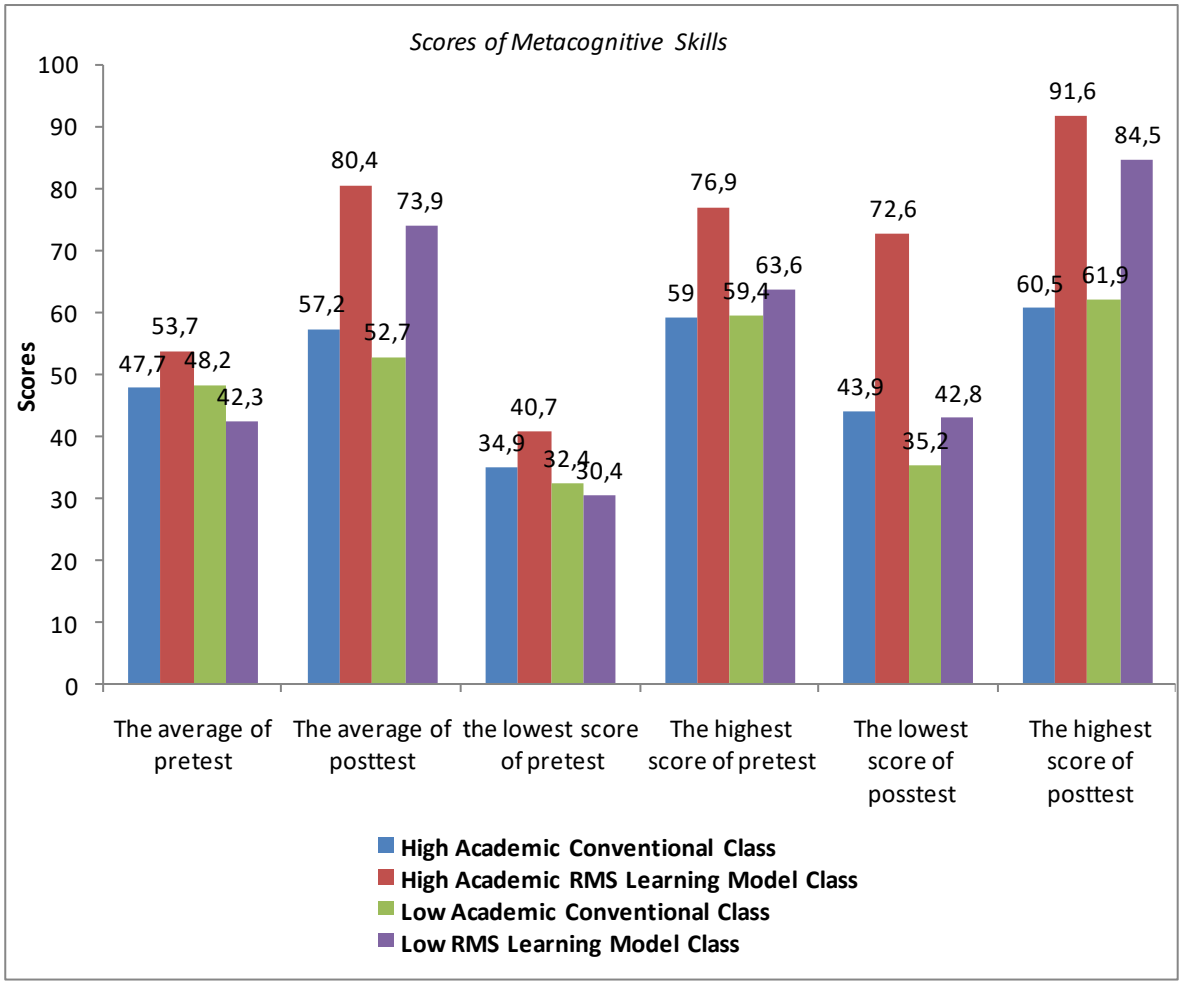

Figure 1. *Summary of Metacognitive Skills Values*

Scores of the RMS learning model in high and low academic students was higher than the average score of the conventional class. Metacognitive skill scores were grouped based on specific guidelines categories. determining categories based on values obtained with a range of values 88-109 (very high), 66-87 (high), 44-65 (sufficient), 22-43 (low), 0-21 (very low). Summary of the metacognitive skill scores data of pretest and posttest can be seen in Table 5.

Table 5. *Summary of Metacognitive Skill Scoresby Category*

Class	A	Score	Category (%)				
			Very high	High	Sufficient	Low	Very low
Conventional	HA	Pretest	0	0	80	20	0
		Posttest	0	6,7	86,6	6,7	0
	LA	Pretest	0	0	66,7	33,3	0
		Posttest	0	0	86,7	13,3	0
RMS learning model	HA	Pretest	0	12,5	75	12,5	0
		Posttest	12,5	87,5	0	0	0
	LA	Pretest	0	6,2	31,2	62,6	0
		Posttest	0	87,6	6,2	6,2	0

Notes: A: Ability
HA: High Academic
LA: Low Academic

Table 4 shows the percentage of pre-test scorein conventional and RMS learning model class for both high and low academic studentswas low enough. At the posttest, metacognitive skillsscoreincreased in both classes. After the implementation, conventional class was still dominated by the sufficient and lowmetacognitive skill category, but 6.7% in the high category. Unlike RMS learning model classfor the high and low academic students was dominated by high metacognitive skill criteria, even 12.5% in the "very high/excellent" at high academic achievers. This information proves that compared to conventional classroom, RMS learning model was able to more enhance metacognitive skills. Result of the essay test data based on indicators of metacognitive skills can be seen in Figure 2.

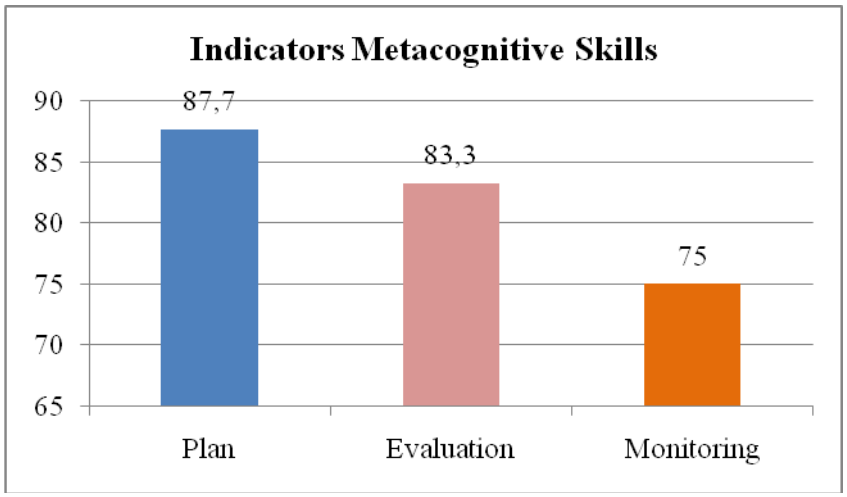

Figure 2. *Summary of Indicators Metacognitive Skills Values*

Figure 2 indicates that the highest indicator of metacognitive skill based on the test result was plan indicator, whereas the lowest was monitoring. It indicates that RMS learning model was more capable in improving the skill of students in learning planning including self-management in learning readiness and learning process in class. Description of each metacognitive skill indicators can be seen in Table 6.

Table 6.*Value (%) Metacognitive Skills Based Indicators*

No	Indicator	Description	Score (%)
1.	Plan	• Setting goals	90
		• Enabling relevant resources	80
		• Choosing the right strategy	70
2.	Evaluation	• Determine the level of understanding of a person	85
		• How to choose the right strategy	80
3.	Monitoring	• Checking one's progress	85
		• Choose the appropriate improvement strategies when the chosen strategy does not work.	70

Table 5 explains that the highest metacognitive skill of students was in the skill of determining learning goals in studying a topic of material to be studied. The lowest cognitive skill was on choose the appropriate improvement strategies when the chosen strategy does not work. It gives explanation that RMS learning model could optimally improve the metacognitive skill of students in every description of metacognitive skill indicator. The determination of students' learning goals in learning model was facilitated in the step of reading that is intriguing the students on the material studied and what will be studied. Students' metacognitive skill related to the selection of strategy was weak in comparation to

other description. Thus an emphasis was neededon the weakness during the learning process with RMS learning process.

The process of learning in class using RMS learning model was observed in each learning meetingby the observers who are also the researchers. The result of the appraisal indicates that the average value was 4.90. It can be interpreted that the learning model syntax had been well conducted and all syntax has been done. The result of the appraisal of Learning Model Worksheet from observer is displayed as follow. Description of process of RMS learning activities can be seen in Table 7.

Table 7. *Process of RMS Learning Activities*

No	Appraisal Aspects	Average Value
1.	Introduction	4,90
2.	Main activities	4,90
3.	Closure	4,90
4.	Time management and class atmosphere	4,90
Total average		4,90

There were differences in activities conducted by students in experimental and control groups, especially in terms of student liveliness. The students in experiment class were very active since the class demanded individual and group activities and the students were facilitated with interaction among the students.

Results about the metacognitive skills based on the observation sheet that 1) students know the group members, 2) students are confident and serious in carrying out discussions, 3) student punctual in collecting tasks, 4) the student is able to define the objectives and strategies of learning, 5) the student is able to provide an evaluation on himself/herself and others.

The metacognitive skills data analysisusingANCOVA preceded by the assumption that, 1) the data normality test conducted by One Sample Kolmogorov-Smirnov test and 2) test of homogeneity of variance using the Levene test. The results showed the normal distribution of data where metacognitive skills scorein bothconventional class and in RMS learning model class was greater than 0.05 itwas equal to (0.200 and 0.088). Homogeneity testby usingLevene test showed that metacognitive skills data of conventional class and RMS model class has greater score than or equal to 0.05.It was equal to 0,05.

ANCOVA test with pretest as covariant was done to see whether there was an effect of RMS learning model and academic ability as well as its interaction tostudents' metacognitive skills. The summary of ANCOVA test of the treatment effectsto the students' metacognitive skills can be seen in Table 8.

Table 8. *Summary of ANCOVA Test Results of Treatment Effectsto Metacognitive Skills*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9182.879[a]	4	2295.720	49.186	.000
Intercept	3000.590	1	3000.590	64.287	.000
Pretest	1060.551	1	1060.551	22.722	.000
Learning Model	7618.759	1	7618.759	163.231	.000
KA	99.331	1	99.331	2.128	.150
Learning Model * KA	57.993	1	57.993	1.242	.270
Error	2660.451	57	46.675		
Total	285092.620	62			
Total Corrected	11843.330	61			

In Table 8,the test results for the learning sources model had F value of 163.231 with a p-value less than α (p≤0.05) in which significance value is 0,000. It indicated that there was a difference between the students' metacognitive skills taught using RMS model and taught using conventional learning models. Based on this reason, it can be concludedthat there was significant effect ofRMS learning model to students' metacognitive skills.

The next test determined whether there was the effectof academic ability tostudents' metacognitive skill, based on test results.In Table 6, the source of academic skills had F value of 2.128 with a p-value greater than α (p≥0.05) in which significance value is 0.150. It means that there was no effectof academic ability to students' metacognitive skills. So, there was no significant effect of the academic ability to students' metacognitive skills.

The next test examined whether there was any effect of the interaction of learning model and academic ability to the students' metacognitive skills. Based on test results in Table 6, the source of the interaction model of learning and academic skills had F value of 1.242 with a p-value greater than α (p≥0.05) with 0,270significance. It means that there was no interaction effect of learning model and academic ability to the students'metacognitive skills. So, there was no significant effect of interaction of learning model and academic ability to the students' metacognitive skills. The mean value of corrected and improved metacognitive skills is in Table 7. RMS learning model class and conventional learning class obtained corrected values metacognitive skills and different upgrade. The impact of RMS learning model was 51,5% higher than conventional model on metacognitive skills.

Table 9. *The Mean Value Corrected Metacognitive Skills*

Learning Model	Mean Corrected		Enhancement (%)
	Pretest	Posttest	
Conventional	47,9	54,9	14,6
RMS Learning Model	46	76,4	66,1

DISCUSSION and CONCLUSION

The results of data analysis revealed thatthe students' metacognitive skillswho taught through using RMS learning model was better than the students who taught through using conventional learning models. The indications of increasing metacognitive skills in the RMS learning model classroom based on observer's field notessuch as students were able to demonstrate the purpose of their learning, students were able to monitor progress in learning by knowing the things that have been understood or not understood, and the students were able to correct the errors in learning by finding additional relevant learning resources.

The RMS learning model hasreading syntax, mind mapping, and sharing. In *reading* activities, students shouldindividually read variety of sources regardingmaterial or studied topics. The students were required to be able to define the main idea, purpose, and determine the things they are understood yet. Reading text material or a specific topic will trigger them to ask their selves if any shortcomings or something that they cannot understand. So, it will evoketheir motivation and curiosity to find the answers by searching information from various sources. This activity can improve metacognitive skills that can be used to plan, monitor, and evaluate the successes learning. According to Amzil (2013),results of research on reading activityis able to improve the evaluation. Vehovec et al (2014) stated that reading can improve metacognitive skills.

The nextstudentperformedactivitieswereindividual mind mapping and collaborative group. These activities allowed students to think analytically, manage the information, and linking one concept to another in order to construct the previous obtained concepts in written mind maps. Creating mind map activitypotentiallybe ableto assist the student to plan, monitor,

and evaluate or correct the results of a mind map.So,students'metacognitive skill will increase. This is in line toAdodo (2013) research that mind mapping activity can improve self-regulation of the learning progress.Similarly, it was stated that learning by using mind map can enhance students' activity that spurs their creativity so that learning goals can be achieved (Zubaidah et al., 2017).

Social interaction occurred in collaborative groups. The mind mapping and sharing activities were also be the factor in increasing students' metacognitive skills. The demand for collaborative mind mapping activities madethe students be able to plan the necessitiesfor a given task (Wu et al., 2013). The social interactionrequired the students activelyinvolvingin problemsolvingtogether, expandingthinking process, and increase the confidence. It supportsresearch by Jayapraba&Kanmani(2013) that cooperative learning can improve every learner activation role in solving the problem together. According to researchof Chua et al.(2011), collaborative learning can improve a person's self-confidence by increasing metacognitive skills.

The test results of academic ability to students' metacognitive skills showed that there was no significant effect of academic ability to students' metacognitive skills. In line with results of the research by Palennari (2011) that the academic ability does not affect the learners' metacognitive skills. And,, the low academic ability can improve student metacognitive skills if they provided the orderly learning according Basith (2012).

Equitable metacognitive skills in academic ability differ from RMS learning model due to the readiness of the students in following study which already arranged by reading the preliminary information from variety of learning sources and social interaction that occur through working in collaborative group, heterogeneous group distribution, peertutorials, and *sharing*. All students were responsible for their learning progress in individual and in a group, assisted each other in achieving learning goals. So,the equalization target was evenly distributedfor each individual metacognitive skill.

The interactionof learning model and academic ability indicated that there was no significant effect between them. It provided information that the same metacognitive skills achievement among thehighand low academicstudents after participating in learning with RMS model. The results of this study supportfindingof Palennari (2011) that the academic ability had no effect on metacognitive skills. This was due to the RMS learning model activity required students to be actively involved as individual from finding the information, critical and comprehensive understanding of information, pouring the mind map in*mind map*, and presentingit in the class. Aktamis, et al., (2016) and (Saglam&Sahin, 2017) states that learner's active involvement is able to enhance learning achievement.

Those activities sharpen the students' metacognitive skills for both high and lowacademic ability students. Every individual should be aware of learning goals, identify strategies to be able to complete the assigned task, and evaluate the learning process so that each individual metacognitive skill can be improved. It supportsresearchof Kirmizi (2015) that the activity which demands self-learning will make students find the purpose in their learning and be able to set their learning objectives. In line withRamdiah (2013) researchthat the activities that facilitate students to make decisions on any action, monitoring, and evaluating the learning process can improve metacognitive skills.

The other causes that effects equity of metacognitive skills was RMS learning model that facilitate collaborative group consist of heterogeneous members (academic high, middle, low).Cooperative learning can be a supporting way of improving learners' academic levels (Bilgin, et al., 2016). This meant that an interaction of mutual aid in the learning without reducing the individual responsibility on successful learning. The active involvement of each individual in the group study allowedthinking process of each member in solving a problem that helped students to organize the thoughts, ideas or information which required in solving a

problem. This is consistent with researchof Damsa (2014) that the collaboration can improve thinking skills in problem solving. According toLong & Carlson (2011) opinion, learning to optimize the process of thinking will help learners to regulate and control their learning so it improves metacognitive skills.

The following conclusions can be derived based on the data analysis and presented discussion:

1) There was an effect between RMS learning modeland students' metacognitive skills.
2) There was no significant effect between students'academic ability and students' metacognitive skills.
3) There was no effect of interaction between RMS learning models and different academic abilities toward the students' metacognitive skills.

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