

## THE LEARNING TOOLS BASED ON THE REMAP TMPS MODEL (READING CONCEPT MAP TIMED PAIR SHARE) AND THE EFFECTIVENESS OF STUDENTS CRITICAL THINKING SKILLS

SARIAH<sup>1</sup>, JAMALUDDIN<sup>2</sup>, DADI SETIADI<sup>3</sup>

<sup>1</sup> Senior High School Islam Al-Maarif Al-Ijtihad, Tumpak Pujut, Email; [sariahbjang327@gmail.com](mailto:sariahbjang327@gmail.com)

<sup>2</sup> Biology Education Studies Program, FKIP UNRAM, E-mail: [jamalbio2017@gmail.com](mailto:jamalbio2017@gmail.com)

<sup>3</sup> Biology Education Studies Program, FKIP UNRAM, E-mail: [setiarasyid@gmail.com](mailto:setiarasyid@gmail.com)

Key Words	Abstract
Learning Tools, Reading Concept Map Time Pare Share, Critical Thinking Skills.	<i>This study aims to improve critical thinking skills through the application of science-based learning tools REMAP TMPS model (Reading Concept Map Timed Pair Share). The type of research was quasi experiment with One Group Pretest-Posttest design. The population in this study were al Junior high skool students of class VII at Senior High School 4 Pujut and Senior High School 6 Pujut with sampling using purposive sampling technique so that the samples taken are class VII-A at Senior High School 4 Pujut and VII-B in Senior High School 6 Pujut. instruments used to measure critical thinking skills in the form of answer-question as much as 10. The results showed the average N-gain class VII-A higher than class VII-B. This suggests that REMAP TMPS-based science learning tools has effective toward student critical thinking skills.</i>

### INTRODUCTION

Learning tool is one of supporting tools of success of learning. In learning tools there is a learning process plan, assessment, media, and model to be used in learning. Planning a good learning tool has impact on the implementation of successful learning. Khan (2012) Stated that science learning is done in order to develop students' knowledge, attitude, and scientific skills. Learning is done by involving students in active and innovative learning activities by integrating skills, knowledge, and attitudes to understand IPA concepts. It is stressed that the learning process must be optimized from planning to implementation.

The change of curriculum aims to improve the system and learning activities so that the learning activities are more interactive, inspirational, fun, challenging, motivate

the students to participate actively and provide sufficient space for initiative, creativity, and independence according to students' talents, interests, and physical and psychological development.

Education in Indonesia is still running monotony, Gobert (2010) found learning process focused on fingering vocabulary, facts and formulas. Rahayu (2012) The process of learning is still done conventionally characterized by the domination by teachers and the less active learning process involving students. Besides reading and writing activities are not a top priority, consequently the ability to read and write Indonesian students is not good. Based on the results of PISA tests on reading scores was 2015 Indonesia is on the prewent to 62 of 70 countries that follow the test PISA. This can be seen in the following Table 1:

Table.1 PISA TEST Scores Index

Year	Reading Score	Ranking Indonesia	Number of countries	Average Score PISA
2015	397	62	70	500

Source: OECD, 2016

A good learning process begins with careful planning in determining appropriate learning models to achieve optimal learning outcomes. One of the learning models that train students to work independently and skillfully in communicating is cooperative model. One effective cooperative model is Reading Concept Map Timed Pair Share REMAP TMPS. The steps of REMAP TMPS model include reading, students are required to read reading related material that will be taught at home; concept map (create a mapping concept), students are asked to make a mapping concept from the results of reading it and this activity is done at home; Timed, students were asked to pay attention to time arrangement at Pair and Share stage; Pair, students form pairs of groups, formulate problems based on reading outcomes, formulate hypotheses from formulation of problems that have been prepared, analyze data by doing problems or problems individually, explain answers to friends, listen to friends, write responses; Share students submit responses, ask or refute the theme answers and make conclusions. Nakagawa (2003) stated that TMPS is potential and provides opportunities for students to empower critical thinking skills. Additionally Hussein et al, (2015) suggested an increase critical thinking skills is very important because it affects the student's mastery of concepts.

Critical thinking skills are skills to filter with intelligent, meticulous, meticulous and responsible models of any kind of information that is not necessarily good and truth-tested. The characteristic of Critical Thinking is always questioning an argument for obtaining the essential truth. This is because critical thinking people can clearly see the wide range of information received throughout understanding, thorough analysis, and judgment with a criterion model that can be accounted.

According to Marzano, et al. (1988) there are eight critical skills that need to be

mastered by someone to do the reading activity. There are eight critical thinking skills, namely focusing skill, information gathering skill, recall skills, organizing skills, skill of analyzing, generalizing skill; integration skills and skills to evaluate.

The results of a survey conducted by Kurniawati, et al (2015) showed that 60% of students are still not developed critical thinking skills, so it still needs to be improved. Critical thinking skills can be empowered through cooperative learning (Lai, 2011). Zubaidah (2014) One of the model of learning result of combination with cooperative learning model potentially empowering critical thinking skill is learning model of Remap Coople (Reading Concept Map Cooperative Learning) . Kurniawati, et al (2016) Application of learning model Remap-CS as one of the learning that can be applied to empower students' critical thinking skill in science lesson. The same thing is put forward by Zubaidah (2014) RT REMAP learning model can improve students' critical thinking skills higher than conventional learning.

In addition to empowering critical thinking skills other TMPS advantages are able to make learners improve the ability to explain to others and improve the way word processing in opinion (Walters, 2000). TmPS also be used to build a positive relationship between the students of the other students in sharing information, improve critical thinking, enhance the ability of air communication (Nakagawa, 2003).

Based on the description above, the research development of learning tools based on science REMAP TMPS model and test their effectiveness to critical thinking skills on Integrated Science subjects in Senior High School 4 and Senior High School 6 Pujut needs to be done.

## **METHOD**

In this was Quasi Experimental development this used one group pretest posttest testing design. The subjects of the

study were students of Senior High School 4 Pujut and Senior High School 6 Pujut in class VII, And sample 50 people in the academic year 2017/2018. The test developed to measure the effectiveness of critical thinking skills is a description of 10 questions on the topic of climate change and its impact on the ecosystem. The test includes indicators of critical thinking skills: Provide simple explanations, Build basic skills, Summarize, Provide further explanations and Strategies and tactics.

The effectiveness of applying REMAP TMPS based learning apparatus to students' critical thinking skill is determined based on normalized gain scores, N-gain. N-gain is calculated by the equation developed by Meltzer (2002) where:

$$N\text{-gain} = \frac{S_{\text{post}} - S_{\text{pre}}}{S_{\text{maks}} - S_{\text{pre}}} \dots \dots \dots (1)$$

with g is a normalized gain,  $S_{\text{maks}}$  is the ideal score of the initial and final tests,  $S_{\text{post}}$  is the final test score, whereas  $S_{\text{pre}}$  is the initial test score. The low N-gain can be classified as follows:  $g > 0.7$  (high),  $0.3 \leq g \leq 0.7$  (medium), and  $g < 0.3$  (low).

**RESULTS AND DISCUSSION**

Learning tools that have been developed in addition must be feasible, practical and effective. The level of effectiveness of the developed tools based on pretest and posttest results or from the N-gain score obtained after applying the learning tools. Intrumen critical thinking skills use the pretest and post test questions. The result of comparison test between Senior High School 4 Pujut and Senior High School 6 Pujut in class VII can be seen in Figure 1 below.

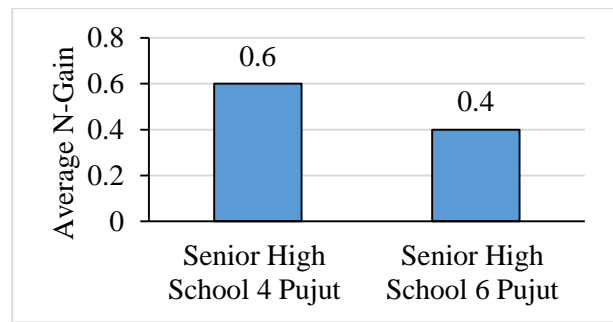


Figure 1 . Comparison of Effectivity of Senior High School 4 Pujut and 6 Pujut

Based on the Figure above the results of the N-gain test on the results of the effectiveness ratio of students' critical skills obtained Senior High School 4 Pujut of 0.6 while Senior High School 6 Pujut 0.4 in the medium category. The highest effectiveness is Senior High School 4 Pujut from Senior High School 6 Pujut. This is influenced by the initial ability and characteristics of different students from each school, when the learning process takes place the most active students to ask questions, answer questions, give input or suggestions, communicate, enthusiastically discuss the students of Senior High School 4 Pujut, while in Senior high school 6 Pujut is still not seen optimally and there are some people who look active in the learning process, in addition to the motivation to learn from students still not seen. the differences that occur in both schools are due to differences in student character, environment and their learning habits.

The result of N-gain test analysis on critical thinking skill based on each indicator is giving simple explanation, building basic skill, concluding, giving further explanation and strategy and tactics. The results can be seen in Figure 2.

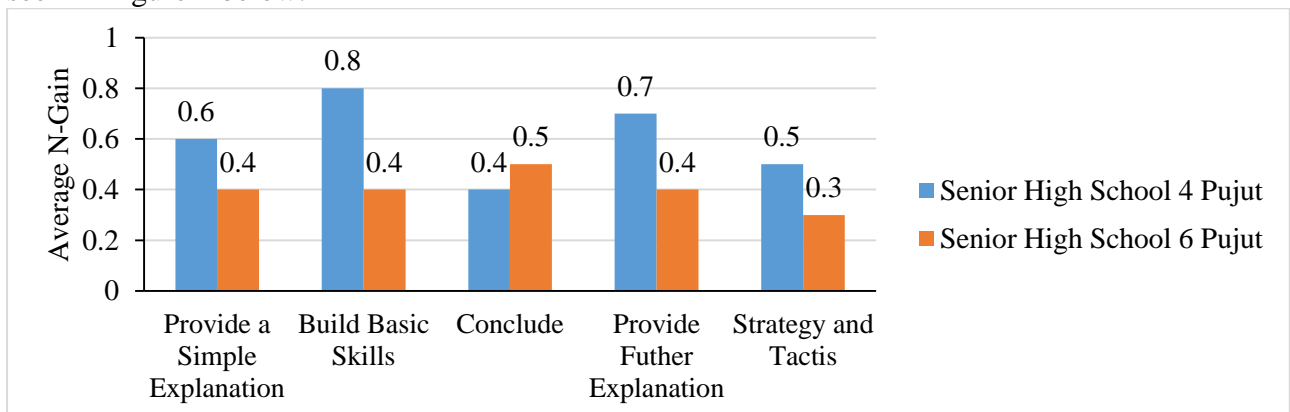


Figure 2. Effectiveness on Each KBK Indicator

Based on Figure 2. Indicators Building basic skills is higher than other indicators in grade VII at Senior High School 4 Pujut. It caused indicator measuring the confidence of students to the answers from the student readings. Sariyem (2016) states the higher the ability to read, the higher the critical thinking skills.

While the results of the lowest indicator is the strategy and tactics, one of the causes because of the integration of the problem in complex material that is how the description of a situation, the problem statement, and the possibility of problem solving, students can determine the positive and negative solutions, or which solution is the most right to solve the problems presented. In addition the position of the problem on the indicator is located at the end so that few students who answer optimally. Jirana et al. (2016) states low indicator of critical thinking skills, due to lack of appropriate decision making and planning effective strategies in learning activities.

## CONCLUSION

Based on the results of the study, it can be concluded that learning tools developed are feasible, very practical and effective to use; learning tools based on concept mapping time effective pare share learning in improving students' critical thinking skills.

## REFERENCES

OECD. 2016. *PISA Released Science Items*. (Online) <http://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf>. Retrieved 24 October 2017.

Gobert, D., Pallant, AR, and Daniels, JTM, 2010. Unpacking Inquiry Skills from Content Knowledge in Geoscience: A Research and Development Study with Impingions for Assessment Desing. *International Journal of Learning Technologies*. 5 (3): 310-334.

Husein Sadam, Lovey Herayanti, Gunawan. (2015). The Effect of Interactive Multimedia Usage on Mastery of Concepts and Skills of Student Critical Thinking on Temperature and Heat Material. *Journal*

*of Physics and Technology Education*. 1 (3): 221-226 ISSN. 2407-6902.

Jirana, Mohammad Amin, Endang Suarsini, Betty Lukiati. 2016. Analysis of Student Critical Thinking Skills at Evolution Course at University of Sulawesi Barat. *National Seminar on Education and Saintek*. 953-958.

Khan, M. 2012. A Comparison of an Inquiry Lab Teaching Method and Traditional Lab Teaching Method upon Scientific Attitude of Biology Students. *Language in India*, 12: 398-410.

Lai, Emily R. 2011. *Motivation: A Literature Review*. Prentice Hall: Pearson Education, Inc.

Marzano, Robert J. 1988. Dimension of Thinking. USA: *Association for Supervision and Curriculum Developmen*.

Meltzer, D.E. 2002. The Relationship Between Mathematics Preparation and Conceptual Learning gains in Physics: Posible "Hidden Variable" in Diagnostic Pretest Scores. *American Journal of Physics*. 70(7).

Nakagawa, JJ .2003. *Spencer Kagan's Cooperative Learning Structures*. Retrieved from <http://jalt.org/pansig/PGL2/HTML/Nakagawa.htm>.

Rahayu, S. 2012. Designed Student-Centered Instruction (DSCI): Constructivist, Inquiry and Contextual Based Learning Model. *Paper presented at the National Seminar on Chemistry and Chemistry Education*, FKIP UNS, March 31, 2012.

Sariyem. 2016. The ability of Critical Thinking and Reading Interest With Critical Reading Ability of High School Students of SD Negeri in Bogor Regency. *Journal of Basic Education*. 7 (2): 329-340.

Walters. (2000). Putting Cooperative Learning to the Tests. *Harvard Education Letter*. 10 (3)

Zubaidah, S., and Mahanal, S. 2016. REMAP RT (Reading Concept Map Reciprocal Teaching) to Improve Student Critical Thinking Skills. *In Proceedings of Biology Seminar*. 13 (1): 280-284.