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Empowering Critical Thinking with Ricosre Learning Model

Tri Maniarta Sari*, Susriyati Mahanal, Siti Zubaidah
Biology Education–Universitas Negeri Malang
Jl. Semarang 5 Malang 65145, Jawa Timur, Indonesia. E-mail: trimaniarta@gmail.com*

Abstract: This study aims to determine the effect of Ricosre learning model on students' critical thinking skills. This research was conducted in two high schools with total participant as many as 136 students. The research design used nonequivalent pretest-posttest control group design. Data on students' critical thinking skills were obtained from the results of the essay test, and the results were analyzed by Anacova technique. The results showed that Ricosre had an effect on students' critical thinking.

Key Words: ricosre learning model, critical thinking skills

Abstrak: Penelitian ini bertujuan untuk mengetahui pengaruh pembelajaran *Ricosre* terhadap keterampilan berpikir kritis siswa. Penelitian dilakukan di dua SMA dengan jumlah partistipan sebanyak 136 siswa. Rancangan penelitian yang digunakan adalah *nonequivalent pretest-posttest control group design.* Data keterampilan berpikir kritis diperoleh dari hasil tes esai, dan hasilnya dianalisis dengan teknik Anacova. Hasil penelitian menunjukkan bahwa *Ricosre* berpengaruh terhadap berpikir kritis siswa.

Kata kunci: model pembelajaran *ricosre*, keterampilan berpikir kritis

INTRODUCTION

According to Eggen (2012) critical thinking is an ability and a person's tendency to create and conduct an assessment of the conclusions based on evidence. In addition, critical thinking skill is a student's ability to analyze an argument, make inferences using reasoning, judging or evaluating, and making decisions or solving problems (Lai, 2011). Critical thinking skill should be developed through learning in school, because the critical thinking skill is considered as a high order thinking skill that are needed in the 21st century (Saavedra & Opfer, 2012). In addition, a very important critical thinking skill is empowered for supporting the cognitive learning outcomes of students (Cano & Maryinez, 1991). This is supported by the results of research revealed by Hashemi (2011) which states that the activity of critical thinking can improve thinking skills of students so as to help the student in learning process. Besides, according to Kim and Choi (2014) students with high critical thinking skill will be better at solving problems.

Facts on the field indicate that critical thinking skill of students is still not empowered optimally at the high school level. It is seen from the results of research conducted by Kurniawati, Zubaidah, and Mahanal (2015). It shows that most of the students of X MIA Class at SMA Negeri Batu or 60% of students have underdeveloped critical thinking skill. Based on research conducted by Kurniawati (2016); and Rosyida (2016), it state that the conventional learning model has not significantly improve students' critical thinking skills. This is supported by preliminary test results that have been conducted in SMAN 4, 5, and 10 Malang which shows that students' critical thinking skill remains low. Based on the fact that empowerment of solving skills and critical thinking are still low, it is necessary to empower solving skills and thinking skills of students in learning process. One solution to improve critical thinking skills and problem solving can be conducted by employing Ricosre learning model.

Ricosre is a learning model developed by Mahanal and Zubaidah (2017). Ricosre learning model is developed to empower students' critical thinking skill in the 21st century. Ricosre learning model syntax was developed from problem solving learning model developed by John Dewey (Carson, 2007), Polya (1988), and Krulick & Rudnick (1996). It consists of Reading, Identifying Problem, Constructing Solution, Solving Problem, Reviewing and Extending Problem

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Table 1. ANACOVA Testing of Students' Critical Thinking Skill

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6454.805[a]	4	1613.701	17.959	.000
Intercept	23157.815	1	23157.815	257.725	.000
PreKritis	352.746	1	352.746	3.926	.050
Model	2106.921	1	2106.921	23.448	.000
Error	11770.960	131	89.855		
Total	838800.000	136			
Corrected Total	18225.765	135			

Solution. According to the research conducted by Fan, Zhao, Cheang, Teo, and Ling (2010) indicates that problem solving learning model is effective in improving high order thinking skill of students in Mathematics learning. Within Riscosre learning model syntax, it could empower students' critical thinking skill. One of the syntax is reading. Reading is not only beneficial for obtaining information and knowledge, but also empowering critical thinking skill (Zubaidah, 2014; Ogeyik & Akyay, 2009).

According to the previous explanation, the authors decided to conduct a research to identify whether Ricosre learning model has a different influence on students' critical thinking skill or not compare to conventional learning. Thus, the proposed hypothesis in this research is Ricosre learning model influences students' critical thinking skill.

METHOD

This study was a quasi-experimental research conducted at 10th graders of Senior High School in Malang. The design of the study was a Nonequivalent Pretest-Posttest Control Group Design. Selection of class was based on the equivalence test. The control class is a XI Science E at SMAN 10 Malang and XI Science 3 at SMAN 4 Malang that was treated using conventional learning models and the experimental class is a XI Science D in SMAN 10 Malang and XI Science 2 SMAN 4 Malang taught by Ricosre learning. The dependent variable is the critical thinking skills and independent variables is Ricorse learning model. The instrument used was a essay consisted of 8 items. The test results were then analyzed with the critical thinking skills assessment rubric developed by Zubaidah, Corebima, and Mistianah (2015) which is developed by modifying the rubric from Finken & Ennis (1993). The analysis of data was using Analysis of Covariance at significance level of 5% or $p < 0.05$.

RESULTS

According to the hypothesis testing, the results of ANACOVA testing for students' critical thinking skill is presented in the following Table 1.

According to the Table 1 , it is indicated that F_{count} is 23.448 with significance rate of $0.000 < 0.005$, thus the research hypothesis is accepted. It further means that Ricosre learning model influenced students' critical thinking skill. The aforementioned results indicate that there is a difference result between Ricosre learning model and conventional learning model on students' critical thinking skill. The calculation result of critical thinking skill corrected average score further indicates that Ricosre learning model obtained higher score than conventional learning. Critical thinking skill corrected average score of Ricosre learning model is 79.85 and conventional learning is 66.41. It indicates that Ricosre learning model could improve students' critical thinking skill.

DISCUSSION

Based on the Anacova analysis, it is known that the Ricosre learning model and conventional learning give significantly different results on students' critical thinking skill. The great difference in the results of the analysis that has been done is to demonstrate that the learning model has an effect on critical thinking skill. The results show that the model study had an corrected average higher than conventional learning models. Based on the results of research conducted by Boleng (2014), Mamu (2014), Karmana (2011), and Suwardi, Kistiayanto & Wagistina (2013) show the influence of the learning model of the critical thinking skill to support this research, it is proving a model of learning has an effect on critical thinking skill.

Further testing indicates that Ricosre learning model obtained a corrected average score of critical

thinking skill higher than conventional learning due to Ricosre's syntax which are able to empower and enhance students' critical thinking skill. Ricosre learning syntax consists of reading, identifying the problem, constructing the solution and then using a solution that have been constructed initally to solve the existing problems, and reviewing the results of the discussion that has been done by presenting the results of the discussion.

The first student activity in Ricosre learning model is reading. Before face-to-face learning begins, students are required to read firstly topic given by teacher in the previous meeting and during the face-to-face learning, students are given several minutes to understand some phenomena. Reading is one of the activities that involve the processing of information that makes the students have the knowledge. Through reading, students can obtain a variety of information related to the learning material that will be discussed in face-to-face activities (Ozbay, 2006). Information obtained by the students is through reading activities and understanding information from reading material (Sharma & Singh, 2005). Once students obtained information about the material learned, students can formulate the problems derived from reading given by the teacher. This is in line with findings proposed by El-Koumy (2006) that reading can help students to organize a thought process within the student.

Aspects of critical thinking skills include the ability which is obtained from the process of reading; analyzing and evaluating the information obtained (Duron, Limbach, & Waugh, 2006; Fascione, 2013). Reading can encourage curiosity of students and have a broad knowledge. Yildirim and Özkahraman (2011), Duron, Limbach, and Waugh (2006) and Ennis (1993) state that the extensive knowledge can support students to have critical thinking skills. Reading also helps students to have an open thought regarding information and able to decide an issue by considering various sides or drawing conclusions based on supported reasons (Ennis, 1993).

The next activity is to formulate the problem. This stage can assist students in finding the problems found in the reading process and then transfered into a form of formulation of the problem. If the stage of formulating the problem combined with reading stage, it can help students to develop critical thinking skills. As in the formulation of the problem, students need to focus and analyze well. By repeating these activities continously, then it can help students to think critically.

Then, students deal with constructing solution. This stage assists students to develop their critical thinking skill since it trains students' flow of thought in constructing solution to solve the problems based on the obtained information. At this stage, students are trained to construct their own solutions to the problems faced equipped with material that has been previously read, so that students are encouraged to connect the knowledge that has been obtained to answer the questions. Thus, it can assist students in developing critical thinking skills, which in turn will affect the learning outcomes of the students.

The next activity is problem solving. This activity is facilitated by discussion in class to solve the problems employing solution which has been constructed before in the previous stage, either result of practice or reading. This stage is indirectly encourage students to organize the obtained information which is beneficial for solving the problem and connecting with the practice activity. Therefore, generating a conclusion based on obtained information from various activity, either literature review or practice, indirectly facilitate students to think critically (Eggen & Kauchak, 2012).

Students should be able to use information they have to be able to solve problems in problem solving activities. Additionally, students must think deeply to identify which information is used to solve the problems. This process is also important for students to be able to associate information or knowledge with other information from various sources for problem solving. Process management of information or knowledge that exists within the student can encourage students to be able to have the critical thinking skill. Critical thinking skill involve the application of knowledge for problem solving. Voscoglou and Buckley (2012) state that critical thinking is the effect of the acquisition of knowledge, while knowledge is the result of thinking about the concept and its combination with the principle. The resulting new concept to solve the problem would be accomodated with existing concepts in cognitive structure of students. This can not be occured if there is no critical thinking skill.

The last stage is reviewing and extending problem solving. This stage, students communicate the results of discussions and receive feedback in the process of classroom discussion. When receiving feedback or suggestion, students need to have skill in choosing the correct concepts which is accepted in this process. The selection of the relevant information is also one of the critical thinking skill (Lai, 2011; Ennis, 1993;

Fascione, 2013). Good management in selecting the materials or concepts that are relevant positively impact on learning outcomes.

CONCLUSION

This research confirms that Ricosre learning model influence students' critical thinking skill. Ricosre learning model could improve students' critical thinking. The findings of this research affirm that Ricosre is feasible to be employed in learning to improve students' critical thinking skill.

Further research is required to examine the consistency of Ricosre learning model improving students' critical thinking skill. Also, it requires to identify the interaction of the studied learning model with other independent and dependent variables within learning process in classroom.

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