The Effect of Learning Model and Critical Thinking Toward Learning Outcome in Economics of The Tenth Graders in Senior High School

Hermidayani [1]*, Mukhtar [2], Hamonangan Tambunan[3]
{* mida1557@gmail.com }

Department of Educational Technology, Universitas Negeri Medan, Medan, Indonesia [1]

Abstract. This study aims to: (1) know the comparison of students' learning outcome in economics which are taught by*problem based learning* (PBL) modeland*think pair square* (TPS) model. (2) To know whether the students with higher learning outcome have an ability in high critical thinking and low critical thinking. (3) To know the interaction between learning model and critical thinking ability toward the learning outcome in economics. The research method used is quasi experiment with research design of 2 x 2 factorial. The technique in analyzing the data uses *ANOVA*with two lines at the segnificance level of $\alpha = 0.05$. The results of this study show that: (1) The students' learning outcome in economics who are taught by PBL modelis higher than students who are taught by TPS model, with$F_{count} = 6.17 > F_{table} = 3.99$. (2) The students' learning outcome in economics with high critical thinking ability is higher than students with low critical thinking ability, with$F_{count} = 40.80 > F_{table} = 3.99$. (3) There is interaction between learning model and critical thinking ability toward the learning outcome in economics with$F_{count} > F_{table} 12.77 > 3.99$.

Keywords: Learning model, critical thinking, economics learning outcomes

1 Introduction

Economics was very necessary in meeting needs, therefore the economy was one of the most important sciences in human life. In general, it can be said that the notion of economics was a field of science studies related to the management of material resources of individuals, communities, and the state to improve the welfare of human life. Therefore, economics was one of the sciences related to human actions and behavior in fulfilling the needs of life that develop with existing resources through consumption, production and distribution activities.

The learning objectives presented by the Ministry of National Education can be concluded to provide basic skills that were meaningful to the lives of students in the community. These goals should lead students to be students who think critically, rationally, creatively, participate intelligently, responsibly, develop positively and democratically, which in turn will develop students' personalities into good economic actors in daily life that can be demonstrated in the process learning and learning outcomes produced.

Learning models also affected students learning outcomes, the reality obtained in the field that the learning model used in economics learning was not as expected, while economics learning required students to be able to think critically and relate to real life in solving problems.

ACEIVE 2018, November 03-05, Medan, Indonesia

DOI 10.4108/eai.3-11-2018.2285666

In connection with this, it was necessary to have information on economics learning that people have studied so that the learning objectives can be overcome broadly to facilitate students in understanding learning.

Based on several studies on economics learning, it was informed that understanding economics activities was needed a Problem Based Learning (PBL) learning model to improve economics learning outcomes on students interest because economic learning was not only applying lecture methods, theater, study rooms, and textbooks (Arul: 2007).

Based on those relevant studies, it was necessary to ascertain what learning models were suitable in applying economics learning so that students understood it easily. Thus, one of the factors that need to be considered was the learning process. It was needed to study a more basic learning model because it required an in-depth understanding of the economy and the existing problems so that a learning model was needed and invited students to think critically in solving economics problems. In connection with this form of learning model Problem Based Learning (PBL) can be an alternative in learning Economics, PBL learning model was a student-centered learning model and supported constructivist learning theory [1]**.** Problem Based Learning (PBL) was a learning model that has the essence of presenting a variety of authentic and meaningful problematic situations to students. The role of the teacher was to present a variety of authentic problems so that it was clear that the activeness of students was required to complete the problem [2]. Another learning model that would be seen as influential was Think Pair Square (TPS). Think Pair Square learning model was a learning model of exchanging pairs that gave students the opportunity to work together with others and an effective way to vary the atmosphere class discussion patterns [3]. This model can be used in all subjects.

Therefore, research was needed to be done on the effect of learning models and critical thinking on economics learning outcomes. The application of the learning model was designed with a very efficient fabric that included students, teachers, learning processes and learning environments, namely Problem Based Learning (PBL) and Think Pair Square (TPS) learning models as factors that could influence the improvement of learning outcomes.

The purpose of this research was to find out: (1) which economics learning outcomes of students were higher taught by problem based learning (PBL) learning models or think pair square (TPS) learning model, (2) the economics learning outcomes of higher students, whether they have high critical thinking skills and who have low critical thinking skills and (3) the interaction between learning models and the ability to think critically about economics learning outcomes.

2 Methodology

This research was carried out at SMAN 6 Padangsidimpuan and at SMAN 4 Padangsidimpuan. The method used in this study was a quasi experimental method (quasi experimental research) with a 2x2 factorial research design with a significance level of 0.05. Before the two-way ANAVA was carried out firstly determined the analytical requirements namely the Normality requirements using the Liliefos Test, while for testing the requirements for Homogeneity using the test Bartlett and F test with the intention that the distribution of samples in the study population were homogeneous. After testing the requirements for analysis, the two-way ANOVA test was carried out. If anava two way was significant, then a

further test (post hoc test) was held because the number of samples per cell was not the same, the Scheffe Test was used.

3 Result and Discussion

3.1 Results

To test hypotheses using factorial 2x2 variance and pathway analysis (ANAVA) techniques, the data were grouped based on the interaction between the learning model and student learning interest. The comparison of groups of data on student learning outcomes was based on researchers' findings.

The differences in student learning outcomes were taught with the PBL (A1) model and those taught with the TPS model (A2). The statistical hypothesis tested was:

$$Ho: \mu A1 \leq \mu A2 \quad (1)$$
$$Ha: \mu A1 > \mu A2 \quad (2)$$

Based on the results of the analysis of variance, the results of the calculation of the learning model data were obtained, where $F_{observed} = 6.17$, while the F_{table} value with degree of freedom (df) = (1.61) and $\alpha = 0.05$ was 3.99. These results indicated that $F_{observed} = 6.17 > F_{table} = 3.99$ so that the null hypothesis (Ho) was rejected and the alternative Hypothesis (Ha) was accepted, thus the research hypothesis stated that students' economics learning outcomes taught with PBL models higher than students taught with the TPS model were tested for truth.

The differences in economics learning outcomes between students who have high critical thinking skills with low critical thinking skills statistically hypothesis tested was as follow:

$$Ho: \mu B1 \leq \mu B2 \quad (3)$$
$$Ha: \mu B1 > \mu B2 \quad (4)$$

Based on the results of testing the hypotheses, the results of the calculation of the data of learning interest were obtained, where $F_{observed} = 40.80$, while the F_{table} value with df = 1.61 and $\alpha = 0.05$ was 3.99. These results showed that $F_{observed} = 40.80 > F_{table} = 3.99$, so that the Null Hypothesis (Ho) was rejected and the Alternative Hypothesis (Ha) was accepted, thus the research hypothesis stated that economics learning outcomes of students who have critical thinking skills were higher than students who have low critical thinking skills were tested for truth.

The hypothesis of interaction between learning models and students' critical thinking in influencing economic learning outcomes statistically tested was as follow:

$$Ho: A > <B = 0 \quad (5)$$
$$Ha: A > <B \neq 0 \quad (6)$$

Based on the results of testing the hypotheses, the data calculation of the interaction between the learning and critical thinking models were obtained, where $F_{observed} = 12.77$ and F_{table} values with df = 1.61 and $\alpha = 0.05$ was 3.99. This result indicated that $F_{observed} > F_{table}$ (12.77> 3.99), so the alternative hypothesis (Ha) was accepted and the null hypothesis (Ho) was rejected, meaning that there was interaction between the model of learning and critical

thinking in influencing the outcomes of economics learning. Thus the hypothesis which stated that there was an interaction between the learning model and critical thinking in influencing the learning outcomes of the economics was verified.

The third test results stated that there was an interaction between the learning model and critical thinking on the learning outcomes of students' economics. Then a further test was conducted to find out the average value of which group gave a better or higher influence on the learning outcomes of economics. Further testing was carried out by the Scheffe test.

3.2 Discussions

The economic learning outcomes of students taught with PBL learning models were higher than students who received treatment with the TPS learning model. The results showed that the average of the economics learning outcomes as a whole group of students who received PBL learning model treatment was higher than the group of students who received the TPS learning model treatment. This was because students in the PBL learning model group emphasized grouping/ combining discussion learning methods and the ability to think critically. Problem Based Learning did not mean replacing the learning model of discussion in the classroom, but strengthening the learning model because students not only discussed but more sharpen students for critical thinking such as discussing a problem. By learning Problem Based Learning students have established themselves as active learning actors who understood their needs and strive to achieve an understanding of knowledge independently. Activities carried out by students during the learning process took place made students eager to follow the learning process.

The results showed that the average value of learning outcomes in economics students who have high critical thinking skills were higher than students who have low critical thinking abilities. This indicated that students who have high critical thinking skills were better and able to understand economics lessons compared to students who have low critical thinking skills.

So, there was an increase in critical thinking skills. This increase was due to students who can follow the learning well where students can solve the questions posed, the learning model that can foster the spirit of students in learning.

4 Conclusion

Based on the results of the research and discussion that has been stated earlier, then in this study it can be concluded that:

a. Learning outcomes Economics of students taught by problem based learning (PBL) learning models was higher than students taught with Think Pair Square (TPS) learning models.
b. Learning outcomes Economics students who have high critical thinking skills were higher than students who have low critical thinking skills.
c. There was an interaction between the learning model and the ability to think critically about the economics learning outcomes. Students who have high critical thinking skills get higher economic learning outcomes if they were taught using problem based learning (PBL) learning models than Think Pair Square (TPS) learning models, while students who have low critical thinking skills were higher learning outcomes if

learned from Think Pair Square learning models (TPS) rather than problem based learning (PBL) learning models.

References

[1] M. B. Etherington, "Investigative primary science: A problem-based learning approach," *Aust. J. Teach. Educ.*, vol. 36, no. 9, p. 53, 2011.

[2] R. Arends, *Learning to Teach Ninth Edition*. New York: McGraw-Hill, 2012.

[3] A. Lie, "Cooperative learning: Mempraktikkan cooperative learning di ruang-ruang kelas," *Jakarta: Grasindo*, 2002.