International Journal of Trends in Mathematics Education Research
Vol. 1, No. 2, September 2018, pp. 39-42
Available online at http://ijtmer.com

E-ISSN : 2621-8488

RESEARCH ARTICLE

Improving Students' Learning Outcomes Using 4Me Module with Cooperative Learning

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How to Cite: Suprapti, E., Musyidah, H., Inganah, S. (2018). Improving Students' Learning Outcomes Using 4 Me Module with Cooperative Learning. *International Journal of Trends in Mathematics Education Research, 1*(2), 39-42. doi:10.33122/ijtmer.v1i2.

ARTICLE HISTORY

Received: 11 April 2018
Revised: 12 June2018
Accepted: 17 August 2018

KEYWORDS

Cooperative Learning
Learning Outcome
4Me Module
Liniear Algebra

ABSTRACT

Based on the evaluation result on the course of linear algebra, the result of mathematics student's learning outcome, faculty of teacher training and education, University of Muhammadiyah Surabaya, from 26 students indicate that 30,76 % of students complete learning and 69,24% did not complete the target with average value 55,60. Based on the student's opinion, the course of linear algebra was difficult because has a high difficulty level, the learning system uses direct learning, and it causes the boredom. Furthermore, the reference material does not support completely for linear algebra. Thus we need additional learning models, so the students do not get bored and difficult by direct learning model that we used. In this case, we use "The Cooperative Learning Type TPS" model with 4 Me module in order to help the student to be able to work and shared with their friend to find problem solutions so that the interaction among learners occurs and the learning process becomes more active. We use the classroom action research method in this research. Based on the result of the research, we can improve 30% student's learning result, 21 % of student's activity and 95 % positive student's response.

1. INTRODUCTION

Educators are now still being the main object of the material delivery, and learners as the object of the recipient without any more interaction on the teaching and learning process. It causes the learning process becomes boring. Brunner and Ausubel state that learning must be meaningful. By meaningful learning, learners will be able to understand the material, since by good understanding it can improve student learning outcomes. This is in line with the opinion of Abdurrahman (2009:37) who mentions that learning outcome is the ability obtained by children through learning activities.

Learning itself is a process of obtaining a form of relative sedentary behavior change. Meanwhile, according to Keller in Abdurrahman (2009:38) learning outcomes is the actual achievement displayed by the child while the activity is a directed action on the completion of learning tasks. This means that the amount of effort is an indicator of the motivation existence, while the learning outcomes are influenced by the amount of effort made by the child. Learning outcomes are also influenced by intelligence and mastery of the child on the material studied.

Based on the result of the evaluation on the course of linear algebra, the result of mathematics student's learning outcome, faculty of teacher training and education, University of Muhammadiyah Surabaya, from 26 students indicate that 30,76 % of students complete learning and 69,24% did not complete the target with average value 55,60. Based on the student's opinion, the course of linear algebra was difficult because has a high difficulty level, the learning system uses direct learning causes the boredom. Furthermore, the reference material does not support completely for linear algebra. Thus we need additional learning models, so the students do not get bored and difficult by direct learning model that we used.

In this case, we use "Cooperative learning TPS type" model in order to help learners to be able to work and shared with their friends to find problem solutions so that the interaction among learners occurs and the learning process becomes more active. Think-Pair-Share type learning is one of the cooperative learning models simple procedure that has explicitly stated so that Cooperative Learning Think-Pair-Share type is easy to implement (Fatimah,2015).

The cooperative learning model is more emphasized on active learners so that students are expected not to feel bored and saturated during the learning process. And most importantly this learning is expected to be meaningful to the students. In this Think Pair Share type of cooperative learning, students will be more active in discussing both their partners so that students will be directly involved in group discussions and also interactions that are established between students and other students more easily so that the opportunity to give ideas and input in more groups (Nisa,2014).

In the cooperative learning model students are required to group and discuss problems with their groups. The priority of TPS

type cooperative learning model is that it can foster student involvement by providing open opportunities for students to speak, express their own ideas and motivate students to engage in class conversation (Pangkali, 2016). With conditions like this are expected students can establish cooperation with the group. It also can foster the attitude of responsibility in each student, their motivation to learn will affect their learning outcomes. according to the opinion of Wahyuni (2012), In order for learning with cooperative learning methods to think pair share type to succeed, the three main steps carried out in the learning process must be properly implemented, namely the steps of thinking (thinking individually), pair (pairing with a friend), and share (sharing answers with other pairs or whole class).

Based on the description above, the purpose of this study is to a) describe the improvement of learning outcomes of learners on the course of linear algebra using TPS cooperative learning model; b) describe the learner's activities on the course of linear algebra using TPS cooperative learning model; and c) describe the learner's responses on the course of linear algebra using TPS cooperative learning model.

2. RESEARCH METHODS

The type of research used in this study is a classroom action research (CAR). Broadly speaking, the classroom action research model includes four main points: (1) planning, (2) implementation, (3) observation, and (4) reflection. This study was conducted with two cycles. The implementation procedure in cycle I begin with planning the implementation of action, observation, and reflection. At the planning stage, the researcher develops tools and learning instruments. Once the tools and learning instruments were ready, then the stage of implementation and observation began. Both were carried out at the same time. At the reflection stage, the researchers analyze or process the data that has been collected by the methods that have been determined. This reflection activity was done at the end of the lesson to discuss the shortcomings and advantages of the learning activities that have been implemented. Then the researcher along with the teacher considered the results as the basis for planning in the next cycle.

This research was conducted in the Department of Mathematics education department, Faculty of Teacher Training and Education, University of Muhammadiyah Surabaya. The subject of this research was 27 students. Data collection techniques in the study were a test, observation, and questionnaire. Analysis of the data included student learning outcomes and student responses. Data analysis was done by referring to quantitative data analysis according to Arikunto (2008: 236). The success of this study could be seen from the improvement of student learning outcomes before and at the end of the action in cycle II.

3. RESULTS AND DISCUSSION

This research was conducted in the Department of Mathematics Education, Faculty of Teacher Training and Education, University of Muhammadiyah Surabaya. The subjects of this study were of 27 students. In Table 2, the first cycle consists of 2 meetings with 3 lesson hours in each meeting; every 1 lesson hour consist of 50 minutes. The second cycle consists of 2 meetings with 3 lesson hours in each meeting. The results of the research can be seen in the following table:

Table 1. Results of Student's Learning

Criteria	Before Treatment	Cycle I	Cycle II
Secore >75	56%	81%	92,5%
Secor <75	44%	19%	7,5%
average	73,7	76,26	80,03
Highest	85	90	95
Lowest	60	63	63

Based on the Table 1, the completeness of learning outcomes in the cognitive aspects of cycle I increased, it compared before the action from 56% to 86, 67% while in the second cycle increased to 92.5% resulting in increase of 36,5% of data from before the action up to the data in the cycle II.

Table 2. Students Activities Based on Affective Aspect

Criteria	Cycle I	Cycle II
Active	32,5%	46,67%
Quite active	47,5%	42,67%
Lest active	20%	10,67%
Not Active	0%	0%

Based on the Table 2 in affective aspect, the student's activity did not appear before action because the model of learning was conventional. In the first cycle, student activity in affective aspect, 80% of students was in active and quite active criteria. In the second cycle, active and quite active students increased to 90.33%.

Table 3. Students Activities in Psyichomotor Aspect

Criteria	Cycle I	Cycle II
Skilled	33,3 %	33,3%
Quite Skilled	33,3%	60%
Lest Skilled	33,3%	6.7%
Unskilled	0%	0%

Based on the Table 3, students active in the psychomotor aspect, before the action of student's activity did not appear because the learning model was still conventional. In the cycle, I, student's activity in psychomotor aspect was 66,66% of the students which considered as skilled and quite skilled. In cycle II, students who considered the skilled and quite skilled increase to 93.3%. The result of student's activity in psychomotor aspect was over the indicator of success.

The learning outcome in the cycle I, in cognitive and psychomotor aspect has not reached the indicator of success so that the research continued in cycle II. The learning outcome of cycle II, in cognitive, affective, and psychomotor aspects had already exceeded the indicator of success. In other words, the research had already been successful.

Figure 1. Students Activities in Discussion

Based on the observation on the ability of lecturers in managing the learning and student activities during the implementation of learning in the cycle I, learning activities had not been implemented maximally. It was due to the learning model used was relatively new and lecturers still had to direct the students to adjust the learning model implemented. Individual learning tendencies lead to lack of communication and cooperation during group learning. During the learning process, it could be seen that low-skilled students relied only on who had more skilled within their group. In this TPS cooperative model, more skilled students could assist the low skilled students during the process of interaction with the group. However, low-skilled students did not improve in the problem-solving process since they still relied only on more skilled students.

Based on the observation of lecturer activity in managing the learning and activities of students in cycle II, the learning process ran better than before, both from students who followed the learning and lecturers in explaining the material and guiding the students. The learning process in the classroom had already focused on the students. Lecturers provided guidance to lead the students to find the concept of learning. The guidance was not only given to the individual or group, but to all of the students in the class. During the learning process, the class was grouped into several group discussion to facilitate the guidance of students. During the discussion took place the students asked the lecturer when they found problems. However, students' questions were not directly answered by the lecturer. Lecturer asked students to more closely discuss the questions. The answers had to be found by the students themselves. Therefore, the lecturer guided the students with additional guidance to help to answers to the questions or concepts learned, not only to a group that asked the question but to all of the students in the class. This is done in order to avoid repetition of questions by students or other groups. Thus, the learning process was really focused on students.

Figure 2. Students Got Help from Lecturer Using Scaffolding Technique

In the process of finding, students were assisted by students worksheet (LKM) in 4Me Module provided and lecturer as a guide. Students who were in the same group interacted to each other in solving the problems contained in LKM. When they found problems, students could communicate with their group and teachers. Interaction in the form of sharing or students with low skill asked more skilled students and ones who were good at the topics. Interaction also occurred between lecturers and certain students with some students or simultaneously with all students in the class. The lecturer acted as the facilitator only directed the students to solve the problems given and the students construct their own knowledge. Students got help from lecturer using scaffolding technique. It is a technique to provide assistance to students who have difficulties above their ability in solving problems in the form of questions and guidance. Questions given by teachers were in the form of simple questions for the purpose of helping them to construct the concept. This form of questioning is a continuation of the questions outlined in the LKM. The assistance provided was not to the individual but to another group with the same difficulties in conducting the process of discovery based on the discovery process in LKM.

4. CONCLUSIONS

The final test result of the first cycle action obtained the improvement of 36,5%, and student's activity results increased. It means that students followed the course of learning with appropriate steps. The final test result of cycle II showed that there was an increase compared to the final test result of cycle I. Besides, the observation of students' activity also increased. The final test result of this cycle II has reached the criteria of success. It could be concluded the students' learning outcome can be improved by applying TPS cooperative learning model. The result of student response analysis about learning process using TPS cooperative learning model showed that more than 95% of students expressed positive responses to the learning process and learning tools. Positive responses from the students provided clues that the learning could make students happy and enthusiastic in learning. They could accept the TPS cooperative learning model and be expected to obtain a better learning outcome.

Acknowledgements

Praise the author gratitude to Allah Almighty, for his grace and guidance so that the writer is able to finish this research article. To write this article gained support from various parties both morally and materially. The authors would like to thank Rector of University of Muhammadiyah Surabaya and all lecturers of Department of Mathematics Education and Research Team.

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