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The impact of the implementation three-step interview cooperative learning model in mathematics learning toward the learners' activities and outcomes

Usmadi[1,a], Hayatul Hasanah[1,b], Ergusni[1,c]

[1] Department of Mathematics Education, Muhammadiyah University West Sumatera, Indonesia, 25172.
*Corresponding author:[a] usmadidttumanggung@gmail.com; [c] ergusni12@gmail.com | Phone Number: +6282172118481; +6282169065382

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ABSTRACT

This study is motivated by the issues found in observations at school, where the daily teaching activities carried out by teachers show that; teaching and learning activities are classical, the teacher only stands or sits in front of the class, the direct relationship between the teacher and students is rare, and students tend to behave passively, such as coming, listening, reading and writing. To overcome this issues, the researchers conducted a research by applying a three-step type of cooperative learning model interview in learning mathematics in the class. The purpose of this study is to reveal the activities and learning outcomes of students after applying the three-step interview type cooperative learning model. From the results of the study it was found that the learning activities of students during the application of the three step interview cooperative learning model increased at each meeting. Thus it can be concluded that the mathematics learning outcomes of students with learning by applying a three-step interview type cooperative learning model is better than those who do not apply the techniques.

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1. INTRODUCTION

Teaching is defined as a process that is planned systematically, programmed, and aims, as well as an effort to create a learning environment that can enhance the creativity and activities of students. (Raka Jono, 1985: 3; Moore, 2000). Likewise I Nyoman (2014: 7) states that teaching is guiding the learning activities of students so that their potential is maximally developed.

Based on the observations obatained in the school, it was found that daily teaching activities undertaken by teachers in the classroom were still conventional in nature, namely: (1) teaching and learning activities were classical, (2) the teacher only stood or sat in front of the class, (3) direct relationship between teachers and students is rare, and (4) students tend to behave passively, such as coming, listening, reading and writing.

The learning process occurs when students strive and have the skills to assimilate and accommodate (integrate and internalize) new knowledge with existing knowledge in the cognitive structure of students. Learning to progress on the ability to create new meanings, new neural networks, and new network elements that are mutually integrated in a unity within students (Ausubel: 1963; Meier, 2000: 9; Zubaidah, et al: 2015). Learning activities involve all psychological and physical aspects of students. Thus learning activities are directed so that students can build understanding and understanding based on what has been acknowledged through emotions, beliefs, and expectations so that it will help to enhance the learning process of students.

Along with this expert's opinion, plethora of efforts have been made by the government to improve the quality of mathematics learning, including improving the curriculum, providing school operational assistance (BOS), providing scholarships for students, teacher training, and deliberation of teachers (MGMP), seminars, and tuition funding for teachers to continue their education. However, this effort has not been reflecting any effective results to improve the quality of mathematics learning in schools. Thus, the learning outcomes of students' mathematics are still in disappointing rates.

To overcome the above problems, teachers should be able to design mathematical learning models to help students develop an understanding of concepts, reasoning, problem solving, and mathematical communication. Teachers must be able to apply innovative learning models or strategies in their learning in class likeactive participation of students in teaching and learning activities. This is in line with the opinion of Kemp (1979) that there is a need for teaching and learning activities to encourage students to be active and participate in learning activities. Being active in learning activities are expected to be resulted in the increase of learning mathematics and student retention. Learning activity that can be applied is cooperative learning (Made Wena, (2016: 189) & Lie, (2000)).

Some of the results of research on the application of cooperative learning models from various countries, namely: Malaysia, Singapore, and Thailand, researchers report that: cooperative learning creates conditions for active learning, planning group activities in cooperative learning to determine

the effectiveness of learning, and cooperative learning makes learning groups become more meaningful, fun, and more effective (Jessica Ball, George M. Jacobs and Gan Siouek Lee in Priyanto, 2007).

Through cooperative learning will provide opportunities for students to work together in constructing knowledge and completing structured tasks given by the teacher. Cooperative learning is a learning system that contains elements of learning, namely: (1) positive interdependence, (2) face-to-face interaction, (3) individual accountability, (4) skills for establishing interpersonal relationships or social skills that deliberately taught.

One alternative that is expected to be used to overcome the above problems is the application of the Three-Step Interview Cooperative Learning Model. Three-Step Interview cooperative learning model is a learning model that consists of three stages of activities, namely (Interview – Interview - Report) by conditioning students to form partners and alternately interview their partners, then report the results of the interview to other pairs. The three steps of the Three-Step Interview learning are illustrated in Table 1 as follows:

Table 1. Steps For Learning The Three-Step Interview

Steps	Learning steps
1	Student A interviews student B
2	Student B interviews student A
3	Students A and B each summarize the responses of their partners to students C and D, and vice versa.

Source: Modified from Barkley (2012: 183).

The Three-Step Interview cooperative learning model proposed by Barkley (2012: 184-185) has the following steps: Based on Barkley's formulation (2012: 184-185) in the application of Three-Step Interview cooperative learning in class, then in this study, the syntax of learning carried out in class is:

a. The teacher divides students into groups consist of 4 students for each group.
b. The teacher divides each group into 2 pairs.
c. Each pair of students decide who will become the interviewer and the interviewee.
d. The teacher gives a worksheet to each student and then each student works on the worksheet.
e. The interviewer interviews his partner about matters relating to the completion of the worksheet by his partner, while the interviewer conveys responses about the questions raised by the interviewer.
f. Students exchange roles.
g. The two couples who are in one group join then each student conveys what he attained when he became an interviewer.
h. Finally, groups present the results of their group discussions classically.

This research will reveal the mathematics learning outcomes of students in the cognitive domain and the activities of students during the learning process using the Three Step Interview cooperative learning model. Where the activities of students who will be examined during the learning process as shown in Table 2.

Table 2. Student Activities Observed In Learning

No	Activities	Student activities
1	Oral activities	1. Learners act as interviewers 2. Students act as interviewees
2	Listening activities	3. Learners listen to their friends' presentations
3	Writing activities	4. Learners make a report on the results of the interview 5. Students work on worksheets

Source: Modified from Sardiman (2011: 101) as needed

While the hypotheses tested in this study were the mathematics learning outcomes of students by applying the Three-Step Interview cooperative learning model better than those who did not apply it.

2. RESEARCH METHOD

This type of research is quasi-experimental research. Quasi-experimental research is aimed at determining whetherthere is an effect caused to an object that is given certain treatment. In this study students are grouped into two classes, namely the experimental and control classes. The experimental class was treated using the Three Step Interview cooperative learning model while the control class was not given the same treatment. The research design was the Randomized Control Group Only Design, as in Table 3 below.

Table 3. Research Design

Class	Treatment	Mathematical learning outcomes
Experiment	T_1	X_1
Control	T_2	X_2

Source: Modified from Suryabrata (2011: 104) According to Researchers' Needs

The population in this study were all students of class X SMK Cendana Padangpanjang which consisted of four classes with the total number of students were 90 students. Because the population is normally distributed and has a homogeneous variance, the sampling technique is random sampling. The random sampling technique used is Cluster Random Sampling. Where selected TKJ-2 class X as an experimental and TKJ-1 class X as a control class.

The variables in this study are: (1) Student activities during mathematics learning by applying the Three Step Interview cooperative learning model, (2) variable X1 is the mathematics learning outcomes of students in the experimental class, and (3) variable X2 is learning outcomes mathematics learners in the control class.

The types of data in this study are: (1) Primary data in this study are the results of students 'mathematics learning in the cognitive aspects of the experimental class and the control class as well as data on the students' learning activities in the experimental class. Primary data were obtained from students'

learning outcomes and the results of class X students of Vocational High School or SMK Cendana Padangpanjang students who were sampled. (2) Secondary data, namely: data on the number of students who become the population as well as data on the value of the first daily mathematics test of students in semester 1 of class X of SMK Cendana Padangpanjang. Secondary data were obtained from the administration and class X teachers of Vocational High School or SMK Cendana Padangpanjang.

The procedure in this research is as the following:

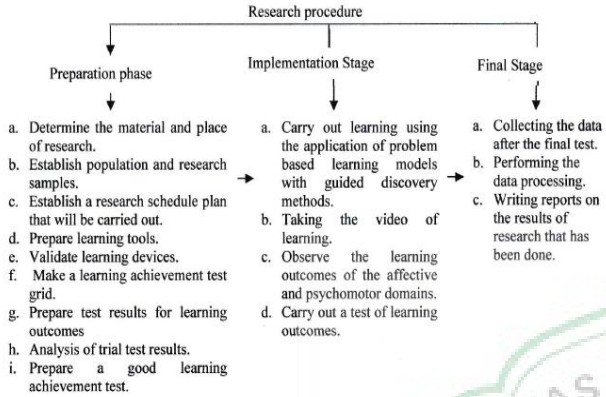

Fig.1. Research procedure

The instruments in this study are:

a. Student Observation Sheet

Observation sheet aims to observe the activities of students while participating in learning with a cooperative model with Three Step Interview. Student activity values are sought by using the percentage formula proposed by Sudjana (1989: 131) as follows:

$$P = \frac{F}{N} x100\%$$

From the value of the results of the activities of the students above can be seen the criteria and level of success of students during the learning process so that it can be seen whether the students' activities are positive or not. The criteria are used, such as Table 4 below.

Table 4. Student Activity Criteria

Criteria	Level of success	Percentage range
So little	Not successful	1 ≤ P < 25
Little	Less successful	25≤ P < 50
Many	Successful	50≤ P < 75
So Many	Very successful	75≤ P ≤ 100

Source: Modified from Dimayati (2009: 12) According to Researchers' Needs

b. Test Learning Outcomes

The learning achievement test given in this research is an essay test. The questions given in this test are adjusted to the subjects given during the learning. To test the truth of the hypothesis statistically from the data obtained using the two-difference test, the t-test. The hypothesis of applying the Three Step Interview cooperative learning model in learning mathematics is better than those not applying it.

3. RESULTS AND DISCUSSION

3.1. Student Activity Data

Data about students' learning activities is obtained through observation during the learning process by using the Three-Step Interview Cooperative Learning Model. The observations of three meetings can be seen, as in Table 5 and Figure 2 below.

Table 5. Percentage of Student Activities

No	Student activities	Meeting to -					
		I, N = 24		II, N = 24		III, N = 24	
		F	%	F	%	F	%
1	A_1	30	41,67	48	66,67	53	73,61
	A_2	37	51,39	48	66,67	55	76,39
2	A_3	39	54,17	54	75,00	56	77,78
3	A_4	38	52,78	43	59,72	53	73,61
	A_5	29	40,28	42	58,33	51	70,83

Source: Processed Data for Final Test Calculation

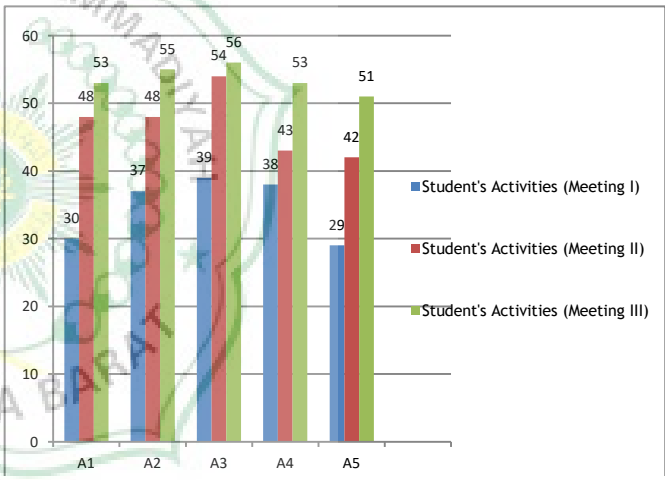

Fig.2. Development of Student Mathematical Learning Activities in Cooperative Learning Type Three-Step Interview.

Information :

Oral Activities

A1 = Learners act as interviewers
A2 = Students act as interviewees

Listening Activities

A3 = Students listen to their friend's presentation

Writing Activities

A4 = Students make a report on the results of the interview
A5 = Students work on worksheets

From the results of data processing it appears that an increase in student activity for each meeting. Where the average percentage value for meeting I was 48.06% with the criteria of Little and Less Successful. At the second meeting there was an increase where the average percentage value for meeting II was 65.28% with the criteria of Many and Success rates Successful. While at the third meeting the average percentage value for meeting III was 74.44% with the criteria of Many and Success rates Successful. From the data above it can be seen that by using the three step interview cooperative learning model in mathematics learning in the experimental class can increase the activity of students during the learning process.

3.2. Data of Learning Result

The data collection of mathematics learning achievement test data is carried out by giving tests to both sample classes. Learning outcomes test in the form of essay questions consisting of 4 items with 90 minutes of time allocation. The implementation of learning outcomes tests in the experimental class was attended by 24 students and in the control class was followed by 22 students. Before conducting the final test, the questions are tested on class XI TKJ1. The test results obtained 0.95 reliability test. This means that the problem has very high reliability. Data on cognitive learning outcomes for the two sample classes, as in Table 6 below.

Table 6. Processed Data Final Test Experiment Class and Control Class

Class	N	≥KKM	$\bar{x}$	X_{maks}	X_{min}	% Completeness
Exsperiment	24	17	78,44	100	50,67	70,83 %
Control	22	9	65,15	92	36,00	40,91 %

Source: Processed Data for Final Test Calculation

The test steps carried out, namely:

a. Test for normality and homogeneity of variance
To find out whether the sample is normally distributed and has a homogeneous variance, the Lilliefors test and the Bartlett test are used.

1) The normality of the experimental class
Normality test results for the experimental class, namely: L_o = 0.1031 < 0.1764 = L_{Table}, this means the sample came from populations that were normally distributed.

2) Control class normality
Normality test results for the control class L_0 = 0.1879 < 0.1832 = L_{Tabel}, this means that the learning outcomes of the control class are normally distributed.

3) To find out if the sample comes from a homogeneous population, the researchers used the Bartlett test. The calculation results obtained that $X^2_{calculate}$ = 0.9214 < 3.841 = X^2_{Table}. These results indicate that both samples have homogeneous variance at 95% confidence level

b. Hypothesis testing
After doing the normality test and homogeneity test it is known that both sample classes are normally distributed and have homogeneous variances. To test the hypothesis the researcher used test statistics, namely the t-test. For a confidence level of 95% or α = 0.05 with a degree of freedom 44, the price of t_{Count} = 2.66 > 1.68 = $t_{(0,05;44)}$ is obtained. Thus it can be concluded that H_0 is rejected or H_1 is accepted. This means that the result of student's mathematics learning with the application of the Three Step Interview cooperative learning model are better than those that do not apply it.

4. CONCLUSIONS

Based on the results of the discussion above, it can be concluded that: (1) the learning activities of students during the learning process with the application of the Three-Step Interview cooperative learning model increased significantly starting from the meetings I, II and III, (2) the results of mathematics learning participants students by applying the Three-Step Interview cooperative learning model is better than the mathematics learning outcomes of students in the control class.

It is recommended that teachers in schools can use the Three-Step Interview cooperative learning model in their learning, in order to increase creativity, activity and activities, as well as the result in mathematics learning as the result of this research.

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