THE IMPLEMENTATION OF THINK PAIR SHARE LEARNING MODEL TO IMPROVE THE MOTIVATION AND MATHEMATICAL CONCEPT UNDERSTANDING OF GRADE XI

Tina Puji Rahayu[a], Aris Thobirin[b]
Program Studi Pendidikan Matematika Universitas Ahmad Dahlan
Jalan Ring Road Selatan, Tamanan, Banguntapan, Bantul Yogyakarta
[a] tina1600006088@webmail.uad.ac.id.

ABSTRACT

Teacher-centered learning may lead to low mathematics learning interest. It can also lead to poor mathematical concept understanding. Therefore, there need to be efforts to improve student motivation and mathematical concept understanding. This research aims at improving the learning motivation and concept understanding in mathematics learning by using Think Pair Share (TPS) learning model. The research is an action research, consisting of 2 cycles. The research setting is Grade XI Fashion 2 class at State Vocational High School (SMK Negeri) 6 Yogyakarta during the even semester of the academic year of 2019/2020 with 32 students. The data collection methods used were observation, interview, questionnaire, and test. The research instruments used were an observation sheet, interview guideline, questionnaire, and test. The instrument validity was also tested in this research. The data analysis used was descriptive qualitative analysis. The research results suggest that mathematics learning through the TPS learning model can improve students' motivation and mathematical concept understanding. The finding is supported by the observation, interview, and questionnaire in every meeting. The improvement of mathematical concept understanding can also be seen from the test result in every cycle. The finding is supported by the average percentage of student learning motivation and concept understanding that show an improvement in every cycle. In cycle, I, the average percentage of student learning motivation from the observation result was 61% and was categorized as Good. In cycle 2, it increased to 78% and was categorized as Good. The average percentage of student learning motivation from the questionnaire in cycle I was 78% and was categorized as Good. In cycle 2, it increased to 83% and was categorized as Very Good. The average percentage of student learning motivation from the cycle test I was 69% and was categorized as Moderate. In cycle 2, it increased to 88% and was categorized as Very Good. Cooperative learning type TPS also got good responses from the students. The finding is supported by the interview result with Grade XI Fashion 2 students at the end of the cycle I and II. Thus, cooperative learning type TPS can improve student motivation and concept understanding.

Keywords: motivation, concept understanding, learning model, Think Pair Share (TPS)

INTRODUCTION

Motivation can be said as a series of attempts to provide certain conditions so that someone wants and wants to do something, and if he does not like it, he will try to eliminate that feeling of dislike. In learning activities, motivation is a driving force within students who can help to achieve the goals desired by the learning subject. In this case, students who have high learning motivation will have much energy in carrying out learning activities (Sardiman, 2016: 75).

Based on the results of observations made at SMKN 6 Yogyakarta on Wednesday, October 9, 2019, in class XI Fashion Design 2, it was found that during mathematics learning, students were less active in participating in the mathematics learning process. Students pay less attention to the teacher's explanation, and there are even students who do other tasks besides mathematics. From the interviews with several students, it was found that there were still many students who did not understand the material presented, so that students felt it was difficult and less enthusiastic to participate in the learning process. Some students feel that mathematics lessons are not linear with their majors, so their interest in

mathematics learning is low. This causes the motivation to learn mathematics in class XI Fashion 2 is fairly low.

The results of studying mathematics, especially class XI Fashion Design 2, are also still relatively low. The low learning outcomes of students shown by the Acquisition of PTS (Middle Semester Assessment) grade XI Fashion Design 2 SMKN 6 Yogyakarta can be seen in Table 1.

Table 1. Mid-Semester Assessment Results Odd Semester Mathematics for Class XI Students of Fashion Design 2 SMK Negeri 6 Yogyakarta Academic Year 2019/2020

No	Score	Mastery Learning		No	Score	Mastery Learning	
		Complete	Not Complete			Complete	Not Complete
1.	31		√	17.	42		√
2.	58		√	18.	34		√
3.	52		√	19.	39		√
4.	50		√	20.	37		√
5.	52		√	21.	53		√
6.	40		√	22.	44		√
7.	53		√	23.	34		√
8.	35		√	24.	39		√
9.	36		√	25.	67		√
10.	32		√	26.	51		√
11.	35		√	27.	59		√
12.	44		√	28.	44		√
13.	46		√	29.	30		√
14.	34		√	30.	72		√
15.	70		√	31.	31		√
16.	46		√	32.	25		√
Average			**44,21875**				
Highest Score			**72**				
Lowest Score			**25**				

The mathematics score obtained by class XI Fashion Design 2 is still below the Minimum Completeness Criteria (MCC) of SMKN 6 Yogyakarta, namely 75. One of the reasons is the low understanding of mathematical concepts from class XI Fashion Design 2. Based on interviews with mathematics teachers in class XI Fashion Design 2 students tend to memorize. For many students who, after learning mathematics, cannot understand even the simplest parts, many concepts are misunderstood.

Through student activity and cooperation, it is expected that student motivation and understanding of concepts will increase so that student learning outcomes will also increase. One way to develop student competence in collaboration is through cooperative learning, which focuses on using small groups to maximize the learning process, one of which is the type of cooperative learning model TPS.

This study aims to improve students' motivation and conceptual understanding in mathematics.

Table 2. Indicators Of Learning Motivati**on**

No	Motivation	Indicator
1.	Intrinsic	There is a desire and desire to succeed.
		There is an encouragement and need to learn.
		There are hopes and dreams for the future.
2.	Extrinsic	There are rewards in learning.
		Some activities are interesting in learning.
		A conducive learning environment.

(Uno, 2012: 23)

According to the Ministry of National Education (Fadjar, 2009: 13), the indicators of the ability to understand concepts are as follows: 1. restating a concept; 2. classify objects according to certain properties (according to the concept); 3. provide examples and non-examples of the concept; 4. presents the concept in various forms of mathematical representation; 5. develop necessary or sufficient conditions of the concept; 6. using specific procedures or operations; 7. apply concepts or problem-solving algorithms.

METHODS

This research was conducted in class XI Fashion Design 2 SMK Negeri 6 Yogyakarta, located at Jalan Kenari No 4, Semaki, Umbulharjo District, Yogyakarta City, Yogyakarta Special Region. Research time is in the even semester of the 2019/2020 school year. The type of research used is Classroom Action Research (CAR). CAR is a form of activity held in the classroom by teachers and students as its scientific object to achieve goals through learning activities. This research design uses Classroom Action Research, which is divided into two cycles. The following is a chart of Classroom Action Research according to Arikunto, Suharsimi (2006: 16)

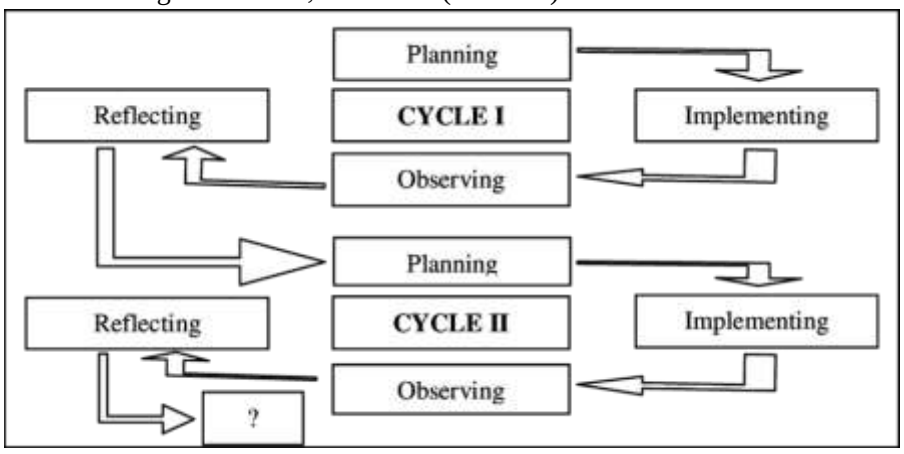

Figure 1. Classroom Action Research Cycle Chart Arikunto, Suharsimi (2006: 16)

In this data analysis technique, the data were analyzed descriptively qualitatively, namely presenting data in descriptions and numbers and understanding based on the study results.

Data from observations and questionnaires, data obtained from the observation sheet, and student motivation questionnaire were used to see students' motivation during the learning process. Data from observations and questionnaires are calculated using the formula:

$$P = \frac{F}{A} \times 100\ \%$$

Information:

P = Percentage of students 'learning motivation

F = Total ScoreScore of students' learning motivation

A = The maximum ideal score of students 'learning motivation The students'

criteria for motivation values can be seen in the following table:

Table 3. Criteria For Motivation

Percentage	Category
$80\% \leq P < 100\%$	Very Good
$60\% \leq P < 80\%$	Good
$40\% \leq P < 60\%$	Enough
$20\% \leq P < 40\%$	Poor
$0\% \leq P < 20\%$	Very Poor

(Arikunto, Suharsimi 2018: 35) with modifications.

Analysis of interview data. The results of the interviews. With students were analyzed descriptively. This is used to identify deficiencies in previous learning to improve quality and improve further learning. These interview results are also to determine how to increase students' motivation after the learning model is applied TPS to mathematics learning.

Data obtained from students' motivation questionnaires were used to see students' motivation after the learning model was applied TPS. In contrast, the written test data was used to measure the level of understanding of students' concepts after the learning model was applied TPS. Data from questionnaires and written tests are calculated using the formula:

$$SA = \frac{PS}{ST} \times SP$$

Information:
SA = Percentage Final Score
PS = Acquisition ScoreScore
ST = Highest Score
SP = Assessment Scale

Table 4.

Percentage	Category
$85\% \leq SA < 100\%$	Very High
$70\% \leq SA < 85\%$	High
$55\% \leq SA < 70\%$	Moderate
$40\% \leq SA < 55\%$	Low
$25\% \leq SA < 40\%$	Very Low

(Zainal Arifin, 2011: 233) with modifications.

Indicators of the success of this study are:

1. The increased learning motivation of students in the mathematics learning process can be seen through the results of the analysis of observation data and the results of questionnaire data analysis, namely if the average percentage of students' motivation to learn mathematics reaches at least a value of 60% (including in good category).
2. Students' increased ability to understand mathematical concepts can be seen from students' test data analysis results. If the average test reaches at least 70% (included in the high category), learning mathematics using the learning model TPS can improve students' understanding of mathematical concepts.

RESULTS AND DISCUSSION

This Classroom Action Research was conducted from March 4 to March 11, 2020. The time allocation for mathematics lessons in one week has one meeting with 445 minutes.

Table 5. Cycle I Test Result

No	Score	No	Score
1.	70	17.	65
2.	75	18.	60
3.	70	19.	46
4.	68	20.	75
5.	80	21.	75
6.	67	22.	70
7.	80	23.	58
8.	70	24.	50
9.	73	25.	75
10.	80	26.	80
11.	78	27.	50
12.	78	28.	80
13	80	29.	73
14.	30	30.	73
15.	81	31.	80
16.	48	32.	76
Total			**2214**
Average			**69,1875**
Score Percentage			**69%**

Table 6. Cycle I Questionnaire Results

No	Indicator	Score	Indicator Score (%)	Indicator Criteria
1.	There is the desire and desire to succeed	295	77%	Good
2.	There is motivation and need to learn	301	78%	Good
3.	There are hope and aspiration for the future	291	76%	Good
4.	There is an appreciation for learning	305	79%	Good
5.	There are exciting activities in learning	300	78%	Good
6.	A conducive learning environment	300	78%	Good
	Total Score	**1792**		
	Total ScoreScore (%)	**78%**		
	Student Motivation Criteria	**Good**		

Table 7. Analysis of Student Motivation Observation Results in Cycle I

No	Indicator	Score
1.	There is a desire and desire to succeed.	
a.	Students directly work on assignments given by the teacher independently	19
b.	Students discuss working on assignments given by the teacher	19
c.	Students pay attention to the teacher's explanation	25
2.	Encouragement and need to learn	
a.	Students ask questions to the teacher about material that is not understood	13
b.	Students answer teacher questions	15
c.	Students ask a group of friends about material that has not been understood	22

3.	There are hopes and aspirations for the future.	
a.	Students read books to find sources of correct answers	20
b.	Students dare to express their opinions in the grade discussion forum	10
c.	Students can defend their opinions in front of other friends	13
4.	There is an appreciation for learning.	
a.	Students are enthusiastic when the teacher gives praise	16
b.	Students are enthusiastic when the teacher gives rewards	24
c.	Students are enthusiastic when the teacher gives an additional	7
5.	There are exciting activities in learning.	
a.	Students pay attention to other groups that are presenting the results of the discussion	20
b.	Students discuss working on student worksheet (LKS)	19
c.	Students value the opinions of different friends	32
6.	A conducive learning environment	
a.	Students pray before starting lessons	32
b.	Students prepare math books before lessons begin	24
c.	Students tidy up desks and throw away trash around tables	22
	Total Score	**352**
	Total ScoreScore (%)	**61%**
	Student Motivation Criteria	**Good**

Table 8. Cycle II Test Result

No	**Score**	**No**	**Score**
1.	70	17.	82
2.	90	18.	70
3.	95	19.	95
4.	87	20.	89
5.	92	21.	95
6.	98	22.	90
7.	90	23.	78
8.	95	24.	95
9.	100	25.	100
10.	90	26.	80
11.	93	27.	85
12.	90	28.	70
13.	90	29.	70
14.	95	30.	100
15.	95	31.	70
16.	88	32.	96
Total			**2823**
Average			**88,21875**
Score Percentage			**88%**

Table 9. Cycle II Questionnaire Results

No	Indicator	Score	Score Per Indicator (%)	Criteria Per Indicator
1.	There is the desire and desire to succeed	314	82%	Very Good
2.	There is motivation and need to learn	319	83%	Very Good
3.	There are hope and aspiration for the future	310	81%	Very Good
4.	There is an appreciation for learning	321	84%	Very Good
5.	There are exciting activities in learning	318	83%	Very Good
6.	A conducive learning environment	321	84%	Very Good
	Total Score	**1903**		
	Total ScoreScore (%)	**83%**		
	Student Motivation Criteria	**Very Good**		

Table 10. Analysis of Student Motivation Observation Results in Cycle II

No	Indicator	Score
1.	There is a desire and desire to succeed.	
a.	Students directly work on assignments given by the teacher independently	22
b.	Students discuss working on assignments given by the teacher	24
c.	Students pay attention to the teacher's explanation	27
2.	Encouragement and need to learn	
a.	Students ask questions to the teacher about material that is not understood	20
b.	Students answer teacher questions	21
c.	Students ask a group of friends about material that has not been understood	29
3.	There are hopes and aspirations for the future.	
a.	Students read books to find sources of correct answers	25
b.	Students dare to express their opinions in the grade discussion forum	20
c.	Students can defend their opinions in front of other friends	20
4.	There is an appreciation for learning.	
a.	Students are enthusiastic when the teacher gives praise	22
b.	Students are enthusiastic when the teacher gives rewards	32
c.	Students are enthusiastic when the teacher gives an additional	20
5.	There are exciting activities in learning.	
a.	Students pay attention to other groups that are presenting the results of the discussion	32
b.	Students discuss working on LKS	28
c.	Students value the opinions of different friends	30
6.	A conducive learning environment	
a.	Students pray before starting lessons	30
b.	Students prepare math books before lessons begin	30
c.	Students tidy up desks and throw away trash around tables	20
Total Score		**452**
Total ScoreScore (%)		**78%**
Student Motivation Criteria		**Good**

The results of classroom action research consisting of cycle I and cycle II using the learning model TPS indicate increased student motivation. This can be seen from the analysis of the observation

sheets, interviews, and questionnaires at each meeting that showed improvement. It also increases understanding of the concept that can be seen from the test results in each cycle.

In cycle I, the process of learning mathematics using the learning model TPS has not run optimally. Based on the results of observations of student learning motivation, it was found that the desire and desire to succeed was good, the motivation and need to learn, and the hope of future ideals was also good enough. However, the test results in the cycle I was still in the moderate category, namely 69%.

In the second cycle, the results of observations, questionnaires, tests, and interviews show a desire and desire to succeed and the urge. They need to learn and the hope of future ideals that are already in a suitable category. The test results in cycle II have also increased to 88%, which is included in the very high category.

Learning mathematics using the cooperative learning model TPS has increased learning motivation and understanding of mathematical concepts. An increase in learning motivation and understanding of students' mathematical concepts can be seen in table 11 and table 12.

Table 11. Increasing Student Motivation Based on Observation Results

No	Indicators of Learning Motivation	Cycle I	Cycle II	Information
1.	There is the desire and desire to succeed	66%	76%	Increased
2.	There is motivation and need to learn	52%	73%	Increased
3.	There are hope and aspiration for the future	45%	68%	Increased
4.	There is an appreciation for learning	49%	77%	Increased
5.	There are exciting activities in learning	74%	94%	Increased
6.	A conducive learning environment	81%	83%	Increased
	Total Score	**61%**	**78%**	**Increased**

The data in table 11 can be described in the following graph:

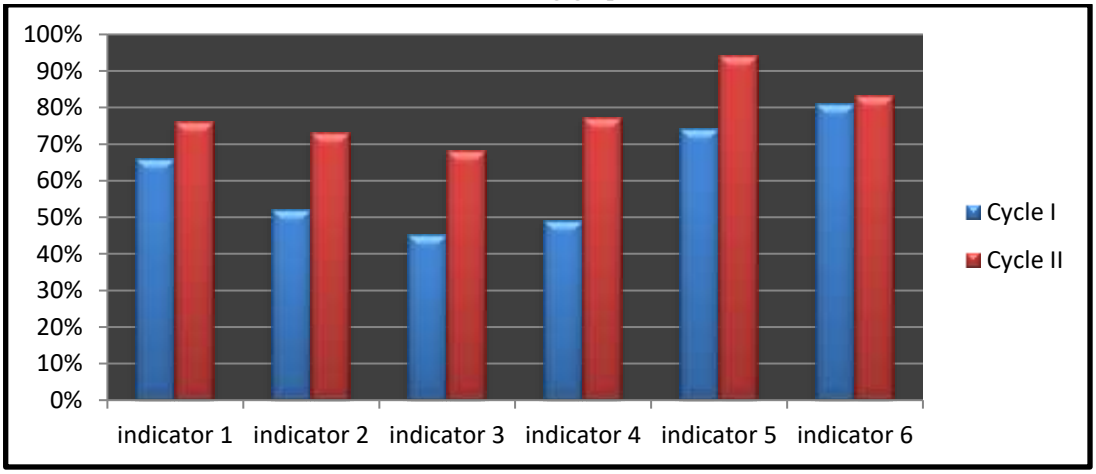

Figure 2. Graph of Increasing Student Motivation Based on Observation Results

Tabel 12. Increasing Student Motivation Based on Questionnaire Results

No	Indicators of Learning Motivation	Cycle I	Cycle II	Information
1.	There is the desire and desire to succeed	77%	82%	Increased
2.	There is motivation and need to learn	78%	83%	Increased
3.	There are hope and aspiration for the future	76%	81%	Increased
4.	There is an appreciation for learning	79%	84%	Increased
5.	There are exciting activities in learning	78%	83%	Increased
6.	A conducive learning environment	78%	84%	Increased
	Total Score	**78%**	**83%**	**Increased**

The data in table 12 can be described in the following graph.

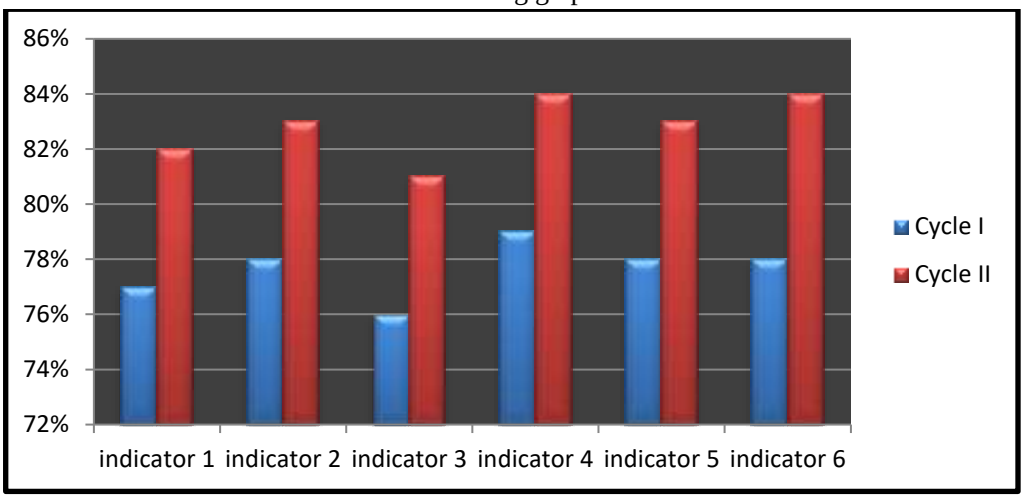

Figure 3. Graph of Increasing Student Motivation Based on Questionnaire Results

In this study, apart from using observational data, questionnaires, and tests, the researcher also used data in interviews conducted with class XI students of Fashion Design 2 at the end of the cycle I and cycle II. This interview was conducted to determine how students responded to mathematics learning using the cooperative learning model TPS and determine student motivation when learning was taking place. Student responses to the cooperative learning model of the type of mathematics learning are TPS very good; this is shown from research interviews with students of class XI Fashion Design 2. Based on the results of the interviews, the following results are obtained:

1. Students immediately work on the assignment given, discuss work results with partners, and pay attention to the teacher's explanations and instructions. So that students have the desire and desire to succeed.
2. Students ask the teacher about material that has not been understood, try to answer questions given by the teacher, and ask group friends if there is a material that has not been understood. So that students have the drive and need to learn.
3. Students read books to find correct answers in doing assignments, dare express their opinions, and defend them. So that students have hopes and dreams for the future.

From the overall data above, this study's purpose was achieved in cycle II with an average percentage of student learning motivation observation results of 78% with good criteria, and an average percentage of student learning motivation questionnaire results of 83% with excellent criteria. The average test result is 88% with very high criteria, so it can be considered that the research has been completed and shows an increase in motivation and understanding of mathematical concepts in class XI students of Fashion Design 2 at SMK Negeri 6 Yogyakarta in 2019/2020 academic year using the cooperative learning model type TPS.

CONCLUSION

Based on the results of research that have been carried out on students of class XI Fashion Design 2 SMKN 6 Yogyakarta in the 2019/2020 academic year on the sub-topic of mathematical logic, it can be concluded that using the type cooperative model TPS can increase motivation and understanding of mathematical concepts. Students.

This is evident from the percentage of student motivation and understanding of concepts that have increased in each cycle. Based on the first cycle observations, it was obtained an average percentage of student learning motivation by 61% with good criteria. The average percentage of student learning motivation increased to 78% with good criteria in the second cycle. Based on the results of the questionnaire in cycle I, it was found that the average percentage of student learning motivation was

78% with good criteria. The average percentage of student learning motivation increased to 83% with very good criteria in the second cycle. The first cycle's test results obtained an average percentage of student learning motivation of 69% with moderate criteria. The average percentage of student learning motivation increased to 88% with very high criteria in the second cycle.

The type of cooperative learning TPS also received a good response from students. This can be proven from interviews with class XI students of Fashion Design 2 at the end of cycles I and II. The type of cooperative learning TPS can increase students' motivation and understanding of concepts.

REFERENCES

Arifin, Z. (2017). *Evaluasi Pembelajaran* (Vol. Remaja Rosdakarya): Bandung.

Arikunto, S. (2006). *Penelitian Tindakan Kelas*. Jakarta: Bumi Aksara.

_____. Suhardjono, & Supardi. (2016). *Penelitian Tindakan Kelas*. Jakarta: Bumi Aksara.

Fadjar, S. (2009). *Diklat Instruktur Pengembang Matematika SMA Jenjang Lanjut. Kemahiran Matematika*. Yogyakarta: Departemen Pendidikan Nasional.

Sardiman, S. (2016). *Interaksi dan Motivasi Belajar Mengajar*. Jakarta: Rajawali Pers.

Uno, H. B. (2014). *Model Pembelajaran*. Jakarta: Bumi Aksara.