APPLYING TEAM ASSISTED INDIVIDUALIZATION FOR INCREASING MATHEMATICS LEARNING INTERACTION

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ABSTRACT

The level of activity the students became a benchmark of success in learning. Student learning interactions are still low. This research aims to increase mathematics learning interaction using cooperative learning model type Team Assisted Individualization (TAI) grade VII C of even semester at State Junior High School 2 (SMP Negeri 2) Bantul Regency 2017/2018 the school year amounted to 32 students. The technique of data collection by observation and interview. Data collection instruments using sheets of observation, interview guidelines, and triangulation. The data analysis technique using data analysis, the results of observation, interviews, and data analysis triangulation. The results showed an increase in student learning interaction in the learning of mathematics. This is proven by the data observations on learning mathematics that has increased at every cycle, i.e., the average percentage in cycle I of 49.95% criteria enough. In cycle II, it increased to 66.90% with the criteria either.

Keywords: Learning Interaction, Team Assisted Individualization

INTRODUCTION

Education is an essential element in supporting national development by forming superior human resources (Suhendri & Mardalena, 2015). Furthermore, Siagian & Nurfitriyanti (2014) states that education is the only way people can improve human resources' quality to deal with technological developments. Therefore improving the quality of education is needed to create quality human resources in national development. To enhance education quality, especially in mastering science and technology, mathematical discipline is required (Harmawati, Bennu, & Hamid, 2016). Novitasari, Suherman, & Mirna (2014) said that the development of science and technology in the current era of globalization uses mathematical thinking. Therefore, learning mathematics for every human being must be obtained by humans from an early age.

Learning mathematics requires various efforts to create success in learning by choosing a model and learning (Ariwahyuni, Japa, & Sumantri, 2014). Mathematics learning will be successful if the learning process involves students' intellectuals optimally (Rusmana, 2015). The success of mathematics learning can be measured from activity, understanding, mastery of the material, and student learning outcomes (Nur, 2016). Therefore, selecting a good learning model is a learning model that makes students actively involved in learning.

Based on the results of observations made on August 23, 2018, in class VII C of SMP Negeri 2 Pajangan, it appears that student interactions with teachers are still very low. This is evidenced by the many students who are busy themselves and the absence of students who ask questions when explaining the material in front of the class. Then, no student dares to write the answers forward when given a practice question and must be appointed first. When students experience difficulties in answering practice questions, they do not have the initiative to solve them in their learning resources. Students wait for an explanation from the teacher to not make good use of learning resources. From the interviews conducted with the VII grade teacher of SMP N 2 Pajangan, Mrs. Nining Puspayani S. Pd., Said that the teacher had applied various learning methods, namely lectures, discussions, and questions and answers. Many students do not do group discussion activities with classmates to work on the teacher's questions. Students only rely on one person when working, or even groups do not only see other groups' work. Many groups only talk about something outside the problem, so the class becomes noisy. So that student interaction with students does not go well.

Based on the description above, we need an appropriate learning model in delivering subject matter to improve student learning interactions. The use of proper learning models provides opportunities for students to build knowledge in themselves more actively. One learning model that might be applied in mathematics learning is the cooperative learning model. Several types of cooperative learning models can be used, one of which is the Cooperative Learning Model Team Assisted Individualization (TAI) type. The TAI learning model has the motivational dynamics of STAD, and TGT students support each other and help each other try hard because they all want their team to succeed. Individual responsibility is ensured because the only score that counts is the final score. However, what distinguishes it slightly is that TAI type cooperative learning is a placement test before forming groups (Slavin, 2005: 15-16). Based on the description above, the researchers are interested in researching with Efforts to Increase Student Learning Interactions in Mathematics Learning Through the Cooperative Learning Model of Team Assisted Individualization (TAI) Class VII C Students of SMP Negeri 2 Pajangan Even Semester Academic Year 2017/2018.

METHODS

The type of research used is Classroom Action Research (CAR) or better known as Classroom Action Research (CAR). According to Arikunto, Suharsimi (2010: 3), CAR is an examination of learning activities in the form of an intentional action raised and occurs in a class together. CAR stages include planning, implementing, observing, and reflecting. The subjects in this study were students of class VII C SMP Negeri 2 Pajangan. Simultaneously, the object of research is mathematics through TAI type cooperative learning to improve student learning interactions. The research procedure in this class action research consists of two cycles, and the researcher positions himself as a teacher. Details of the research procedure for each cycle that includes planning, implementation, observation, and reflection. The research data collection instruments used observation sheets, interview guidelines, and triangulation. This research's data analysis technique is by analyzing observational data, analyzing interview data, and triangulation. Here is Table 1 of the percentage categories of student learning interactions:

Table 1. Category Percentage of Learning Interaction

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

RESULTS AND DISCUSSION

1. Cycle I

The results of observations at the first meeting indicated that student learning interactions were still lacking. This is indicated by students who are still reluctant to answer the teacher's questions, so in group discussions, students still often chat outside the learning topic. Teamwork in groups while working is still lacking. Not many students dare to ask questions if they encounter problems in completing worksheets. Students also lack open learning resources to solve the problems they face. The results of the observation of the second meeting showed an increase in student learning interactions. This was demonstrated by students who seemed more enthusiastic about learning. When researchers give questions, students are willing to answer and respond to the questions given. Students are seen to be active in group activities and want to ask questions among members or other group members in solving problems in the LKS. Some aspects of learning interaction are still 44.83% or still below good criteria. It can be seen in Table 2:

Table 2. Data Observation Results of Student Interaction Learning Cycle I First Meeting

No	Observed aspect	Score	Percentage
1	Student interaction with the teacher	46	41,07%
2	Interaction between students	51	45, 53%
3	Student interaction with learning resources	44	52,38%
Total Score		136	
Percentage			44,83%

From the observations of learning interactions at the second meeting, the percentage of student learning interactions was 54.545%. This shows that the rate of student learning interactions is still below good criteria. This can be seen in Table 3:

Table 3. Data on Observation Results of Student Interaction Learning Cycle I Second Meeting

No	Observed aspect	Score	Percentage
1	Student interaction with the teacher	67	52,34%
2	Interaction between students	71	55,46%
3	Student interaction with learning resources	63	65,62%
Total Score		201	
Percentage			57,81%

Based on observations of each aspect of student learning interactions, Table 4 represent data on the development of students' mathematics learning interactions at the first and second meetings:

Table 4. Improvement of students' mathematics learning interactions Cycle I

No	Aspect	Percentage		Information
		Meeting I	Meeting II	
1	Student interaction with the teacher	41,07%	52,34%	Increase
2	Interaction between students	45, 53%	55,46%	Increase
3	Student interaction with learning resources	52,38%	65,62%	Increase
Average		46,32%	57,81%	Increase

While the individual student's post-test scores in the first cycle of the first meeting, there are still many children who score below the Minimum Completeness Criteria (MCC) value. Only 5 children received grades above the MCC. Furthermore, at the second meeting, the children who scored above the MCC were only children. Post-test results data in the first cycle can be seen in the Table 5:

Table 5. Results of Post Test Analysis of Cycle I Grade VII C Students

Completeness Criteria	Achievement	
	Meeting I	Meeting II
Amount	1644	2222
Average	58,7	69,4
The highest score	74	96
Lowest Value	34	54
Number of students who scored ≥71	5	12
Percentage	17,8	37,5
Percentage of Average Cycle I	27,65	

Based on the table above, it can be seen that 27.65% of students have scored ≥71 or have completed it, and 72.35% have not yet reached the completeness score.

Based on reflections that have been held by researchers and subject teachers, the following things are obtained:

1) Students who ask researchers/teachers 56.92% or enough, but many students are still embarrassed to ask when having difficulties.
2) Students who answered the questions of researchers/teachers 39.06% or less because students lack the courage to express their opinions.
3) Students who use researchers/teachers as sources as much as 56.7% are enough, but many students do not use researchers to understand the material.
4) Students who use researchers/teachers as facilitators are 34.15% or still lacking because many students are still less active in doing worksheets.
5) Students who ask friends of one group are still lacking at the first meeting but are already good at the second meeting.
6) Students who answer friends' questions are still lacking in the first meeting, but it is good at the second meeting, but once there are children who have not answered questions from friends for fear of being wrong when answering.
7) Students who ask other groups are 37.05% or less because they are still afraid to ask.
8) Students who answer questions from friends from other groups are 25% or less because there are still rarely children who ask questions and are afraid of being wrong when answering.
9) Students are good when reading learning resources.
10) Students who read practice questions were 39.06% or less because they still often chatted with friends when learning.
11) Students who read learning resources to answer questions 51.33% are still lacking because students only answer as best they can while still not trying to open books.

2. Cycle II

The observations at the first meeting of the second cycle started to get used to learning TAI. Almost in all aspects of student learning interactions at this first meeting has increased. This can be seen when the researcher explains that students pay attention well and respond when given a question. Then during the group discussion, students were very enthusiastic and often asked questions from researchers. Students are not ashamed to ask researchers if they have difficulty. Furthermore, when the group discussion takes place, the interaction between students and students goes well. This can be seen when they do they work together to find answers. Also, they have dared to ask friends from other groups. However, there are still groups that still rely on friends who are good at doing worksheets.

At the second meeting of the second cycle, students' interaction with the teacher was still going well. However, it decreased slightly because students were disturbed by conditions outside the classroom. Students still listen well when the teacher explains the material. Also, during group discussions, if students experience difficulties, they even ask questions from researchers. Then the interaction between students and students in the second meeting increased. Students work well together in groups when working on worksheets. When experiencing difficulties in a group, they try to ask other groups of friends. Vice versa, when other group friends ask, they want to answer. The observations of every aspect of student learning interactions in the second cycle of the first meeting showed that the percentage of student learning interactions had reached 69.86% or were in good criteria. This can be seen in Table 6.

Table 6. Data Observation Results of Student Interaction Learning Cycle II First Meeting

No	Observed aspect	Score	Percentage
1	Student interaction with the teacher	87	70, 16%
2	Interaction between students	78	60, 93%
3	Student interaction with learning resources	73	78,49%
Total Score		238	
Percentage			69,86%

The observation of each aspect of student learning interactions in the second cycle of the second meeting showed that the percentage of student learning interactions was 63.54%. This shows a decrease in the rate of student learning interactions compared with previous meetings. However, the percentage of student learning interactions is still in good criteria. This can be seen in Table 7.

Table 7. Data Observation Results of Student Interaction Learning Cycle II Second Meeting

No	Observed aspect	Score	Percentage
1	Student interaction with the teacher	78	60,93%
2	Interaction between students	82	64,06%
3	Student interaction with learning resources	63	65,62%
Total Score		223	
Percentage			63,54%

Based on observations of each aspect of student learning interactions, Table 8 represent data on the development of students' mathematics learning interactions at the first and second meetings:

Table 8. Increased Student Mathematical Learning Interactions Based on Observation Results

No	Aspect	Percentage		Information
		Meeting I	Meeting II	
1	Student interaction with the teacher	70, 16%	60,93%	Decrease
2	Interaction between students	63, 09%	64,06%	Increase
3	Student interaction with learning resources	78,49%	65,62%	Decrease
Average		69,86%	63,54%	Decrease

While the individual student's post-test scores in the second cycle of the first meeting had many children who scored above the MCC score, some 21 children get grades above the MCC. Furthermore, at the meeting of the two children who scored above the MCC of 26 children. Post-test results data in the first cycle can be seen in Table 9.

Table 9. Results of Post Test Analysis Cycle II Grade VII C Students

Completeness Criteria	Achievement	
	Meeting I	Meeting II
Amount	2322	2463
Average	74,9	76,9
The highest score	93	94
Lowest Value	67	67
Number of students who scored ≥ 71	21	26
Percentage	67,7%	81,25%
Percentage of Average Cycle I	74.49%	

Based on the table above, it can be seen that 74.49% of students have scored ≥ 71 or have completed it, and 25.51% have not yet reached the passing grade.

Based on reflections that have been held by researchers and subject teachers, the following things are obtained:

1) Students who ask the teacher are good, reaching 79.33% because they are no longer ashamed to ask questions when they encounter difficulties.
2) Students who answered the teacher's questions were already good at 62.10%. Students were brave to answer when the teacher asked, even though it was still wrong.
3) Students who used the teacher as a resource reached 68.35% with good criteria, although some had not.

4) Many students have used the teacher as a facilitator with a 53.42% percentage with sufficient criteria, although there are still a few who have not.
5) Students who ask a good group friend with 68.15% of students are no longer ashamed to ask.
6) Students who answered the question of friends from one group were also already good, with 71.37%. Group work went well with mutual help between members.
7) Students who asked other groups reached 62.05% with good criteria because researchers/teachers continued to motivate, so students were no longer ashamed.
8) Students who answer questions from other groups are sufficient, reaching 50.76%. Students dare to answer even though they are not so sure.
9) Students who read learning resources had reached 74.85%, students, without being forced to read learning resources.
10) Students who read the question exercise were already good at 70.02%. Students had tried reading the question exercises when doing worksheets.
11) Students who read learning resources to answer questions already with a percentage of 71.32%. Students always try first to look for answers in learning resources before asking researchers/teachers directly.

In the first cycle of mathematics, student learning interactions are still insufficient criteria. This can be seen from the percentage of each indicator of student learning interaction, namely the interaction of students with teachers by 46.70%, the interaction of students with students by 50.5%, and students' interaction with learning resources 52.67%. Also, it obtained an average observation of student learning interactions by 49.95%. Furthermore, in cycle II, an improvement was made of the deficiencies that occurred in cycle I. After the learning process in cycle II was carried out, there was an increase in student learning interactions. This can be seen from the percentage of each indicator of student learning interaction, namely the interaction of students with teachers by 65.55%, the interaction of students with students by 63.08%, and students' interaction with learning resources 72.06%. Also, it obtained an average observation of student learning interactions by 66.90%. Thus, according to the qualifications of the results of the observation score observation of student interactions, student learning interactions in the second cycle are already in good criteria, so the study was stopped until the second cycle. Analysis of student learning interactions in the first cycle, and the second cycle can be seen in the following table.

Table 10. Analysis of Observation Results of Student Learning Interactions in Cycle I and Cycle II

No	Aspect	Percentage		Information
		Cycle I	Cycle II	
1	Student interaction with the teacher	46,70%	65,55%	Increase
2	Interaction between students	50,50%	63,08%	Increase
3	Student interaction with learning resources	52,67%.	72,07%.	Increase

CONCLUSION

Based on the results of classroom action research using the Team Assisted Individualization (TAI) type of cooperative learning in class VII C, even semester of SMP Negeri 2 Pajangan Bantul Regency in the academic year of 2017/2018 with a quadrilateral subject, it can be concluded an increase in student learning interactions. This is evident from the results of student observations on each cycle, increasing each indicator. In the cycle, the percentage of student learning interactions amounted to 50.16% with sufficient criteria. Then an increase in cycle II with the percentage of student learning interactions amounted to 65.34% with good criteria.

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