

# Team Assisted Individualization to Improve Student's Self Confidence in Mathematics Learning

Resvita Febrima<sup>1, a)</sup> Jailani<sup>b)</sup>

*<sup>1</sup>Postgraduate Mathematics Education, Yogyakarta State University  
Jl Colombo No.1, Karangmalang, Depok, Yogyakarta, Indonesia*

a)Corresponding author: [resvita.febrima2016@student.uny.ac.id](mailto:resvita.febrima2016@student.uny.ac.id)

b) [jailani@uny.ac.id](mailto:jailani@uny.ac.id)

**Abstract.** The study aim to improve students's self confidence using scientific approach setting cooperative learning type Team Assisted Individualization (TAI) in senior high school 11 Yogyakarta. The type of this study is an action research which uses four cycles: they are planning, implementation, observation, and reflection. Subjects of the study were 29 students of XI.6 of senior high school 11 Yogyakarta. Data of the study were gathered by using documentation, observation sheet, and checklist. All collected data were anylized descriptively by comparing the condition before treatment, at the end of 1st and 2nd cycle. The result showed that cooperative learning type TAI is able to improve students self confidence in math. The significant result can be seen from student's pre-test result which in medium category and it increased at the end of 2nd cycle, to be in high category. The improvement of student's self confidence in math is followed by the improvement of student's achievement. This can be seen from the number of students who were able to reach the criteria of completeness learning minimal (KKM) is increasing. The result of pretest in 1st and 2nd cycle shown 3% of students reach KKM. At the end of ist cycle 72% of students were able to reach KKM and at the end of 2nd cycle 95% students were able to reach KKM. This research result is students's self confidence increas by using cooperative learning type team assisted individualization (TAI).

## INTRODUCTION

Education is able to change a person's mindset so as to develop the potential that exists within the self. Education is formally done at school in the form of teaching and learning process. Teaching and learning process is a dynamic interaction between teachers who carry out teaching tasks with students who carry out learning activities, in order to achieve the goals that have been determined. Learning is an active process in acquiring new knowledge that ultimately leads to changes in behavior (Herman Hudojo, 2003:83).

The learning process in the school is organized into a curriculum that includes several competencies. Curriculum applied in Indonesia today is the curriculum 2013 where the curriculum includes 4 aspects including aspects of knowledge, skills, attitude and social. It is expected that these four aspects can support students' ability.

In attitude and knowledge aspect contained value of self confidence and learning achievement. The results of learning achievement and self confidence are influenced by many factors causing low student math score and lack of student confidence. Some of these factors are the lack of student participation in the teaching and learning process so that mutual relations between students and teachers less occur. The strategies and teaching methods chosen by the teacher are less precise so that the students become bored and saturated, poor evaluation system, less teachers' ability to generate self confidence of student learning, or also because the learning approach is still expository so that students are not much involved in the learning process.

Observations made in SMAN 11 Yogyakarta mathematics learning is still implemented by expository method. This is due to the lack of variety of teachers in delivering lessons that cause less students to be given the opportunity to channel their ideas. With the silence of the students and just imitating how the teacher explains making the students less confident in their way of solving the problem. Learning by expository method also tends to reduce the students' social activity so that students quickly feel bored and bored by only listening to the explanation from the teacher. The material given by the teacher completed in a timely manner but not yet

satisfactory because the student's learning achievement has not reached the specified target. This is evidenced by the acquisition of pre-test scores carried out by only 3% of completed students from KKM.

In addition, low student scores are also a result of low student self-confidence. The pretest and initial questionnaire results can be seen from the table below:

**TABLE 1. XI.6 Science Classroom Observation Results**

Variable	Interval	Criteria	Initian Condition
Affective ( <i>Self Confidence</i> )	$60 < X$	Very high	0,00%
	$46,67 < X \leq 60$	High	31,25%
	$33,33 < X \leq 46,67$	Medium	40,63%
	$20 < X \leq 33,33$	Low	21,88%
	$X < 20$	Very low	0,00%
	<b>Mean = 46</b>	Medium	41
Cognitive / skill	Complete $\geq 75\%$	<b>KKM achieved</b>	3%
	<b>Mean</b>	KKM = 75	40
Learning process	Achieved $\geq 75\%$	<b>Successful learnig</b>	

Optimal learning achievement, will not be separated from the role of the teacher as a facilitator of learning. However the optimal or not achievement of students will depend on the learning process built by the teacher. If teachers are still using expository methods this certainly does not facilitate students to learn in their own way, for example by studying individuals or groups. Related to that, teachers are suggested to be more creative in using learning method, for example the use of scientific approach with cooperative learning type Team Assisted Individualization (TAI). TAI type cooperative learning provides opportunities for students to participate actively in learning and express their ideas, so that students have more opportunities to utilize comprehensive mathematical knowledge and skills within their group. Thus expected self-confidence students to mathematics to be increased by applying cooperative learning type TAI.

## REVIEW OF LITERATURE

### Team Assisted Individualization (TAI)

Team Assisted Individualization (TAI) is one of the cooperative learning developed by Robert E. Slavin. This type is designed to overcome student learning difficulties individually, then the learning activities more to be used on problem solving. The hallmark of the TAI type is that each student individually learns the learning materials that the teacher has prepared. Individual learning outcomes are brought to groups to be discussed and mutually discussed by group members, as well as all group members responsible together.

Student grouping on this type of learning emphasizes students' abilities, where students are grouped based on varying abilities and each student has the opportunity to succeed in achieving the learning objectives (Huda, 2011: 125). Students are grouped into small groups (4 to 5 students) who are heterogeneous to complete group assignments that teachers have prepared, followed by individual assistance for students who need them. According to Lie (2008: 43) heterogeneous groups are favored by teachers who have implemented cooperative learning models for several reasons, namely (1) heterogeneous groups provide opportunities for mutual teaching and peer teaching, (2) interactions between religions, races, ethnicities and gender, (3) heterogeneous groups facilitate classroom management because in the presence of one highly academic, teachers get one assistant for every three to four children.

Team Assisted Individualization (TAI) is a model developed for several reasons. First, it combines cooperative excellence and individual teaching programs. Second, this model stresses the social effects of cooperative learning. Third, TAI is structured to solve problems in teaching programs, for example in terms of individual student learning difficulties.

### Self Confidence

If a learning objective is viewed from the learning result, there are three aspects, namely cognitive, affective and psychomotor aspects. The learning objectives cover not only the cognitive aspects, but also in the affective

aspects. One of the affective aspects that became the focus of this research is students' self-confidence. Confidence or self-confidence is a belief in the ability possessed.

Sieler (in Alias: 2009) reveals that "self-confidence is an individual's characteristic (a self-construct) that enables a person to have a positive or realistic view of themselves. This means that self-confidence is an individual characteristic (self-construct) that allows a person to have a positive or realistic view of themselves or the situation in which they are. This refers to one's expectations of the abilities they possess realistically based on their efforts.

The above opinion is reinforced by Goel (2002: 90) which states "Self confidence is essentially an attitude which allows us to have a positive and realistic perception of ourselves and our abilities". The meaning of self-confidence is essentially an attitude that allows us to have a positive and realistic perception of ourselves and our abilities. But that does not mean people who have the confidence to do everything, only they believe in the ability and accept yourself. Roland Benabou (2001: 876) self confidence is widely regarded as a valuable individual asset. The meaning of the above phrase is that confidence is widely regarded as a valuable individual asset. This is because confidence can be a determinant of one's success in the learning process.

## METHOD

The study aim to improve students's self confidence using scientific approach setting cooperative learning type Team Assisted Individualization (TAI). This study is a type of classroom action research to improve learning activities. Action research was developed according to the design of classroom action research model Kemmis & McTaggart. This action research model guides participants at every stage in every cycle: planning, action or observation, and reflection. The research was conducted at SMA Negeri 11 Yogyakarta which is located at Jalan A.M Sangaji 50 Yogyakarta.

The time of the study was conducted in the first semester of the academic year 2017/2018 precisely in November 2017. The subjects in this study were students of class XI.6 of 29 students who observed his behavior at the time of study. Class XI.6 consists of 10 male students and 19 female students. The average student is at the age of 17-18 years where according to Piaget's theory, students of this age begin to think in a more abstract, logical, and more idealistic way. In this classroom achievement, family background and student learning abilities are very diverse. The sample is chosen by using purposive sampling technique that is sampling technique of data source with certain consideration.

**TABLE 2.** Data Collection Method

No.	Aspects	Type and Category of Data	Technique	Instruments	Data Source
1.	Planning	Conformity of the teaching plan and standart precesses	Documentation/ product	Assessment sheet	Teaching plan
2.	Implementation	Implementation using scientific approach setting cooperative learning type Team Assisted Individualization (TAI)	Observation	Observation sheet	The learning process, students and teachers
3.	Observation	The response of student's self confidence The response of student Learning process	Questionnaire Checklist	Questionnaire Observation sheet	Students Teacher
4.	Reflection	Learning outcomes	Test Observation Product	Test Observation sheet Assessment sheet	Students Students Students

Data of the conformity between the teaching plan and the process standards that obtained from assessment processes were analyzed descriptively (percentage). The analysis of the teaching plan data is done in stages as follows: (1) scoring by the three observer / evaluator, (2) summing of the total score of each component, (3) classifying the obtained scores, (4) averaging the total score obtained from three assessors. The average percentage of the conformity assessment results are then categorized in the predicate is very good, good, fair, or poor [13] in accordance with the scale in Table 3.

**TABLE 3.** Conversion of the Result of the Teaching Plan Assessment

No	Percentage Scale	Category	Predicate
1	86 – 100	A	Very good
2	71 – 85	B	Good
3	56 – 70	C	Fair
4	≤ 55	D	Less

Results of the data processing for implementation of learning are also categorized in the predicate: very good, good, fair, and less, as shown in Table 3. Data of the integrated science implementation that obtained from observations of teachers in classroom were confirmed with the data that obtained from the students response questionnaire to obtain the validity of the data. If there is a match between the data of observations and the data of the student questionnaire, it can be said that the data are valid and reliable.

## RESULT AND DISCUSSION

The first cycle is held in 2 meetings (2 x 45 minutes), with the sequence material being held early November 2017 covering:

a. Planning

Develop learning instruments, among others: learning implementation plan (RPP) about the concept of sequence, test, self confidence questionnaire students to mathematics.

b. Implementation of Action

Implementation of action in cycle 1 is divided into 2 meetings with each meeting time is 2 x 45 minutes and 2 x 45 minutes. The first meeting was held on Thursday, November 2, 2017. And the second meeting was held on Monday, November 6, 2017. In this stage the teacher implement the learning in accordance with the planned implementation of learning that is the application of learning models TAI. Students were divided into 6 groups with each group consisting of 5 students and there was 1 group consisting of 4 people. The division of groups was done randomly based on the students' pretest results. The teacher assigns the problem assignment about the concept of comparison and scale in the form of LKS. Students discuss problems (tasks) in groups with reference to reference books. Students discuss assignments in their respective groups, teachers provide guidance for students / groups in need. students / groups present the results of group discussions in class discussions, with direction from the teacher. Teachers clarify the results of class discussions, and give emphasis to avoid misconceptions in students. During the learning process the students' activities are observed by the teacher observer (kolaborasi). The teacher gives the quiz questions at the end of the lesson, as well as the daily repetition at the end of the cycle.

c. Observation

Observation is done from the beginning to the end of the learning cycle I to observe the implementation of learning activities. After the observation, the learning activity of the first cycle of the first cycle was found, only 64% of learning activities were implemented but at the end of the first cycle at the second meeting the implementation of learning activities increased to 72%. Overall learning activity in the new cycle I was 68%.

d. Reflection

At the end of the first cycle is done recapitulation of the percentage of learning activities along with an analysis of what activities have not been done and efforts to overcome them. In addition, postes are also conducted to measure the success of learning in the realm of cognitive and affective. Increasing self confidence and student achievement of mathematics at the end of cycle I can be seen in the following table:

**Tabel 4.** Research Results At End of Cycle I

Variable	Interval	Criteria	Initial condition	Target	End of Cycle 1
Affective (Self Confidence)	$60 < X$	Very High	0,00%	20%	12,50%
	$46,67 < X \leq 60$	High	31,25%	55%	53,13%
	$33,33 < X \leq 46,67$	Medium	40,63%	23%	21,88%
	$20 < X \leq 33,33$	Low	21,88%	2%	6,25%
	$X < 20$	Very Low	0,00%	0%	0,00%
	Mean		41 (medium)	High	46 (medium)
Cognitive / skill	Achieved $\geq 75\%$	KKM achieved	3%	75%	48%
	Mean		40	>75	75
Learning Process	Achieved	Succesful learning		90%	72%

## **CONCLUSION AND RECOMMENDATION**

### **Conclusion**

From the results of classroom action research that has been implemented by applying TAI instruction learning in class XI.6 SMAN 11 Yogyakarta to improve student's self confidence can be concluded as follows:

1. Scientific learning with TAI setting can improve student self confidence from before cycle I, after cycle I and after cycle II that is from 41 with medium category, become 55% with high category. The criteria of self-confidence of students achieving mathematics.
2. Scientific learning with TAI setting can improve the implementation of mathematics learning process of students from before cycle I, after cycle I and after cycle II that is from 72% to 95%. The success criteria in the learning process is achieved.

### **Recommendation**

By observing the fact that there is an increase of self confidence of students in the learning process with the scientific approach of TAI setting is an input for teachers especially mathematics subjects, from the results of this study are submitted suggestions: In the process of learning, especially mathematics teachers should be able to choose and develop the model and method of learning which is able to facilitate the needs of diverse students so that ultimately able to improve student self confidence.

### **REFERENCES**

1. Kemdikbud, *Panduan penilaian untuk sekolah menengah pertama*, Jakarta: Kemdikbud, (2015).

