

## Improving Students' Creativity in Mathematic Using SAVI (Somatic Auditory Visual Intellectual) Approach

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### ABSTRAK

Penelitian yang berjudul upaya peningkatan kreatifitas mahasiswa menggunakan metode SAVI pada mahasiswa semester 4 Program Studi Pendidikan Matematika Fakultas Keguruan Dan Ilmu Pendidikan Universitas Muhammadiyah Purwokerto ini bertujuan untuk mengetahui apakah SAVI dapat meningkatkan kreatifitas mahasiswa di lingkungan Program Studi Pendidikan Matematika Fakultas Keguruan Dan Ilmu Pendidikan Universitas Muhammadiyah Purwokerto. Penelitian ini termasuk jenis penelitian tindakan kelas. Penelitian dengan fokus peningkatan kreatifitas mahasiswa menggunakan metode SAVI ini dilakukan di semester 4 Program Studi Pendidikan Matematika Fakultas Keguruan Dan Ilmu Pendidikan Universitas Muhammadiyah Purwokerto dengan jumlah mahasiswa 44 orang. Penelitian ini dilakukan dalam 3 siklus. Setelah dilakukan pengamatan dan evaluasi dalam 3 siklus dengan hasil tersebut di atas, maka dapat disimpulkan jika pendekatan pembelajaran SAVI dapat meningkatkan kreatifitas mahasiswa Program Studi Pendidikan Matematika FKIP UMP. Hal ini dibuktikan bahwa pada siklus I respon rata-ratanya sebesar 33,71 %, pada siklus II respon rata-ratanya sebesar 49,3 %, dan pada siklus III respon rata-ratanya sebesar 64,9 %. Dengan peningkatan dari siklus I ke siklus II sebesar 15,59% dan dari siklus II ke siklus III sebesar 15,6%.

**Kata kunci:** Kreatifitas, Matematika, Somatic Auditory Visual Intellectual

### ABSTRACT

The low level of student creativity is a reflection of the unsuccessful learning process. Thus, it needs a special treatment to solve it. The study aims to increase student creativity using the SAVI method for 4th semester students of the Mathematic Education Study Program. This research is a classroom action research. Research with a focus on increasing student creativity using the SAVI method was conducted in semester 4 of the Mathematic Education Study Program, with 44 students. This research was conducted in 3 cycles. After observing and evaluating in 3 cycles with the results mentioned above, it can be concluded that the SAVI learning approach can increase the creativity of students of the UMP FKIP Mathematic Education Study Program. It is proven that in cycle I the average response is 33.71%, in cycle II the average response is 49.3%, and in cycle III the average response is 64.9%. With an increase from cycle I to cycle II of 15.59% and from cycle II to cycle III of 15.6%. From the result it can be said that SAVI was effective to increase students creativity in mathematic.

**Key words:** Creativity, Mathematic, Somatic Auditory Visual Intellectual

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### Introduction

In the educational process, teaching and learning activities are the main thing which means that the success of educational goals depends a lot on how the teaching and learning process is carried out (Delina et al., 2018; Muijs & Reynolds, 2015; Peranginangin et al., 2019). Teaching and learning process that involves student activities, especially in Mathematics learning is absolutely necessary. If the student activities in Mathematics are developed in the teaching and learning process, it will provide an increase in learning achievement, especially in the field of Mathematic studies. But in fact, there are many in the mathematic sclass, most of the students are passive in following lessons(Gregerson et al., 2013; Kim et al., 2016; Thuneberg et al., 2018).

Creativity plays an important role in the series of thinking high level math. Creativity contributes to the first level in development of a mathematical theory, thus allowing conjunctions to be presented as a person's individual experience of a mathematical concept. The condition of creativity among Mathematics students, especially in UMP are still low. This is supported by the results of observations in Mathematics department of UMP. From the results of observations made by researchers, it turns out that there are several problems faced during the teaching and learning process, namely: 1) Students do not have ideas / suggestions about a problem, this is proven when the teacher provides material, if the teacher asks students to give ideas / suggestions on the material, students cannot. 2) Students are not brave enough to express their opinion. It can be seen that students are less interested and tend to remain silent during group discussions. 3) The lack of students asking questions to the teacher, this is proven when the teacher gives the opportunity to students to ask questions, but no student asks, even though the students themselves do not understand. 4) When working on questions, students lacked alternatives in solving problems, it can be seen when students worked on questions according to the example. 5) Most students could not answer questions from the teacher, this was proven when the teacher gave different questions to the example of students who found it difficult to answer questions. work. 6) Students do not have deep curiosity about the material given. 7) Students are still less active in the learning process, this is evidenced by when the teacher explains that there are still many students who are lazy to listen to explanations from the teacher, especially students who sit in the back. When the teacher gives practice questions, students do not try to do it (Davis et al., 2011; Han & Marvin, 2002; Park et al., 2007; Su et al., 2016).

From the components above, it also results in their low creativity in understanding the material given. The low level of student creativity is a reflection of the unsuccessful learning process (Cooper & Heaverlo, 2013; Davis et al., 2011; Gregerson et al., 2013; Han & Marvin, 2002; Kfiufman et al., 2009; Wallace & Russ, 2015). Many factors influence both the students themselves and the teaching factors carried out by the teacher (Hadar & Tirosh, 2019; Robinson, 2009; Runco, 1999).

One learning approach that can improve mathematic creativity is the SAVI learning approach. The SAVI (Somatic Auditory Visual Intellectual) approach is a learning approach that combines physical movement with intellectual activity in learning by utilizing all senses and making the whole body and mind involved in the learning process (Asrin et al., 2014; Iskandar et al., 2016).

There are four elements in SAVI learning, namely somatic (learning by moving and doing), auditory (learning by listening and speaking), visual (learning by observing and describing) and intellectual (learning to solve problems) (Koderi & Syahril, 2018; Muanifah & Sa'yah, 2018; Rakhmawati et al., 2019; Septiyana, 2017). Therefore, students are actively trained to be able to ask questions, answer questions, express opinions and respond to a statement or problem in a convincing proposal during the learning process.(Dapa et al., 2019; Rijal & Arifah, 2020; Sayeketi, 2018; Sholihin, 2015; Yeh et al., 1998).

### **Research Method**

This type of research is a classroom action research consisting of three cycles with each cycle held two meetings and given action with the SAVI approach in each lesson. The subjects of this study were 4th semester students of the Mathematic Study Program with 44 students consisting of 24 male students and 20 female students. The study was conducted from september-December 2020 The research procedure includes four steps, namely planning, implementing

the action, observing and reflecting. At the end of each cycle an evaluation is held to find out how much student learning outcomes have improved. The procedure of the research can be seen in following figure:

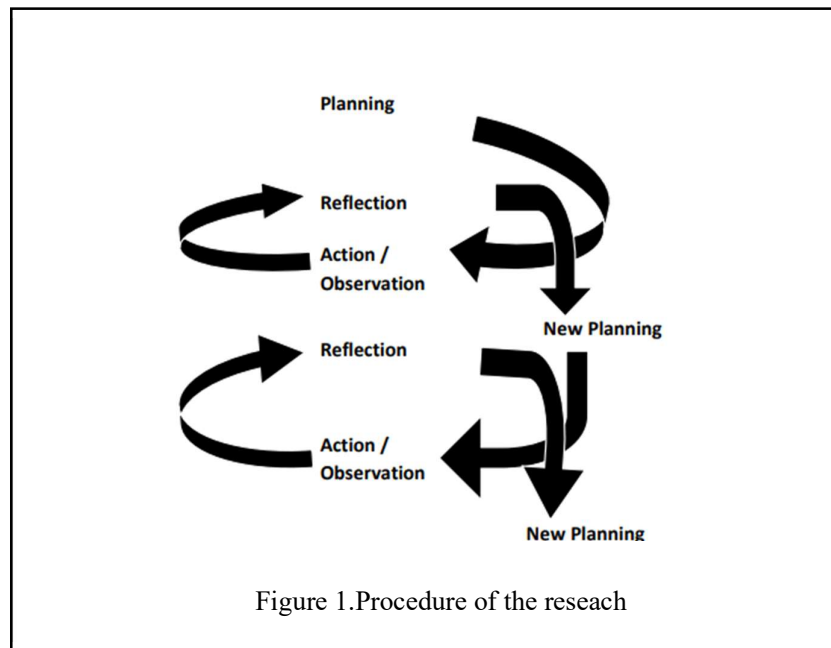


Figure 1. Procedure of the research

In collecting the data, pre test and post test in every cycle was used. The data then analyzed using descriptive statistic to find the percentage and the improvement in each cycle

## Result and discussion

### Result

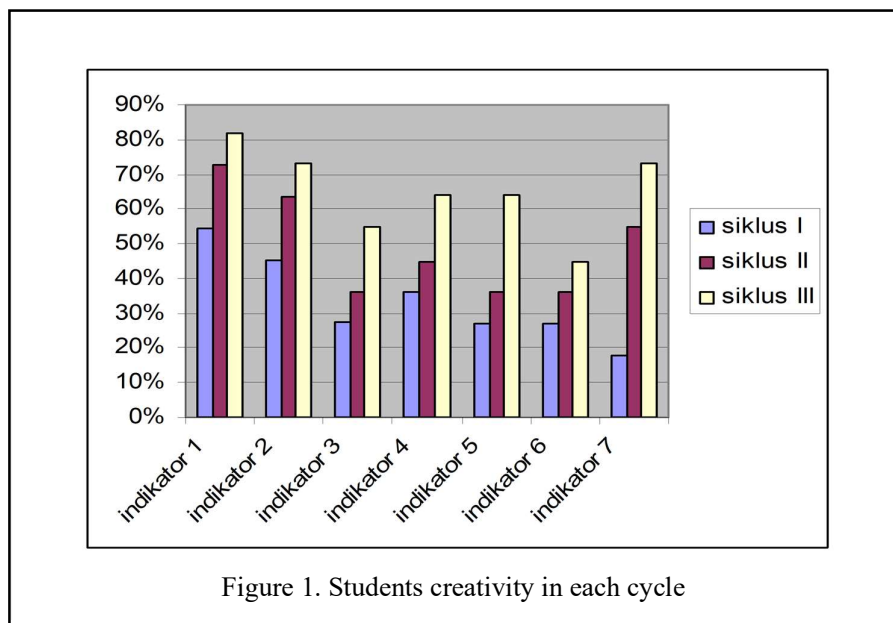
The value of student creativity is obtained from the results of observations by researchers assisted by an observer during the learning process. These observations were made in each cycle. The value of student creativity can be seen in the following table:

**Table 1.** Students creativity score

Cycle	Mean (%)
I	33.71
II	49.33
III	64.90

From the table above, it is obtained that the average value of students' oral communication skills in learning Mathematic using the SAVI approach on the subject of the circle has an increase of 15.59% from cycle I (33.71%) to cycle II (49.3%), and an increase of 15.6% from cycle II (49.3%) to cycle III (64.9%). This shows that the creativity of students in each cycle has always increased in learning with the SAVI approach.

The increase in student creativity is presented in Figure 4.1 as follows:



In indikator 1, the first cycle obtained a response of 54.5%, in the second cycle the response was 72.7%, and in the third cycle the response was 81.8%. It turns out that there is an increase in the ability of students to give a lot of ideas / suggestions on a problem.

In indikator 2, the first cycle obtained a response of 45.4%, in the second cycle the response was 63.6%, and in the third cycle the response was 72.7%, students had an increase when responding to friends' opinions.

In indikator 3, the first cycle obtained a response of 27.2%, in the second cycle the response was 36.3%, and in the third cycle the response was 54.5%. Even though it is not optimal, students have started to dare to ask questions.

In indikator 4, the first cycle obtained a response of 36.3%, in the second cycle the response was 45.4%, and in the third cycle the response was 63.6%. From cycle I to cycle III there is an increase.

In indikator 5, the first cycle obtained a response of 27.2%, in the second cycle the response was 36.3%, and in the third cycle the response was 63.6%. In the third cycle, there were many students who wanted to answer questions from the teacher.

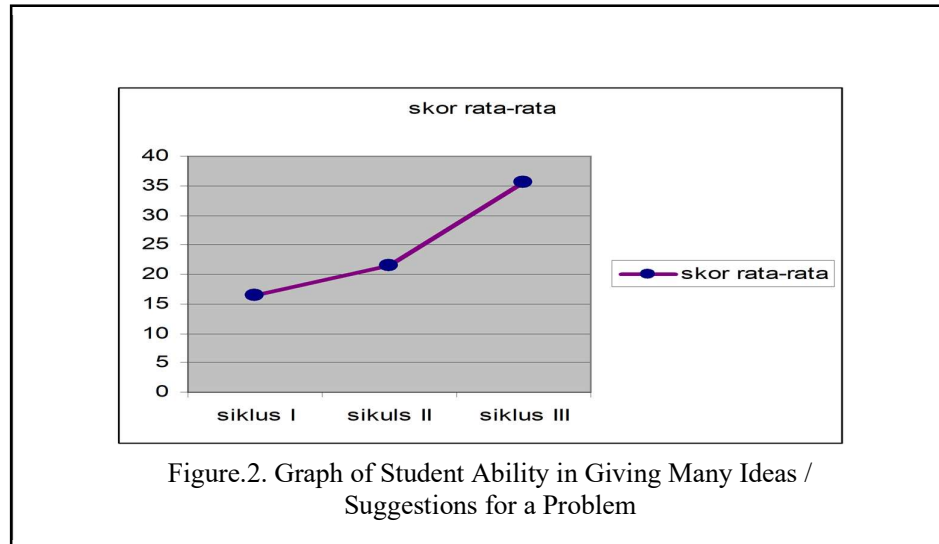
In indikator 6, the first cycle obtained a response of 27.2%, in the second cycle the response was 36.3%, and in the third cycle the response was 45.4%. From cycle I to cycle III there is an increase.

In indikator 7, the first cycle obtained a response of 18.2%, in the second cycle the response was 54.5%, and in the third cycle the response was 72.7%. In cycle I only a few students are active in doing assignments, but in cycle II and cycle III students are very active in doing assignments.

Overall learning using the SAVI approach provides simultaneous changes, in Mathematic all indicators of creativity increase in parallel.

1. Provide many ideas / suggestions for a problem

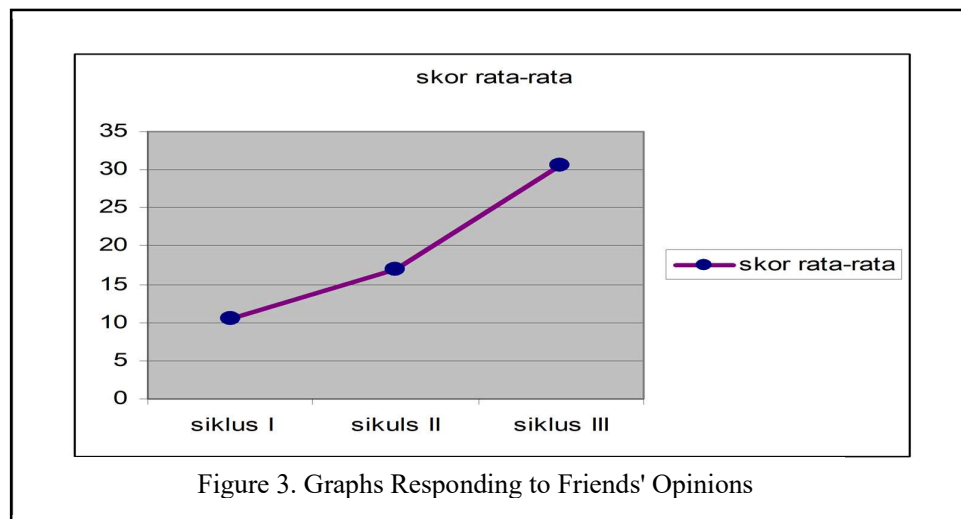
The student's ability to provide many ideas / suggestions for a problem is presented in Figure 2 as follows:



In the first cycle, the score was 16.5. In the second cycle, the score was 21.5. And in the third cycle a score of 35.5 was obtained.

2. Responds to a friend's opinion

The student's ability to respond to friends is presented in Figure 4.3 as follows:



In the first cycle, the score was 10.5. In the second cycle, the score was 17. And in the third cycle, the score was 30.5.

3. Asks the teacher a question

The student's ability to ask questions to the teacher in Figure 4 is as follows:

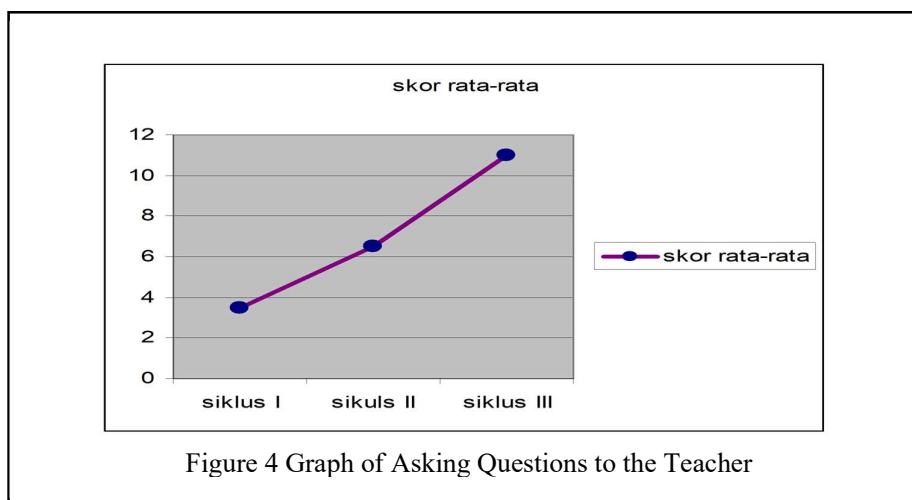


Figure 4 Graph of Asking Questions to the Teacher

In the first cycle, a score of 3.5 was obtained. In the second cycle, the score was 6.5. And in the third cycle a score of 11 was obtained.

- 4. Have alternatives in solving the problem

The ability of students in choosing alternatives in solving problems is presented in Figure 5 as follows:

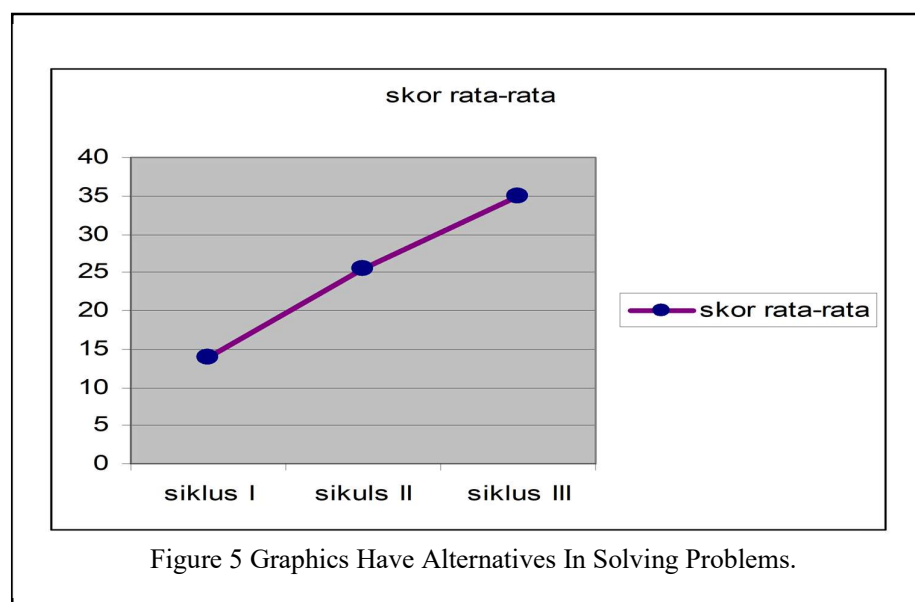
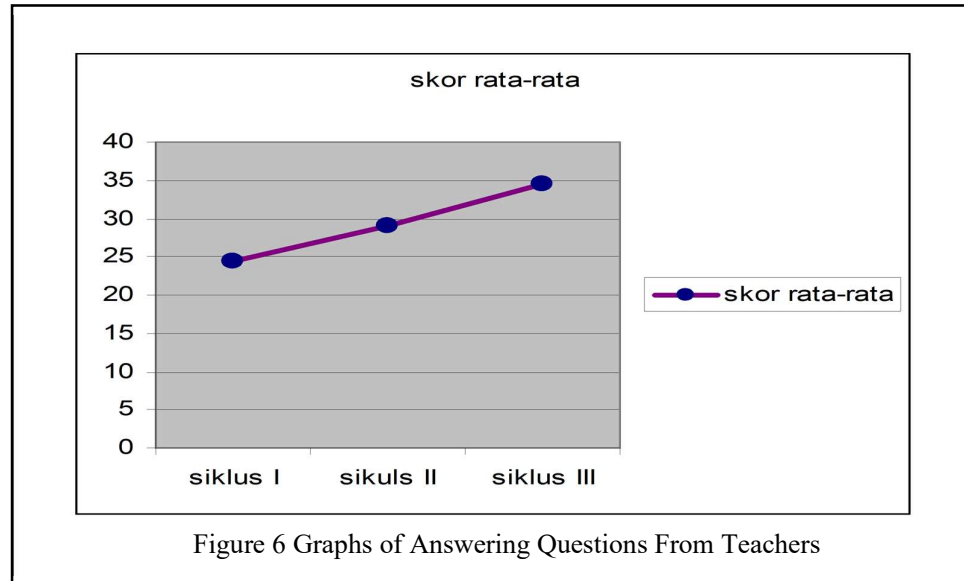


Figure 5 Graphics Have Alternatives In Solving Problems.

In the first cycle, the score was 14. In the second cycle, the score was 25.5. And in the third cycle a score of 35 was obtained.

- 5. Answer questions from the teacher

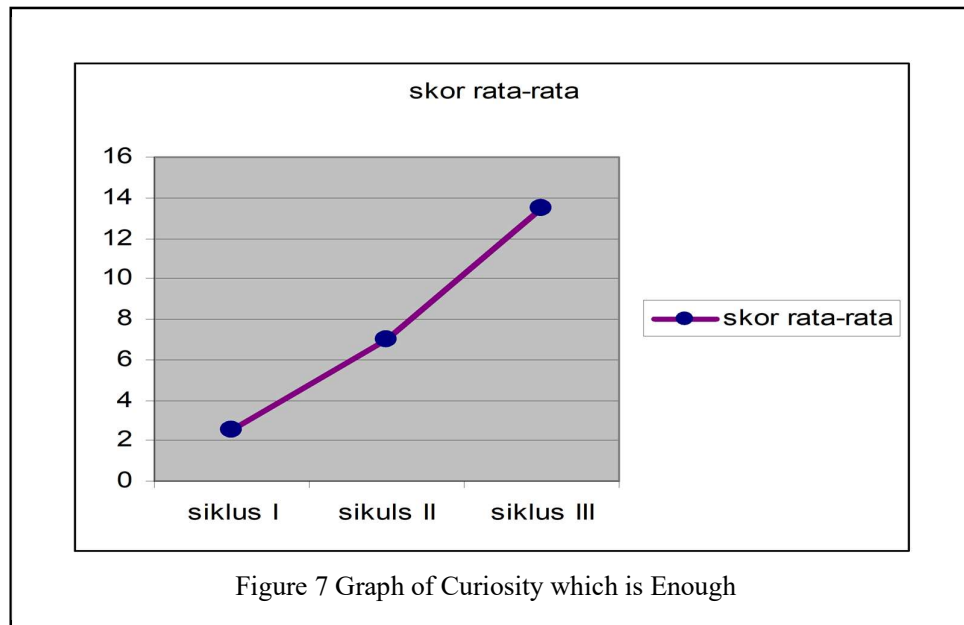
The student's ability to answer questions from the teacher is presented in Figure 6 as follows:



In the first cycle, the score was 24.5. In the second cycle, the score was 29. And in the third cycle, the score was 34.5.

6. curiosity indicator

The students' ability when expressing their considerable curiosity is presented in Figure 4.7 as follows:



In the first cycle, the score was 2.5. In the second cycle, the score was 7. And in the third cycle, the score was 13.5.

7. Doing the task

The ability of students when doing assignments is presented in Figure 8 as follows:

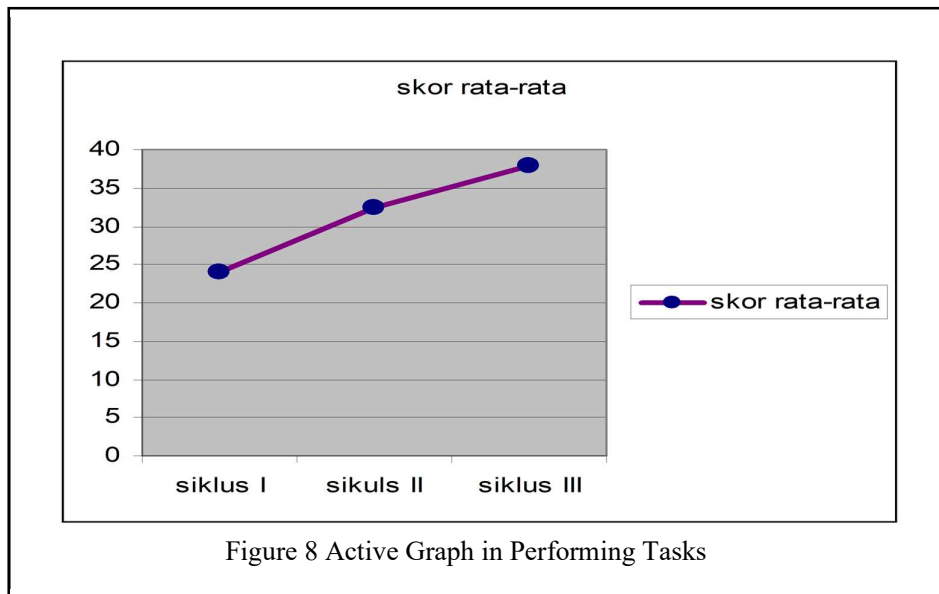


Figure 8 Active Graph in Performing Tasks

In the first cycle, the score was 24. In the second cycle, the score was 32.5. And in the third cycle a score of 38 was obtained. It can be seen that there is always an increase in students.

*Discussion*

Based on the description of the implementation result data above, we can see that the success determined by the Mathematics teacher uses the SAVI method. So the SAVI learning method for mathematics subjects is very effective and works by looking at the learning results that reach the average value Based on the results of the data obtained, students' mathematical scores have increased with an average score in the high category. This can be seen from the results of students' mathematical achievement also increased after the implementation of learning with the SAVI method. Initially, students were still unfamiliar with group discussions and looking for their own formulas. Students are still not maximal in understanding the material being studied, seen from students who rely on their friends to work on the questions in the worksheets.

Most students are getting used to finding formulas on their own with the help of LKS and other sources such as textbooks and the internet. Student confidence indicators have increased because in the auditory aspect students are required to be accustomed to presenting the results of their group discussions in front of the class, so that students have the courage to communicate ideas in front of their friends and dare to work on problems in front of the class, and do not hesitate to ask questions about things. which has not been understood during the learning process. The indicators of interest, curiosity, and inventiveness in doing math tasks also increased. In the visual element in SAVI learning, students learn by seeing and observing the teaching aids given at the beginning of the lesson and during group discussions, so that students' curiosity increases.

Students' CREATIVITY in learning mathematics has also increased, it seems that students are no longer lazy to go to class and are excited about learning mathematics. Students' ability to find increased because during the study Most of the students found their own space formulas with the help of worksheets and teaching aids. Indicators of persistence, persistence in doing mathematics also show an increase in the good category. In general, students seemed to be more serious in understanding the material and working on the questions. Students always complete



the assignment given by the teachers. This is due to the somatic element students are required to learn by moving in finding mathematical formulas and also students are required to learn through what they see (visually) to be observed, and make conclusions from the results of their observations (intellectual). In flexible indicators investigating mathematical ideas, trying to find other strategies, cooperation and respecting different opinions has increased. This is because learning with the SAVI approach in the auditory aspect is optimized through group learning.

Students are divided into groups to discuss, share knowledge and work together in understanding the subject matter. The indicators reflect on the way of thinking and the tasks that have been completed have also increased. The intellectual aspect of the SAVI approach affects this indicator because the results of group discussions presented in front of the class and then given responses by other students and researchers, so that students can evaluate their work and measure their abilities.

Student activities using the SAVI approach have increased. Student activities in the learning process, most students pay attention to the teacher's explanation when learning takes place. Students are also enthusiastic about mathematics lessons seen from students getting used to using worksheets in learning even though they find it difficult to do it and discuss with friends, present group work, ask questions if someone does not understand and dare to give suggestions. In terms of answering questions and concluding material verbally, students are still not used to it and tend not to dare to speak in front of the class.

In the activity of students in the learning process has increased, students are accustomed to using worksheets and begin to dare to speak in front of the class in answering questions, presenting discussion results, and concluding material. Student responses in learning mathematics using the SAVI approach have increased.

Most of the students gave a positive response to learning with the SAVI approach. This can be seen from the positive and supportive towards learning with the SAVI approach, because in mathematics learning experiences a fun and cool learning atmosphere so that students are more enthusiastic in learning and better understand different subject matter well and make students excited about learning. Student learning outcomes also experienced an increase in the test scores of learning outcomes

From the observations, most students understood the material being studied and were used to the questions being studied so that students got good grades. From some of the descriptions above, it appears that the application of the SAVI approach can improve students' creativity in learning mathematics. This can be seen in student activity and increased student response. The tendency of students to learn mathematics to be good causes the value of student learning outcomes to increase and vice versa, so learning activities and student responses in learning are also good and student learning outcomes are also good.

## **Conclusion**

After observing and evaluating in 3 cycles with the results mentioned above, it can be concluded that the SAVI learning approach can increase the creativity of students of the Mathematic Education Study Program.

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