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SERVICES IN IMPROVING MATHEMATICS LEARNING OUTCOMES FOR CLASS X STUDENTS THROUGH WINPLOT MEDIA

Siti Aisyah1[1*], Diyah Ayu Rizki Pradita[1], Nur Azizah[2]

[1,2,3]Mathematics Education, Faculty of Education, Universitas Ibrahimy,
Jl. KHR. Syamsul Arifin 1-2, Situbondo, Indonesia

ABSTRACT

In this era, the lack of use of media available in school computer labs tends to only result in less than optimal results and learning that seems monotonous with conventional media (whiteboards & markers). This research aims to carry out an activity as a service in improving the mathematics learning outcomes of class X students through winplot media. The method used is classroom action research carried out in two cycles with test instruments, documentation, and observation. Which each cycle consists of four stages, namely: planning, implementation, observation and reflection. The subjects of this research were class X students of Madrasah Aliyah Nurul Abror for the 2020/2021 academic year, which consisted of 20 students. The results of this research show that learning using winplot media can improve mathematics learning outcomes for class X Madrasah Aliyah Nurul Abror in the 2020/2021 academic year. Student learning outcomes in mathematics based on test scores increased by 25% from pre-cycle 30% (6 students who completed) to 55% (11 students who completed) in cycle I, then increased by 45% from cycle I 55% (II students who complete) to 100% (20 students who complete) in cycle II. All student learning outcomes in mathematics subjects that were measured increased from pre-cycle to cycle I to cycle II.
Keywords: Learning Outcomes, Mathematics, Winplot

INTRODUCTION

Efforts to improve student learning outcomes, especially in mathematics subjects, are always being developed by teachers through the study of various components. Such as improvements and refinements to the curriculum, teaching materials, teaching and learning processes and others that have been carried out, including the methods that will be carried out. One country that has developed a lot of education is Indonesia. Every year Indonesia always improves its education program.

Education is one of human needs, because with education humans gain knowledge, values, attitudes and skills. Learning is a process of changing behavior that can happen to everyone. Students' learning experience is obtained from how much students' learning process takes place. In other words, effort will not betray the results. then the student learning process can influence student learning outcomes.

Learning outcomes are changes that result in humans changing their attitudes and behavior. To make all this happen, teachers as educators must play an important role in providing knowledge to students so that students have mastery of the knowledge and life skills needed in real life . Because this can also influence the learning outcomes that take place. However, whether students respond well or not occurs due to several factors. One of the factors that can influence students' learning attitudes is the learning process which is always monotonous, the teacher's teaching style, and the choice of learning strategies or methods or all other supporting factors.

Likewise with mathematics learning outcomes, this is because mathematics is one of the subjects that students must master at all levels of education. Mathematics has many benefits for humans. By studying mathematics, our brains will get used to solving problems systematically, so that when applied in real life, we can solve problems more thoroughly, accurately, and can train broader ways of thinking.

According to Lestari (2013: 118) "mathematics learning outcomes are patterns of changes in a person's behavior which include

cognitive, effective and psychomotor aspects after taking mathematics teaching and learning activities, the level of quality of which is largely determined by the factors that exist within the students and the social environment in which they influence it." Meanwhile, Suhendri (2013:1 08) states "mathematics learning outcomes are the culmination of learning activities in the form of changes in cognitive, effective and psychomotor forms in terms of number abilities, shapes, relationships. concept and logic sustainable, measurable and observable".

In learning, students need to be encouraged to carry out learning activities, especially in mathematics subjects . because mathematics is a subject that many students avoid, especially for those who think that mathematics is a difficult and boring subject which is sometimes also due to the lack of a teacher in involving students to actively construct their knowledge, causing students to lack understanding of the subject matter and lack of students' memory of lesson material.

The lack of students' memory of the subject matter results in a lack of students' knowledge ability in answering the questions given, resulting in low learning outcomes for students. As an effort to achieve this goal, education needs to make deliberate and planned efforts in selecting appropriate content (material), strategies (activities), media, methods and assessment techniques through the teaching process.

To create a quality learning process, teachers often encounter difficulties, these difficulties can be seen in the implementation of learning at school which still shows shortcomings and limitations. One of them is providing a concrete description of the material presented, so that this has a direct impact on the low quality of learning outcomes achieved by students.

From the several things mentioned above, it is hoped that learning media can increase students' effectiveness in learning and basically learning media is a means to make it easier to understand material or a concept and is an important support in the learning process. Ali Mudhlofir (2016) provides a definition of learning media as forms of communication, both printed and audio-visual, as well as equipment. Meanwhile, according to Fatikh (2019) learning media is something that can channel messages, solidly stimulate students' thoughts, feelings and desires so as to encourage the creation of a learning process in students.

Based on several definitions that have been discussed, it can be concluded that learning media is a form of means that can stimulate students' thoughts, feelings, attention and interests. Therefore, a teacher must be clever in choosing learning methods or media to achieve success in achieving educational goals. One interesting learning method or media to use is computer media .

Computer technology is a technology that is no longer foreign to us, in learning mathematics the use of computers is a special attraction for students. The use of computer technology to create learning media has many advantages, one of which is innovative and interactive learning, because it can combine text, images, audio, animation/video into one unit that supports each other. One of the computer software that can be used to help with mathematics learning is winplot media.

Winplot is a program created and produced by Richard Paris. Winplot is a program that can be used to draw graphs and explore the properties of function graphs (quadratic functions, trigonometric functions, circle equations, inverse functions , function limits, etc.). *Winplot* too is a special computer application for mathematics that can be used as a learning medium for graphing quadratic functions. With *winplot media* , students can also see graphic images clearly and carefully.

From the description above, it is the teacher who has a very important role in the development and progress of students. The hope that never disappears and is always demanded by a teacher is how the learning material delivered by a teacher can be mastered by students completely. This is quite a difficult problem felt by a teacher, a teacher's complaints are often made simply because of the difficulty of managing the class. A teacher's failure to manage the class makes learning goals difficult to achieve.

From the results of observations made by researchers at Madrasah Aliyah NURUL ABROR Sumbermalang Situbondo, teachers still use a relatively monotonous lecture method in mathematics learning. In fact, at the Madrasah Aliyah NURUL ABROR school there is a computer lab that students can use. However, computer media is rarely used by mathematics teachers in learning because teachers tend to

only use whiteboards and markers. This results in less than optimal results. This is indicated by the results of students' test scores that have not yet reached the KKM (Minimum Completeness Criteria).

Figure 1. The teacher provides material using the lecture method and Computer LAB Documentation

Based on the background above, researchers feel the need to take action to achieve educational and learning goals. And seeing the facts that occur increases the researcher's concern to provide and use effective media for a teacher in learning. Researchers consider that the use of learning media is expected to improve student learning outcomes. Therefore, researchers are interested in providing a service to improve class X mathematics learning outcomes through *winplot media* .

RESEARCH METHODS

In this research, the method used is classroom action research, commonly abbreviated as PTK (in English it is called classroom action research, abbreviated as CAR). Classroom action research is action research carried out by teachers with the aim of improving the quality of learning practices in their classes. PTK focuses on the teaching and learning process that occurs in the classroom, carried out in natural situations (Nurizzati, 2014) . The action taken by the researcher was the use of *winplot media* in mathematics subjects.

The subjects of this research were 20 class X Madrasah Aliyah students. The object *of* research here is the learning outcomes of class Apart from that, researchers also used interview instruments and documentation to collect research data. Meanwhile, to find out the extent of the development of student learning outcomes, the analysis used in this research is comparative descriptive analysis.

Design uses the Kemmis and Mc Tanggart methods. This cycle consists of four phases, namely planning, action, observation, and reflection. In practice, these four phases form two cycles where each cycle includes these four phases.

RESEARCH RESULTS AND DISCUSSION

Table 1. Recapitulation of pre-cycle MATHEMATICS learning outcomes

No.	**Mark**	**KKM**	**The number of students**	**Percentage**
1.	Complete	75	6 students	30%
2.	Not finished	75	14 students	70%
	Amount		**20 students**	**100%**

Based on the table above, it can be seen that in this pre-cycle class X mathematics scores were not satisfactory. With a total of 20 students, it is known that there are 14 students or 70% who have not reached the maximum completion criteria (KKM), while there are 6 students or 30% who have reached the KKM. Based on this, it is necessary to improve the quality of learning which can improve student learning outcomes so that learning outcomes are in line with what is expected. So researchers feel the need to take action to achieve educational and learning goals. One way to improve student learning outcomes, especially in mathematics subjects, is with *winplot media* , where by using *winplot media* the learning system will be more active and effective because by using winplot

media it does not only focus on the teacher's role but also involves learners.

After conducting classroom action research, namely by applying winplot media to mathematics subjects, students' learning outcomes regarding Mathematics learning outcomes increased. Students who have not reached the KKM are because they do not understand how to apply the media being taught, and often do not go to school for the reason of helping their parents work. Apart from that, there are still some students who are embarrassed to ask questions and ask for explanations about material they don't understand. To determine the increase in learning outcomes in cycle I, a learning outcomes test was carried out in the form of a written test. The student learning outcomes tests in cycle I are as follows:

Table 2. Recapitulation of cycle I MATHEMATICS learning outcomes

No.	**Mark**	**KKM**	**The number of students**	**Percentage**
1.	Complete	75	11 students	55%
2.	Not finished	75	9 students	45%
	Amount		**20 students**	**100%**

From the table above, it can be seen that there were 11 students or 55% of students' learning outcomes in the Mathematics subject in cycle I who got a score above 75 or 55%, while 9 students got a score below 75 or 45%. This shows that the learning scores in cycle I have not reached 75%, but the learning outcomes in cycle I have increased, from the pre-cycle only 6 students (30%) completed it, increasing by 25% in cycle I to 11 students (55%).

Continuing with the value of the corrective actions carried out in cycle II, it turns out that student learning outcomes have increased. In cycle II, in general, the learning process was good. This can be seen from the results of learning mathematics which have reached a success indicator of 75%. Therefore, a decision can be made that the cycle can be stopped (not continued in the next cycle) because the learning outcomes of cycle II have reached the indicators of success in student learning outcomes. To find out the learning outcomes in cycle II, the results of a learning test in the form of a written test were carried out. The student learning outcomes tests in cycle II are as follows:

Table 3. Recapitulation of cycle II MATHEMATICS learning outcomes

No.	**Mark**	**KKM**	**The number of students**	**Percentage**
1.	Complete	75	20 Students	100%
2.	Not finished	75	0 Students	0%
	Amount		**20 Students**	**100%**

From the table above it can be seen that 20 students (100%) completed student learning outcomes in the Mathematics subject in cycle II and 0 students (0%) did not complete it. Learning outcomes in cycle II have increased, from cycle 1 which was completed only 11 students (55%) increased by 45% in cycle II which was completed to 20 students (100%). This shows that the results of the learning scores in cycle II have reached 100%.

From the results of research conducted from pre-cycle - cycle II, the completeness of student learning outcomes can be presented in the tables and graphs below:

Table 4. Learning Results for Class

No.	**Cycle**	**The number of students**		**Percentage**	
		Complete	**Not finished**	**Complete**	**Not finished**
1.	**Pre cycle**	6	14	30%	70%
2.	**Cycle I**	11	9	55%	45%
3.	**Cycle II**	20	0	100%	0%

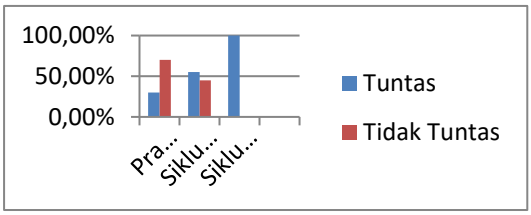

Figure 2. Graph of learning outcomes for class X students in Mathematics

The graph above, it is evident that there has been an increase in the Mathematics learning outcomes of class . This was obtained from the pre-cycle results with a total of 20 students who completed only 6 students (30%) while 14 students (70%) who did not complete it.

After implementing learning using winplot media in the first cycle, there was an increase, with 11 students (55%) completing 20 students while 9 students (45%) not completing it. Next, in cycle II with a total of 20 students, 20 students completed and there were no students who did not complete.

The above can be proven by the theory which states that learning outcomes are the result of changes in behavior obtained by students after experiencing learning activities. The acquisition of these behavioral aspects depends on what students learn (El Fiah & Purbaya, 2017) .

Because in general, learning outcomes are influenced by two factors, namely external and internal factors. Internal factors are factors that come from oneself. such as physiological factors, namely the child's physical condition, whether the child is healthy or unhealthy. Meanwhile, external factors themselves are factors that come from outside the individual, including: non-social factors which include the condition of the atmosphere: time (morning, afternoon and evening), place and tools used in learning. Social factors which include educators and learning methods.

CONCLUSIONS

From the results of learning using winplot media, it can be seen that student learning outcomes have increased in each cycle, this can be seen based on the recapitulation of student learning outcomes which have completely increased by 25% from pre-cycle 30% (6 students) to 55% (11 students) in cycle I, then increased by 45% from cycle I 55% (11 students) to 100% (20 students) in cycle II. Thus it can be concluded that learning using the application of winplot media in Mathematics subjects can improve student learning outcomes class X. *Winplot* media can be an alternative or effort for teachers to improve student learning outcomes in mathematics subjects.

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