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Improving the Students' Physics Learning Outcomes Using Macromedia Flash in SMAN 2 Bantul

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Abstract *– This study aims to improve the students' physics learning outcomes using Macromedia flash learning media. This research is a classroom action research. The research subjects were students of class XI MIA 7 SMAN 2 Bantul, consisting of 30 people (20 Females and 10 Males). Data collection was carried out in three cycles, with three meetings each. The research stages include planning, implementing the action, observing, and reflecting. The results showed an increase in students' learning outcomes after using Macromedia flash learning media. The percentage of students' who achieved the minimum completeness criteria in cycle 1 was 83.3%. In Cycle 2, the percentage improved to 93.3%, and in cycle 3 became 96.7%. Therefore, it can be concluded that the use of Macromedia Flash can improve student learning outcomes.*

Keywords: *Learning Media, Learning Outcomes, Macromedia Flash*

I. INTRODUCTION

In learning, education will always involve educators and students (Idris, 2016; Ramli, 2015; Sudaningsih, 2020). So it requires an excellent reciprocal relationship between teachers and students to be active in the learning process. A learning activity involves physical abilities, mental abilities, and social abilities (Budiarti, 2015; Hasanah, 2016; Suryani, 2019). The way the teacher teaches consists of the role, initiative, and high participation of students in determining problems, seeking information, and determining how to solve problems (Ani, 2018). Physics is one of the sciences at the high school level that underlies modern technology development with the concept of living in harmony with nature (Yusuf et al., 2015). In addition to discussing and studying natural phenomena, physics also provides valuable lessons for humans for their lives to be in harmony based on natural laws. Management of natural resources and the environment and reducing the impact of natural disasters cannot

run optimally without a good understanding of physics (Sarah & Maryono, 2014).

(Laili et al., 2015) claimed that several factors caused physics students low learning outcomes; namely, students still considered that physics was a complicated subject. The physics learning media used by the teacher were less varied, the physics learning models and methods used by the teacher were less diverse and innovative, and the lack of interaction between students and teachers and students and students has made students less active in learning. The last one is that the teacher's student worksheets are still simple in which there are discourses and question exercises.

The teaching method must be combined with a better learning design to produce positive outcomes. Learning is a combination that includes humans, materials, facilities, equipment, and procedures that influence each other in achieving learning objectives. The desired learning objective is a learning process combined with several elements to get reasonable and appropriate learning outcomes (Irfan, 2018).

One alternative that can support the learning process is learning media (Sakti et al., 2012). With the rapid development of technology that has spread to the world of education, especially schools in Indonesia, there is a paradigm shift in learning approaches (Sulisworo & Toifur, 2016). With these technologies' development, a teacher is expected to use and develop learning models to benefit the teaching and learning process. In fact, not all teachers have this ability. Some of them still survive with conventional methods that do not involve active student participation. There is no direct action from students' real experiences with research or simulations, and learning models are still primarily verbal.

For most of the students in class XI of SMAN 2 Bantul, physics material is considered abstract. It resulted in the poor understanding of the concepts of motion and students’ interest. This is due to the teacher's inaccuracy in determining the learning model, so the learning process does not go well. It cannot develop students' potential optimally. This challenge should focus on physics teachers to explain to students that abstract and mathematical physics can be presented with a suitable model to become real. The learning model that can meet these expectations is a learning model using Macromedia Flash (Aththibby & Salim, 2015; Fakhri et al., 2016; Nurdin et al., 2018).

As one of the efforts to overcome these problems, difficulties and students' wrong perceptions of physics are abstract and mathematical can be solved in learning to use this Macromedia flash. Based on the background of the problem, this study aims to improve physics learning outcomes using Macromedia flash learning media for class XI students of SMA N 2 Bantul.

II. METHODS

This research is a type of Classroom Action Research (CAR). The four-step model of Kemmis and McTaggart was used in this study (Wahyuni, 2020). The research was carried out in 3 cycles. Each cycle consisted of 3 meetings, starting from planning activities, action activities and observations and ended by evaluation activities. The research was conducted at SMA Negeri 2 Bantul. The number of students involved was 30 people (20 female and 10 male) who belonged to class XI MIA 7.

The learning media used in this research is Macromedia flash. The students' learning outcomes are assessed using multiple-choice test sheets. Peers validated learning media and test questions. Data were analyzed using percentage techniques (Sari et al., 2018). Completeness criteria are applied if the student's score is more than 78. Learning is said to be successful if the number of students who achieve a minimum completeness score is 95%. Grouping students' abilities refer to Table 1.

Table 1. Criteria for grouping students' abilities.

No.	Score	Category
1	< 78	Low
2	78-88	Medium
3	> 88	High

III. RESULTS AND DISCUSSION

In the pre-cycle, data on student learning outcomes on Newton's law of gravity is shown in Table 2.

Table 2. Student learning outcomes in the pre-cycle

Category	Learning Outcomes	
	Total	%
Low	10	33.3
Medium	14	46.7
High	6	20
Total	30	100

Based on Table 1, it was found that 33.3% of students had learning outcomes in the low category. Students who have learning outcomes in the medium and high categories are 46.7% and 20%, respectively. The initial evaluation results at the pre-cycle stage indicated that learning was needed by implementing Macromedia flash learning media. Learning using Macromedia flash can facilitate students to discuss and exchange information to improve learning outcomes. The use of this media places the teacher as a motivator and facilitator.

Cycle 1 activities are carried out on business and energy materials, and Table 3 summarizes student learning outcomes.

Table 3. Students' learning outcomes in cycle 1

Category	Learning Outcomes	
	Total	%
Low	5	16,7
Medium	17	56,7
High	8	26,6
Total	30	100

Based on the results of learning carried out in cycle 1 (Table 3), it was found that the number of students who were in the Low category was 16.7% (5 people). The number of students' scores in the medium category was 56.7% (17 people), and the number of

students who had to learn outcomes in the High category was 26.6% (8 people). The use of Macromedia flash in cycle 1 caused a decrease in the percentage of students who were in the Low category. The number of students in the Low category is reduced by half from the initial number, namely by 16.7%. This implies an increase in the number of students who complete the medium and high categories. The percentage of students in the medium category increased by 10%, and the percentage of students in the high category increased by 6.7%. There was an increase in the number of students who completed due to the rise in the number of active students during learning activities. Students seemed enthusiastic about participating in learning activities using Macromedia flash media.

However, the evaluation and reflection results in cycle 1 showed that the number of students who completed still did not meet the specified classical completeness criteria. Therefore, the research needs to be continued into cycle 2. In cycle 2, learning activities are carried out on business and energy materials.

Table 4 shows the student learning outcomes in cycle 2 for the Work and Energy material.

Table 4. Student learning outcomes in cycle 2

Category	Learning Outcomes	
	Total	**%**
Low	2	6,7
Medium	18	60,0
High	10	33,3
Total	30	100

Based on Table 4, it was found that the number of students who did not complete or were in a Low category was 6.7%. The number of students completed in the medium category was 60.6%, and the High category was 33.3%.

The use of Macromedia flash in cycle 2 shows a positive impact on student learning outcomes. Several students in the Low group experienced a decrease, while the medium and high groups experienced an increase. The Low group was reduced by 10%. Meanwhile, the medium and high groups experienced an increase in each by 3.3% and 6.7%.

The increase in student completeness in cycle 2 shows a positive effect of using Macromedia flash on student learning outcomes. However, the results of the evaluation and reflection conducted show that classical completeness has not been fulfilled. So it still needs to be continued to cycle 3.

Cycle 3 is still carried out on the same material, namely Work and Energy. Table 5 shows the student learning outcomes in cycle 3 for the Work and Energy material.

Based on Table 5, it is found that the number of students who are in the Low category is 3.3% (1 person). Meanwhile, the number of students in the medium and high categories was 64.4% and 33.3%, respectively.

Table 5. Student learning outcomes in cycle 3

Category	Learning Outcomes	
	Total	**%**
Low	1	3,3
Medium	19	64,4
High	10	33,3
Total	30	100

Macromedia flash in cycle 3 showed a positive influence on students' learning outcomes, as in cycles 1 and 2. Several students in the medium group experienced an increase in their scores. Meanwhile, the percentage of students in the Low group has decreased. The number of students in the medium category increased by 4.4%. The percentage of students in the Low category decreased by 4.4%.

Meanwhile, the percentage of students in the high category did not increase. The evaluation and reflection results in cycle 3 show that the classical completeness criteria have been met. Therefore, classroom action research using Macromedia flash is considered achievable.

These results have shown that the learning process using Macromedia flash improves student learning outcomes. The number of students who have completed has exceeded the completeness requirements classically.

The study of students' learning outcomes before and after using Macromedia flash is very different. If we see from the passing grade, many students have not yet reached the minimum completeness criteria, making efforts to improve student learning outcomes with varying learning models. After being carried out using Macromedia flash learning in cycles 1 to 3, there was an increase in the physics learning outcomes of class XI MIA 7 students. The increase can be seen from the value of student learning outcomes. (Priandana & Asto, 2015) findings support this research. Interactive learning media assisted by Macromedia Flash software provides positive results to improve student learning achievement.

According to the results of research conducted by (Umam & Yudi, 2016), there was an increase in mathematics learning outcomes using Macromedia flash 8 learning media with an average result in the experimental class, namely Y_1 = 19,900 and in the control class Y_2 = 17,700. This study concluded that there was an effect of using Macromedia flash on students' mathematics learning outcomes.

According to Masykur et al. (2017), the Macromedia Flash application can create learning stimulation animations. The results of the research that has been done show that students are more interested in learning using Macromedia Flash-based learning media.

Learning media is a tool or a means that educators can use to convey messages or content of learning material more attractively to streamline communication and interaction in learning so that learning objectives can be maximally achieved (Yuliana et al., 2018). One of the successes in learning is the

increased learning outcomes obtained by students. The better the learning outcomes obtained, the more successful the learning process that has been carried out (Angrasari, 2018).

IV. CONCLUSION AND SUGGESTION

Based on the research that has been done, it can be concluded that Macromedia flash can improve the learning outcomes of students in class XI MIA 7 SMA Negeri 2 Bantul. The number of students who completed learning in each cycle was 83.3%, 93.3% and 97.7%.

Students' achievement should be maintained for teachers to be more creative in developing learning actions. For learning, schools with this model need to be continuously designed to achieve school targets.

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