

The Role of PowerPoint Media in Improving Physics Learning Outcomes of Students of SMA Nurul Hasanah Medan

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Abstract

This study aims to determine the importance of PowerPoint media in improving student physics learning outcomes on the subject matter of temperature and heat in class X-3 SMA Nurul Hasanah Medan. This type of research is quantitative with a population of all students of class X SMA Nurul Hasanah Medan, totalling 5 classes. The research sample was taken in 2 classes determined by simple random sampling, namely class X-3 as a class that uses PowerPoint media and class X-2 as a control class in which PowerPoint is not utilized. Each of these amounted to 34 students. The research design used is a post-test design. The data collection methods used were tests and documentation. The analysis of the instrument used is a test of validity and reliability. The data analysis technique in this study used initial and final analysis using the normality test and homogeneity test, and hypothesis testing was carried out using the t-test. From the results of data processing, it is obtained that $t_{count} = 4.25$ and $t_{table} = 1.584$ so that $t_{count} > t_{table}$ ($4.25 > 1.584$) then H_a is accepted, which concludes that there is a role of PowerPoint media on the physics learning outcomes of SMA Nurul Hasanah Medan in 2017/2018 academic year.

Introduction:

There are more than a few elements that can affect student learning outcomes, among other things are the teacher, student, facilities and infrastructure, and the environment. From the teacher's side, one of them is the approach teachers employed which tends to master the learning process by applying the lecture method, this method makes the teacher dominate teaching and learning activities in the classroom which leads to the students becoming passive.

These aforementioned factors can cause student learning difficulties and result in unsatisfactory student learning outcomes. It is already understood that improving student learning outcomes cannot be separated from the teacher's role as a motivator. Sanjaya (2008: 29) states that teachers as motivators must be able to generate student learning motivation to obtain optimal learning outcomes. Therefore, the teacher is very influential in the teaching and learning process in the classroom. The success of the teaching and learning process in the classroom can be supported by the learning media used by the teacher.

But in reality, in the field, this is not by this assumption, because in general, the physics scores obtained by students are always low. The low learning outcomes of students, apart from

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being caused by the student's assumptions, are caused by many factors from within and outside the students themselves, such as the unavailability or incompleteness of books, inadequate school facilities, distance from school to the residence, parents' economic factors, lack of interest and lack of interest in learning. student motivation, not understanding the actual concept of physics, lack of application of physics formulas to the questions given by the teacher, lack of use of varied learning strategies or models, and lack of teamwork between students to study physics (Slameto: 2010). From the description above, one of the causes of low student learning outcomes is the absence of teachers in employing the media in learning.

The media used in this study is PowerPoint media. PowerPoint is software created and developed by the Microsoft Company and is a multimedia-based program. Some of the things that make this media interesting to use as a presentation tool are various text, colour, and image processing capabilities, as well as animations that can be processed according to the creativity of the user. In principle, this program consists of several visual elements and their operational controls. The purpose of this research is to see how far the role of PowerPoint media is in improving student learning outcomes.

Learning is an active process that leads to a particular goal. A person is said to be learning, if there is a certain change in him, for example from not knowing to knowing. Learning activities can take place through the process of observing, listening, reading, and imitating (Al-Tabany, 2017). According to Purwanto (2010), learning means observing something, and asking about it, so that someone gets knowledge about it. Meanwhile, according to Skinner in Sagala (2012: 14) learning is a process of adaptation or adjustment of behaviour that takes place progressively. Learning is also understood as a behaviour, when people learn, the response becomes good.

Hamalik (2002) asserts that learning outcomes are behaviours that arise for example from those who do not know, the emergence of new knowledge. Changes in attitudes, habits, skills, and respect for the development of social, emotional, and physical characteristics. Furthermore, Soedijarto (2011) said that learning outcomes are defined as the level of mastery achieved by students in participating in teaching and learning programs by established educational programs. Another opinion says that learning outcomes are obtained through knowledge and skills. From some understanding of learning outcomes above, it can be concluded that learning outcomes are a sign that a person has learned through a series of processes that one has lived and can re-present as a result of changes during the learning process.

Research Methodology:

The type of research used in this research is the type of experimental research (Suharsimi, 2006). In carrying out the research, there were two different treatments; one class was taught using PowerPoint media (X1) while the second class was taught without using PowerPoint media (X2). The population in this study was all students of class X SMA Nurul Hasanah Medan in the 2017/2018 academic year which consisted of 4 classes, the total number of students was 120 people. The sampling technique used in this study is random sampling (Akbar and Usman, 2008) taking 2 classes from 4 classes. So, it is clarified that the sample consists of 2 classes. The first class is taught using PowerPoint media and the second class is taught without using PowerPoint with the same subject matter. To find out if there are differences in students' physics learning outcomes with PowerPoint media and conventional learning models, a "t" test is carried out with the formula:

$$T_{\text{count}} = \frac{\overline{X}_1 - \overline{X}_2}{S_{gab} \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Research Results and Discussion:

The research was conducted at SMA Nurul Hasanah Medan to see the progress and impacts made by the utilization of PowerPoint media in improving student learning outcomes. The data is analyzed to solve existing problems. The results are as follows:

Data Analysis:

Table 1: X1. Frequency Distribution

| S No | Inter | (xi) | fi | (xi) ² | fi xi | fi xi ² |
|--------------|-------|------|-----------|-------------------|------------|--------------------|
| 1. | 7-8 | 7.5 | 4 | 56.25 | 30 | 225 |
| 2. | 9-10 | 9.5 | 4 | 90.25 | 38 | 361 |
| 3. | 11-12 | 11.5 | 8 | 132.25 | 92 | 1058 |
| 4. | 13-14 | 13.5 | 6 | 182.25 | 81 | 1093 |
| 5. | 15-16 | 15.5 | 7 | 240.25 | 108 | 1681 |
| 6. | 17-18 | 17.5 | 5 | 306.25 | 87 | 1531 |
| Total | | - | 34 | 951.25 | 437 | 5950 |

The average score and standard deviation of student test results taught using PowerPoint media using the following formula:

$$\bar{X} = \frac{\sum f_1 X_1}{\sum f_1} = 12,85$$

$$S_1^2 = \frac{n \sum f_1 X_1^2 - (\sum f_1 X_1)^2}{n(n-1)} = 3,18$$

Table 2: X2 Frequency Distribution

| S No | Interval | (xi) | fi | xi ² | fi xi | fi xi ² |
|--------------|----------|------|-----------|-----------------|------------|--------------------|
| 1. | 4-6 | 5 | 5 | 25 | 25 | 125 |
| 2. | 7-9 | 8 | 10 | 64 | 80 | 640 |
| 3. | 10-12 | 11 | 12 | 121 | 132 | 1210 |
| 4. | 13-15 | 14 | 4 | 196 | 56 | 784 |
| 5. | 16-18 | 17 | 3 | 289 | 51 | 867 |
| Total | | - | 34 | 695 | 344 | 3626 |

The average score and standard deviation of student test results are taught using the Conventional Model using the following formula:

$$= \frac{\sum f_1 X_1}{\sum f_1} = 10,11$$

$$S_1^2 = \frac{n \sum f_1 X_1^2 - (\sum f_1 X_1)^2}{n(n-1)}$$

$$n = 2.08$$

Hypothesis Test:

After obtaining the value of the two learning models, thus hypothesis testing is carried out using the t-test as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S_{gab} \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$
$$t = \frac{2.74}{0.6432} = 4.25$$

From the analysis of the difference in the arithmetic mean obtained is the value of $t_{count} = 4.25$ while the value of t_{table} for a significant level of 0.05 and 66 degrees of freedom is 1.584 meaning $4.25 > 1.584$. So, the hypothesis is accepted in other words, the data shows that there is a role for PowerPoint media in improving physics learning outcomes for students at SMA Nurul Hasanah Medan in the 2017/2018 academic year.

In testing the hypothesis from the analysis of the difference in the arithmetic mean, the value of $t_{count} = 4.25$. Meanwhile, the value of t_{table} for the significant level of 0.05 and degrees of freedom 66 is 1.584, meaning $t_{count} > t_{table}$ ($4.25 > 1.584$). Thus, it can be said that the hypothesis is accepted, in other words, the data shows that students' learning outcomes in PowerPoint media are improved than those who do not use PowerPoint media.

This is because based on the PowerPoint media; students understand the material more profoundly. They can immediately see the material presented and have prior knowledge before receiving the material presented by the researcher. The use of the PowerPoint media model showed that students are more effective in observing learning materials and getting new things from learning materials.

Conclusion:

Based on the research results obtained from the analysis and testing of hypotheses from data processing, the following conclusions can be drawn:

- i. Student learning outcomes with the PowerPoint media model are better than the physics learning outcomes of students who do not use PowerPoint media.
- ii. There is a role for PowerPoint Media in improving students' physics learning outcomes.

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