USE OF POWTOON MEDIA ON STUDENT LEARNING OUTCOMES

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ABSTRACT

This study aims to determine the effect of discovery learning with Powtoon-based learning video media on the learning outcomes of class X SMA students on the subject matter of Newton's law in SMA Sw. Dharma Pancasila Medan T.A 2022/2023. The type of research used is a quasi-experimental design with two groups of pretest-posttest design. The population of all students of class X IPA SMA Sw. Dharma Pancasila Medan. The research sample was taken from two classes selected by simple random sampling technique. The instrument used in this research is a test of multiple choice. Based on the results of pretest data processing, the experimental class average was 46.16, and the control class was 44.66. After being treated, the post-test result for the experimental class was 87.33, and for the control class was 77. Based on the results of hypothesis testing using the different test (t-test) it was found that there was a significant effect of the application of powtoon learning media on student learning outcomes on the subject matter of Newton's laws at SMA Sw Dharma Pancasila Medan T.A 2022/2023

Keywords: *discovery learning, Powtoon, learning outcomes, instrument*

INTRODUCTION

The development of information and communication technology is increasingly sophisticated. No exception in the field of education. Education becomes more interesting with the existence of technology in today's super-sophisticated era. Delivery of material in learning is inseparable from the use of learning media, besides being useful for making learning material conveyed properly, learning media also makes students more interested and responds more positively so as to increase motivation and student learning outcomes in the learning process (Nurdiansyah et.al 2018).

Based on observations made by researchers at SMA Sw. Dharma Pancasila Medan in conducting teacher learning still rarely uses technology-based learning media. Student learning outcomes are also still relatively low, this is evidenced by the average daily test scores and final school exam scores in physics subjects that have not passed.

Teacher at SMA Sw. Dharma Pancasila Medan still does not utilize technology in learning and still tends to use media such as blackboards and powerpoint which contain writing and pictures which make students less interested in participating in learning. Students also have difficulty understanding the material explained by the teacher, so this impacts low learning outcomes. Students want learning that can describe directly the explanation of the material explained by the teacher in everyday life. Students also want

to learn to use interesting and not boring media such as videos and music.

Teachers rarely use technology-based learning media because of limited time and also the ability of these teachers who are not very good at using technology. Fajar et.al (2017) stated that there are still many teachers who find it difficult to use various software as the processing of existing technology-based learning media such as adobe flash, articulate, and auto desk 3D maker, where using these software special skills are needed so that many teachers maintain conventional delivery methods.

Seeing the problems faced by teachers and students during observations, an innovative interactive learning media is needed that is interesting and easy to make and does not take long to make, but the results are effective and efficient and can have a positive influence on student learning outcomes. Based on these problems, the researcher chose the "powtoon" software, to solve this problem, where it is quite easy to make, which is just like making a powerpoint, but the results are like flash, more lively and fun.

Powtoon has complete features and can create learning videos needed by students. Students can see live explanations of physics theories through learning videos using PowerPoint so that learning will be more effective. Powtoon is a web-based application that is online in the form of an animated video that can facilitate understanding of the learning and teaching process of students completely so that they can receive and understand the material that has been designed by the teacher (Anita, 2016). Powtoon is a combination of other media elements such as text, image, graphics, audio, video, and sound so that it can accommodate the learning styles of students who may have visual, auditory, or kinesthetic types (Sudrajat, 2010). Learning media developed using powtoon are practical and have the potential effect of increasing understanding of lecture material (Nurdiansyah et al, 2018).

Learning using learning video media must also continue to use learning models. Researchers chose the discovery learning model as learning model in this study. This model was chosen because, in its application, this model will make the media more effective in learning activities. The discovery learning model which is discovery in nature requires students to analyze the information that will be displayed by the powtoon learning video so that learning will be more effective and student learning outcomes will increase. In line with the research of Kartika and Adelia, (2017) which states that through discovery learning using macro flash media student learning outcomes increase as seen from the increase in posttest results being tested. Sari et al, (2016) also stated that the application of discovery learning assisted by virtual laboratory media had an effect on the mastery of physics concepts and student learning outcomes.

The purpose of this study is to determine the effect of powtoon-based learning media on student learning outcomes in the subject matter of Newton's law in class X at SMA Sw Dharma Pancasila Medan T.P 2022/2023 and to analyze the increase in student learning outcomes using powtoon learning media.

RESEARCH METHODS

This research was conducted at SMA SW. Dharma Pancasila Medan, Kec. Medan Selayang, Medan City, Prov. North Sumatra. The research was conducted in the odd semester of the 2022/2023 academic year. The population in this study were all students of class X MIA SMA SW. Dharma Pancasila Medan for the 2022/2023 academic year which consists of 3 classes and each class has an average of 30 people. The sample in this study was students of class X MIA SW SMA. Dharma Pancasila Medan as many as 60 students. The sampling technique used in this study was simple random sampling. Based on this technique, 2 classes were taken, namely X MIA 1 as an experimental class which was taught using discovery

learning with powtoon-based video media, and X MIA 2 as a control class, namely a class taught conventionally.

This research can be classified as experimental research, namely a research method to look for the effect of certain treatments on others under controlled conditions (Sugiyono, 2017). The research design used was a non-equivalent control group design. Sugiyono 2017 states the visualization of the non-equivalent control group research design, shown in Fig. 1.
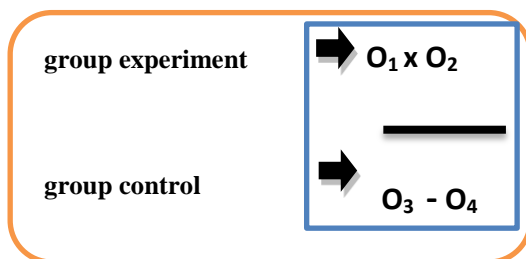

Figure 1. Non-equivalent control group design research.

Information :

O_1 = pretest group experimental

O_2 = posttest experimental group

O_3 = pretest control group

O_4 = posttest control group

X = treatment using discovery learning with Powtoon learning video media in learning.

- = treatment by giving PowerPoint media

Before the pretest was carried out, construct validity was carried out first. After the results of the pretest of the two classes were obtained, then they were tested for similarity using the pretest hypothesis test using the t-test with the condition that it consisted of normality and homogeneity tests. After the pretest data is complete, then given the treatment. Then both classes were given a posttest. The posttest results of the two classes were tested for similarity using the posttest hypothesis test using the t-test with the condition that the data were normal and homogeneous. The increase in student learning outcomes is calculated using the N-gain score.

RESULTS AND DISCUSSION

After the pretest, the average pretest score for the experimental class (using discovery learning with powtoon video media) was 46.16 with a standard deviation of 10.72. The pretest average value for the control class (PowerPoint media) was 44.66 with a standard deviation of 14.43. The pretest data for both classes can be seen in Figure 2.
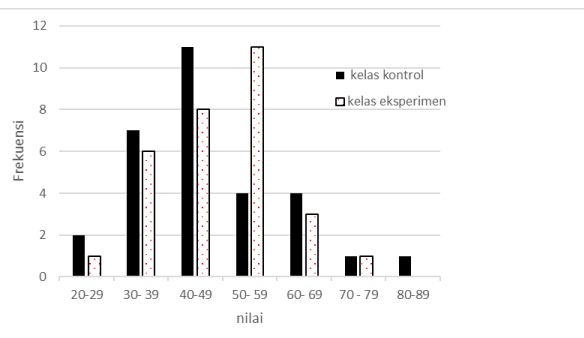

Figure 2. Diagram of experimental and control class pretest results

Posttest data for students of both classes can be seen in Table 1.

Table 1. Data posttest experimental class and control class

Experiment class		Control class	
Score	*fr*	Score	*fr*
70 – 74	1	60 – 65	7
75 – 79	3	66 – 71	2
80 – 84	5	72 – 77	5
85 – 89	6	78 – 83	4
90 – 94	6	84 – 89	8
95 – 99	5	90 – 95	4
99 – 100	4	96 – 100	0
Sum	30	Sum	30
Avarage	87,33	Avarage	77,00
Variants	70,22	Variants	111,37

Based on Table 1. it is known that in the experimental class students who have lower scores are fewer than in the control class and students who have higher scores are more in the experimental class than the control class.

Test the normality of the pretest and posttest data for both classes using the Lillefors test. The Lillefors test results can be seen in Table 2.

Tabel 2. Pretest normality test data

Data	class	L_{count}	l_{table}	conclusion
Pretest	Experiment	0,160		normal
	control	0,134	0,161	normal
Posttest	experiment	0,110		normal
	control	0,113		normal

Based on the data in Table 2, it can be seen that $L_{count} < L_{table}$ in the experimental class and control class in the pretest and posttest data, it can be concluded that the pretest and posttest data in the experimental class and control class are normally distributed.

Testing the homogeneity of the data was carried out using the variance similarity test (F test). The results of the pretest and posttest data homogeneity tests can be seen in Table 3.

Table 3. Pretest data homogeneity test results

Data	Class	Variants	F_{count}	Sig	conclusion
Pretest	Experiment	114,97	1,81		homogen
	control	208,50		1,84	
posttest	Experiment	70,22	1,59		Homogen
	control	111,37			

Based on the data in Table 3 it is known that $F_{count} = 1.81$ with a significance of 1.84. The calculation of significant prices for pretest data is less than 0.05 (sig <0.05), and for posttest data $F_{count} = 1.59$ with a significance of 1.84. The calculation of the significant value of the post-test data is less than 0.05 (sig <0.05), therefore it can be concluded that the pretest and post-test data from the two groups are homogeneous (have the same variance). The calculation of the pretest hypothesis test with the t-test can be seen in Table. 4.

Tabel 4 Test the Student Pretest Hypothesis with the T-Test

Class	$\ddot{x}$	T_{count}	T_{table}	Kesimpulan
Experiment	46,16	0,503	2,0021	The initial ability of students of both classes is the same
Control	44,66			

Based on Table 4, it was found that the pretest value $t_{count} < t_{table}$, namely 0.503 <2.0021, then H_o was accepted, so it was concluded that the student's initial abilities in the experimental class and the control class were the same.

The calculation of the post-test hypothesis test with the t-test for the experimental class and the control class is shown in Table. 5.

Table 5 Posttest Hypothesis Test

Data	$\ddot{x}$	t_{count}	t_{table}	Conclusion
Experiment	87,33	4,43	2,0021	There is the influence of PowerPoint-based learning video media
Control	77,00			

Based on data from Table 5, the posttest research results were obtained for the experimental class and control class with $t_{count} > t_{table}$, namely 4.43 > 2.0021, so it can be concluded that there is an influence of discovery learning with powtoon-based learning video media on student learning outcomes in Newton's law material in class X SMA Sw Dharma Pancasila Medan T.A 2022/2023.

The results of the average N-gain analysis of 30 students as many as 19 students obtained an N-Gain index of $0.70 \leq g \leq 1.00$ with a high interpretation and as many as 19 students obtained an N-Gain index of $0.30 \leq g \leq 0.69$ with moderate interpretation. Based on these data, an increase was obtained from the pretest results with a standard gain <g> value of 0.76. This value is included in the high category. This means that there is an increase in learning outcomes in the high category. This increase can occur due to the use of learning media in the form of Powtoon-based videos, the use of this media makes learning more interesting and easy to understand, in line with research

Pribadi, (2016) which states: Learning media generally makes the learning process more effective and efficient, and learning becomes more interesting so that it can improve learning outcomes and student learning motivation.

An interesting display of moving animation with very unique animated characters owned by powtoon-based animation media makes the appearance of learning media presentations in the classroom more attractive so that various kinds of distractions that usually arise during the learning process such as boredom and boredom can be minimized. In line with the opinion of Benny, (2017), which states that "Animation is able to enrich students' experiences and competencies in a variety of teaching materials so that with the presence of animated elements in the form of real illustrations on powtoon-based animation media, students are able to think about how learning material that has previously been studied can be applied in real life".

LKPD work also runs smoothly. Students can carry out existing experiments and answer questions in the LKPD properly. This cannot be separated from the role of the PowerPoint videos shown which make students more interested and easy to understand learning. Students also become easier in drawing conclusions from learning. Students become more active in learning and also become motivated because discovery learning requires students to find concepts from the material in the learning. This can make student learning outcomes increase because students find their own concepts from experiments carried out. This is supported by Simanjuntak et.al, (2019) indicating that the application of discovery learning makes students active in learning and motivated because in the process students are required to find concepts so that their understanding is deeper. Based on the results of this study, discovery learning with Powtoon video-based learning media has an influence on student learning outcomes.

CONCLUSIONS

The conclusions obtained based on the results of research and discussion are that there is a significant influence on student learning outcomes using discovery learning with powtoon-based video media on the subject matter of Newton's laws in class X at SMA Sw. Dharma Pancasila Medan. This is shown by the comparison of t_{count} of 4.43 which is greater than t_{table} of 2.0021 at dk 60 with a significant level of 0.05.

There was an increase in learning outcomes in the experimental class using discovery learning with powtoon-based learning video media on Newton's law material in class X at SMA Sw Dharma Pancasila Medan T.A 2022/2023. It can be seen from the data from the average N-Gain analysis of 30 students as many as 19 students obtained an N-Gain index of $0.70 \le g \le 1.00$ with a high interpretation and as many as 11 students obtained an N-Gain index of $0.30 \le g \le 0.69$ with moderate interpretation. Based on these data, an increase was obtained from the pretest results with a standard gain $<g>$ value of 0.76. This value is included in the high category.

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