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INCREASING STUDENTS' UNDERSTANDING OF CONSERVATION USING LEARNING VIDEO MEDIA BASED ON AN ARTIFICIAL INTELLIGENCE PLATFORM

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Abstract. The Covid 19 pandemic has impacted many changes in various sectors of life, one of which is the education sector. There are many things that have changed significantly in the learning process in the world of education. Both in terms of learning activities, assessment processes and the development of learning media. One of them is the emergence of digital platforms that provide facilities to support the learning process. This digital platform is equipped with an Artificial Intelligence (AI) system in it. This research aims to help teachers improve their soft skills in creating interesting learning media videos with the help of an AI-based digital platform and determine its effect on increasing students' understanding of conservation. Based on the research results, it shows that the use of learning video media using AI can increase the value of student learning outcomes. This is shown by the results of statistical test calculations using a paired sample T test on the average value of the pre-test and post-test using AI learning videos which obtained a Sig value (0.001) < 0.05, so that H0 is accepted and shows that there is a significant difference between the average values pre-test and post-test average. Meanwhile, the results of statistical tests in the control class without using AI learning videos obtained a Sig value (0.063) > 0.05, so H0 was rejected and showed that there was no significant difference between the average pre-test and post-test scores. The use of learning video media can provide students with experience in being able to provide more concrete images related to conservation terms. That way, students can participate in learning activities optimally and be connected to the material presented by the teacher. The importance of this connection is so that students remain focused during learning activities.

Keywords: *learning media; videos; AI; conservation*

I. INTRODUCTION

The Covid 19 pandemic has impacted many changes in various sectors of life, one of which is the education sector. There are many things that have changed significantly in the learning process in the world of education. Both in terms of learning activities, assessment processes and the development of learning media. Various problems include: the effectiveness of using Zoom meetings **[1]**, the implementation of online learning **[2]**, the lack of availability of telecommunications, multimedia, information and platform technology infrastructure that supports the process of online teaching and learning activities, the formation of students' personality traits and applying learning media, limited time for parents to accompany students' learning **[3]**, students do not have gadgets or unstable signals from teachers or students to carry out online learning, very poor understanding of technology, low enthusiasm for learning **[4]**, teacher resources that can utilize information technology , increasing teacher burden, limited internet facilities **[5][6]**, and the lack of implementation of character education in online learning **[7]**. These changes can have a negative impact if they cannot be adapted properly and conversely they can have a positive impact if they can be adapted appropriately. Changes in the learning process not only need to be responded well by students, but also by teachers **[8]**. All academics must have an adaptive attitude and have the ability to continue to hone their skills regarding the dynamics of scientific development. Currently, students are required to be able to develop numerical analysis and literacy skills obtained from inside the classroom and outside the classroom. Meanwhile, teachers are required to be able to develop learning materials and learning media so that they can attract students' interest in learning. If teachers do not want to develop their learning media and only rely on previous material, it can make students become bored and tend to behave indifferently in class. Currently there are many digital platforms that provide facilities to support the learning process. This digital platform is equipped with an Artificial Intelligence (AI) system in it. Artificial intelligence is a science that is applied to a machine so that it can behave intelligently like a human who can think and adapt in terms of decision making. AI has the ability to learn, think, correct, and make decisions like human intelligence in solving a problem. Alfarisi and Hasanah's research **[9]** states that there are four aspects of AI in education, namely knowing and understanding, using, evaluating, and ethical issues. The use of AI is needed to be able to produce good quality competency-based graduates and prepare themselves to welcome learning in the 5.0 era **[10].**

AI-based digital platforms available online include DeepArt.io which functions for image editing; Designs.ai website which is useful for creating image designs; Soundful.com which helps with music editing; ChatGPT which

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helps process data in text form and Pictory.ai which can be used in making video presentations. Most of these digital platforms can be used in developing learning media. Teachers need to be serious about being able to utilize and optimize the AI-based digital platform. If teachers cannot follow and adapt to the development of this technology, it can be misused by students in doing assignments or other things. One digital platform that teachers can use to create more interesting learning media is using Pictory.ai. Teachers can create media in the form of learning videos that can make it easier to explain material that is complicated for students to understand. Like conservation material which is generally macro in nature, the use of foreign terms and process mechanisms requires visual explanation. Generally, teachers explain conservation material by making presentations in power point form and tend to emphasize explaining definitions of terms. However, if you only use images that are two-dimensional, they will be less interesting. This is mostly because teachers have limited abilities in using conventional multimedia such as photo and video editing. The difficulty of using conventional multimedia is due to the many stages that must be done just to create one simple media. Apart from that, there are also many foreign terms used in application features. Teachers will feel increasingly burdened if they have to learn how to use conventional multimedia because there are many administrative tasks that must be completed. There needs to be an approach to increasing the abilities (soft skills) of teachers in developing teacher creativity without burdening existing tasks. Therefore, the presence of digital platforms based on Artificial Intelligence needs to be studied and studied in depth so that they can support teachers in improving the development of learning media. Apart from that, having a comprehensive study on AI can reduce the negative impacts that can be misused by students.

II. RESEARCH METHODS

The research was conducted at Al-Muhtadin Vocational School, Depok City, West Java. The time for collecting research data is June - September 2023. The subjects of this research are class X students who study material related to conservation in Natural and Social Sciences (IPAS) subjects. The research sample was 62 students divided into two classes. The first class consisted of 31 students as the treatment class using AI learning videos. The second class consisted of 31 students as a control using conventional learning (without using AI learning videos). The key informant is a biology subject teacher. Data collection was carried out by giving pre-test questions to students before learning began. After that, it continues with the delivery of material using learning media according to the trial class division. Then it ends by giving post-test questions to students. Data collection was carried out in Duplo, that is, by repeating it twice. Apart from that, students also provided feedback regarding the use of learning media in each trial class.

The data obtained will then be analyzed using a quantitative analysis approach. The statistical test used is the paired sample T test. **[11]** In this test, the difference between the average pre-test score and the average post-test score in each trial class will be compared. Testing was carried out using a significance value of 0.05 (α = 5%). The basis for decision making is as follows: 1. If the significant value is > 0.05 then H0 is rejected and Ha is accepted (the difference in average values is not significant) 2. If the significant value is <0.05 then H0 is accepted and Ha is rejected (the difference in the average value is significant). The results of the data analysis obtained will then be interpreted using descriptive analysis supported by secondary data from student respondent feedback and key informants. Research discussions are equipped with data in the form of tables and graphs.

III. RESULTS AND DISCUSSION

Making learning videos using artificial intelligence can be done through several website platforms, including systhesia.io, heygen.com and pictory.ai. Each platform provides several supporting features that make it easier to create learning videos. The following is table 1 regarding the comparison of feature availability on each platform:

Table 1 . Comparison Of Features On Ai Platforms

No	Fitur	Platform AI		
		Synthesia.io	Pictory.ai	Heygen.com
1.	registration login menu	√	√	√
2.	insert video menu	√	√	
3.	insert voice menu		√	
4.	insert text menu	√	√	√
5.	insert avatar menu		√	√
6.	free copyright video menu		√	√
7.	text to video menu	√	√	√
8.	menu URL to video	√	√	
9.	file to video menu		√	
10.	unlimited video creation		√	

Based on table 1. above, the AI platform used to create learning videos is Pictory.ai. This platform has more complete features compared to features on other platforms. Apart from that, using Pictory.ai is also easier for beginners because the website display is simple so it is easy to learn. Four videos were made for learning video media using the AI platform. The video is related to environmental conservation material. The steps for making a learning video using Pictory.ai are as follows: 1. Create an account on pictory.ai using an email account; 2. Create narrative material using an AI application in the form of ChatGPT or through other sources such as textbooks, e-books, articles on websites, pdfs, etc.; 3. Choose a suitable video

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template; 4. Compile narrative material to suit the video templates available on pictory.ai or add uploads from other sources; 5. Add other components in the form of background sound, audio narration, avatars, supporting animations available on pictory.ai or uploaded from other sources; 6. Save the project or download the editing results directly in MP4, AVI, MPEG, etc.

The learning video media that has been created will then be used in the treatment class group. Meanwhile, the control class only uses lecture media in delivering the material. Students in the treatment and control classes were both given pre-test questions before learning activities began. After that, at the end of the learning activity, students are given post-test questions. The following are the results of student pre-test and post-test data processing which were analyzed using the paired sample T test attached in the tables 2.

Table 2. Paired Samples Statistics

		Pair 1 Pre-Test AI - Post Test AI	Pair 2 Pre-Test - Post Test Non AI
Paired Differences	Mean	-6.45161	14.60931
	Std. Deviation	14.60931	13.40103
	Std. Error Mean	1.85538	1.70193
95% Confidence Interval Of The Difference	Lower	-10.16168	-6.62903
	Upper	-2.74154	.17742
T		-3.477	-1.895
Df		61	61
Sig. (2-Tailed)		.001	.063

Based on the statistical test results in table 2, it shows that the average pre-test and post-test scores in the control class without AI learning videos obtained a Sig value (0.063) > 0.05. This shows that H0 is rejected. So it can be concluded that there is no significant difference between the average pre-test and post-test scores in the control group. The results of statistical tests on the average pre-test and post-test scores in the treatment class using AI learning videos obtained a Sig value (0.001) < 0.05. This shows that H0 is accepted. So it can be concluded that there is a significant difference between the average pre-test and post-test scores in the treatment group with learning media. This shows that the average pre-test and post-test scores in the control class have no influence on the learning process provided. The learning process in the control class does not use AI learning videos, but only uses conventional lecture methods. The use of this method has several disadvantages. Based on observations made, students became less enthusiastic after participating in the lesson in the initial 15 minutes. Students feel bored with the teacher's relatively monotonous explanations using the lecture method. Apart from the lack of variety of illustrative images to explain the material presented, sometimes teachers only have one direction in presenting the material. The learning process becomes focused on the teacher or teacher oriented so that students tend to be passive and feel bored, and the knowledge gained does not develop. This was shown when the teacher gave the opportunity to ask questions, only a small number of students actively responded. **[12]**

However, on the contrary, the average pre-test and post-test scores in the treatment class have an influence on the learning process provided. The learning process in the treatment class uses learning videos created using the AI platform. After students take the pre-test, the teacher explains the learning material using two videos. After each video is played, the teacher will discuss the video with active discussion by the students. Likewise for the second video playback. The final part of the learning activity is that students work on post-test questions. The second repetition process of data collection also has the same sequence.

Video discussion sessions are an opportunity for students to explore information that they have not yet understood so that they can improve their understanding of the material being studied. Students' curiosity can increase after seeing learning video media. If in the lecture method students tend to find it difficult to imagine or describe the terms explained by the teacher, then using learning video media can make it easier for students to interpret learning material visually. Learning videos can also increase student activity in learning **[13]**. That way, students can participate in learning activities optimally and be connected to the material presented by the teacher. The importance of this connection is so that students remain focused during learning activities. The success of using video learning media can also be observed from the comparison of the increase in the average pre-test and post-test scores for each trial class. Based on Figure 1, the average pre-test and post-test scores using AI learning videos have increased more significantly compared to the average pre-test and post-test scores without using AI learning videos. The average pre-test score in the class that used learning videos was 53.71 and the average post-test score was 60.16. There was an increase in value of 6.45 points. Meanwhile, the average pre-test score in the class that did not use learning videos was 57.90 and the average post-test score was 61.12. There was only an increase in value of 3.32 points.

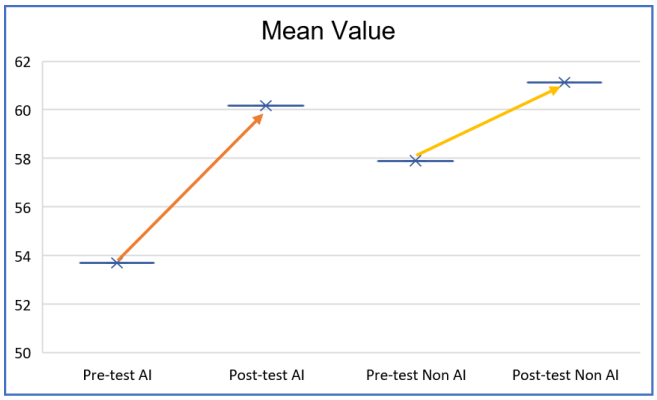

Figure 1. Graph of the average pre-test and post-test scores

The success of using AI learning videos in increasing student understanding is in line with the level of student preference in choosing learning methods. Based on the feedback results, data was obtained that the majority of students preferred the use of AI learning video media, both in the treatment class and in the control class. The percentage of student preferences can be seen in Figure 2.

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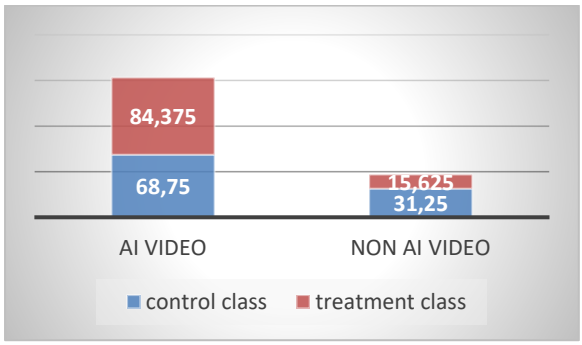

Figure 2. Graph of student learning method preferences

Based on Figure 2, it is known that in the control class there were 68.75% or 22 students who tended to choose the learning method using AI videos and only 31.25% or 10 students chose without AI video learning media (lecture method). Even though the control class was not treated at all with the use of AI Video learning media, the majority of students believed that using this media would improve learning outcomes. The percentage of students' preference for learning methods using AI videos is increasing in the treatment class. There were 84.375% or 27 students who tended to choose the learning method using AI videos and only 15.625% or 5 students chose without AI video learning media (lecture method). Even though in the treatment class all students immediately experienced the use of learning methods using AI videos, there were still five students who still chose the lecture method. If explored more deeply, the choice of lecture method in the treatment class means that the use of the lecture method is still needed to be able to explain in detail the material that has been delivered through AI video learning media. This is in accordance with what was conveyed by the key informant that based on experience while teaching biology, it is not enough to just apply one learning method. Student interest and improving student learning outcomes can be achieved by increasing the variety of learning methods used in the classroom.

III.CONCLUSION

The use of learning video media using AI can increase the value of student learning outcomes. This is shown by the results of statistical test calculations using a paired sample T test on the average value of the pre-test and post-test using the AI learning video which obtained a Sig value (0.001) < 0.05, so H0 was accepted. These results show that there is a significant difference between the average pre-test and post-test scores. Meanwhile, the results of statistical tests in the control class without using AI learning videos obtained a Sig value (0.063) > 0.05, so H0 was rejected. These results show that there is no significant difference between the average pre-test and post-test scores. The use of learning video media can provide students with experience in being able to provide more concrete images related to conservation terms. That way, students can participate in learning activities optimally and be connected to the material presented by the teacher. The importance of this connection is so that students remain focused during learning activities. Thank you to the Ministry of Education and Culture for providing funding support for this research. Thank you also to Al-Muhtadin Vocational School, Depok, West Java, which was willing to be the location for collecting research data.

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