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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH: JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel) : Learning Video Applications on Global Warming Materials: Analysis of Differences on Students' Cognitive Learning Outcomes
Penulis Jurnal Ilmiah : Nur Hayati, Lina Arifah Fitriyah
Identitas Jurnal Ilmiah
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b. Volume Nomor Tahun : Volume 23 Nomor 1 Tahun 2022
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d. Penerbit : Universitas Lampung
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Kategori Publikasi :
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- ☐ Jurnal Ilmiah Internasional
- ☑ Jurnal Ilmiah Nasional Terakreditasi
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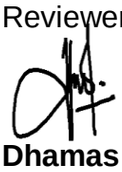

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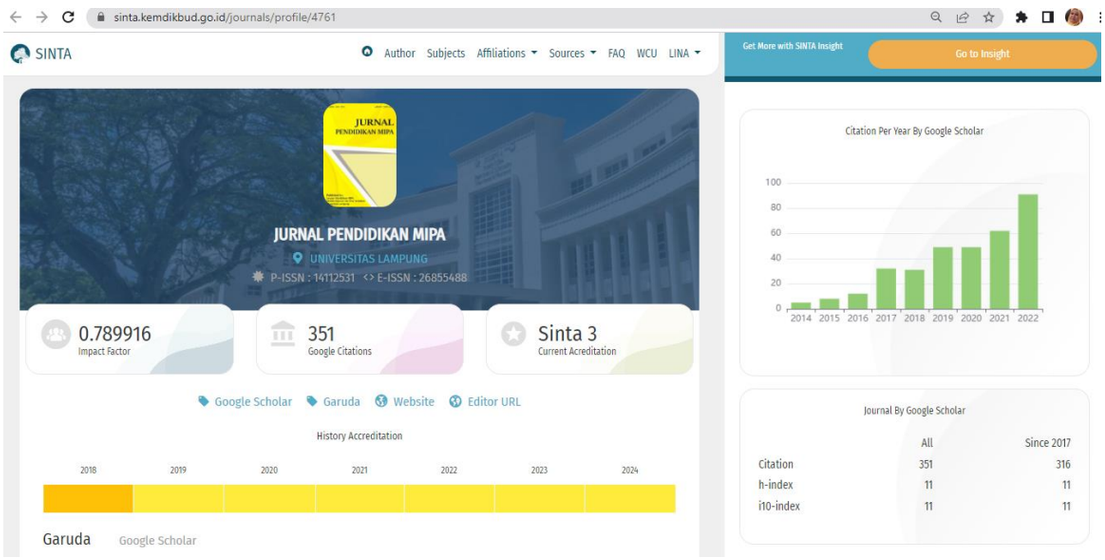

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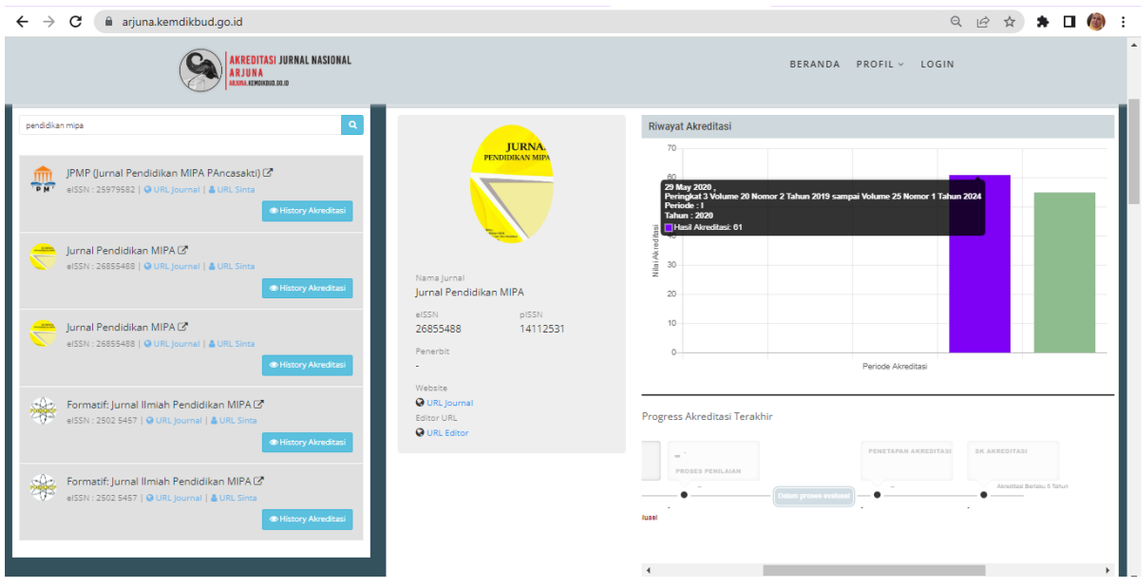

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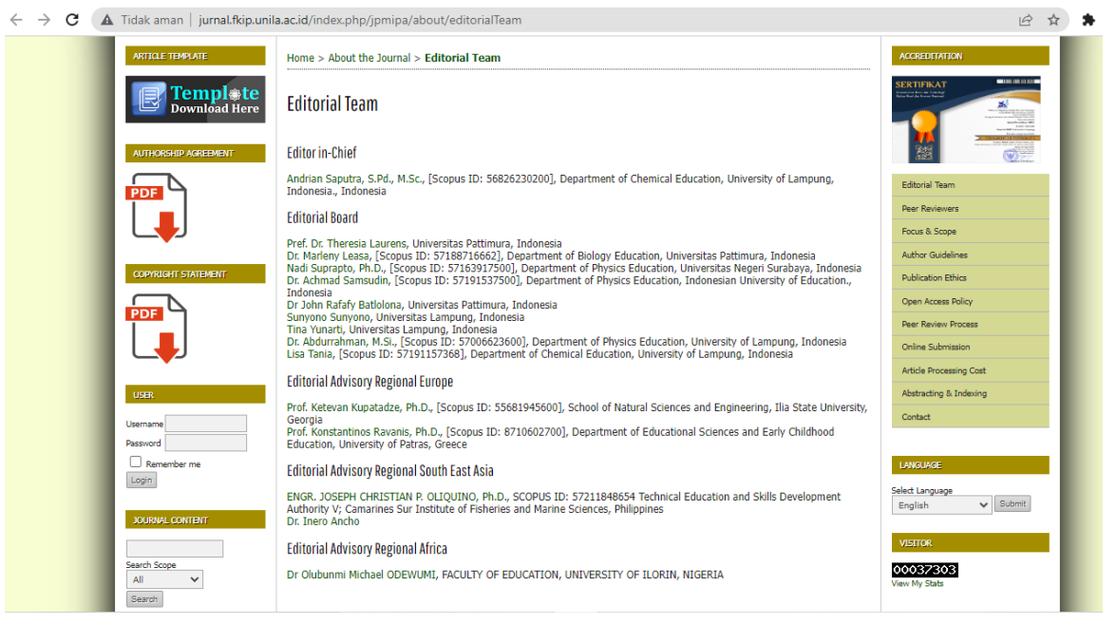

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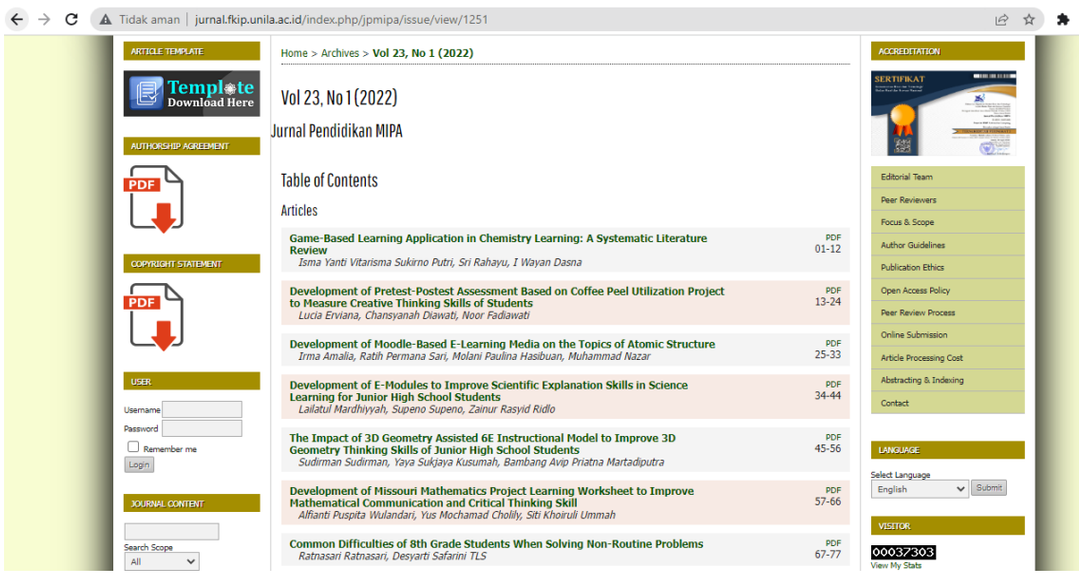

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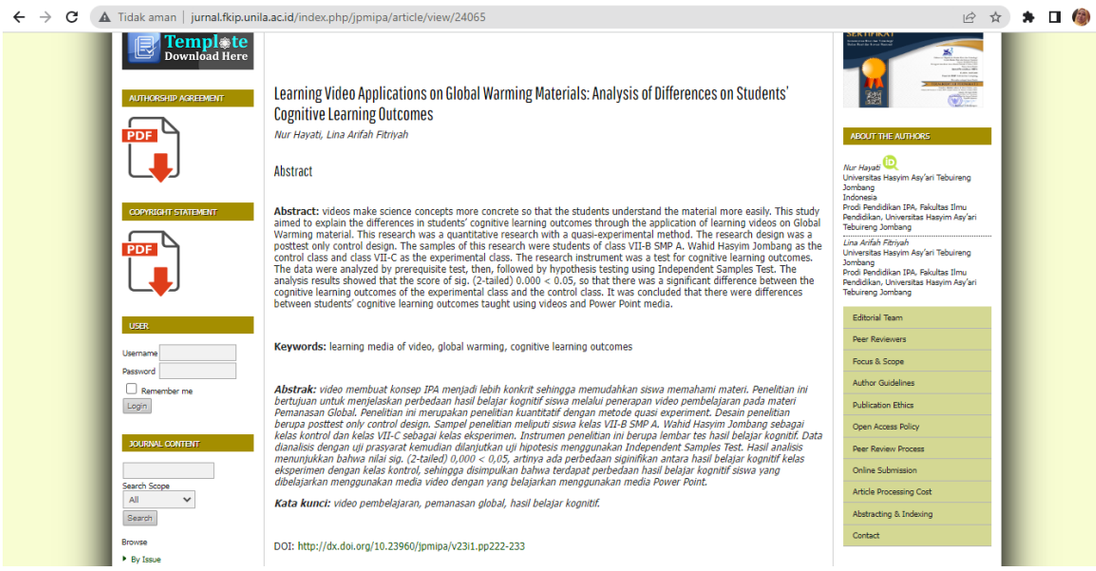

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Learning Video Applications on Global Warming Materials: Analysis of Differences on Students' Cognitive Learning Outcomes

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Abstract: videos make science concepts more concrete so that the students understand the material more easily. This study aimed to explain the differences in students' cognitive learning outcomes through the application of learning videos on Global Warming material. This research was a quantitative research with a quasi-experimental method. The research design was a posttest only control design. The samples of this research were students of class VII-B SMP A. Wahid Hasyim Jombang as the control class and class VII-C as the experimental class. The research instrument was a test for cognitive learning outcomes. The data were analyzed by prerequisite test, then, followed by hypothesis testing using Independent Samples Test. The analysis results showed that the score of sig. (2-tailed) 0.000 < 0.05, so that there was a significant difference between the cognitive learning outcomes of the experimental class and the control class. It was concluded that there were differences between students' cognitive learning outcomes taught using videos and Power Point media.

Keywords: learning media of video, global warming, cognitive learning outcomes

Abstrak: *video membuat konsep IPA menjadi lebih konkrit sehingga memudahkan siswa memahami materi. Penelitian ini bertujuan untuk menjelaskan perbedaan hasil belajar kognitif siswa melalui penerapan video pembelajaran pada materi Pemanasan Global. Penelitian ini merupakan penelitian kuantitatif dengan metode quasi experiment. Desain penelitian berupa posttest only control design. Sampel penelitian meliputi siswa kelas VII-B SMP A. Wahid Hasyim Jombang sebagai kelas kontrol dan kelas VII-C sebagai kelas eksperimen. Instrumen penelitian ini berupa lembar tes hasil belajar kognitif. Data dianalisis dengan uji prasyarat kemudian dilanjutkan uji hipotesis menggunakan Independent Samples Test. Hasil analisis menunjukkan bahwa nilai sig. (2-tailed) 0,000 < 0,05, artinya ada perbedaan siginifikan antara hasil belajar kognitif kelas eksperimen dengan kelas kontrol, sehingga disimpulkan bahwa terdapat perbedaan hasil belajar kognitif siswa yang dibelajarkan menggunakan media video dengan yang belajarkan menggunakan media Power Point.*

Kata kunci: *video pembelajaran, pemanasan global, hasil belajar kognitif.*

▪ INTRODUCTION

Learning media is one of the factors that play an important role in learning (Nurrita, 2018; Tafonao, 2018), including video media (Brame, 2016; Hansch et al., 2015; Thomson et al., 2014). Various media with various designs are used to help achieve learning objectives (Adi et al., 2021; Marpanaji et al., 2018). The use of appropriate learning media determines the success of learning because it makes learning more meaningful. In addition to playing a role in making it easier for students to master the subject matter, learning media are also able to increase motivation, interest, creativity, and students' activities so as to improve students' learning outcomes (Adi et

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al., 2021); . Learning that tends to be less interesting is often experienced by teachers because they do not understand the needs of students in learning, both related to characteristics and how to convey the material. In this regard, a teacher plays an important role in the selection of media and the implementation of efficient and appropriate learning (Puspitarini & Hanif, 2019; Sutirman, 2019; Wahyu et al., 2014). Furthermore, Lodang et al. (2014); Puspitarini & Hanif (2019) state that a teacher is demanded to have an ability to develop various learning media.

Science learning in the form of a series of facts and concepts can be packaged as well as possible through learning media to make science material more interesting and easier for students to understand. The use of animation or moving images to explain science concepts is also able to improve students' memory, attention and interest during learning. In science learning, media serves as a means of displaying learning objects to students (Dewi & Handayani, 2021; Suryana & Hijriani, 2022). Many research results show that learning that applies learning media provides a higher level of success in achieving learning objectives (Lodang et al., 2014).

The results of observations and interviews on 7-8 April 2018 showed that only 37% of students in grade VII C of SMP A. Wahid Hasyim Tebuireng Jombang completed the Global Warming subject. This data was supported by the results of a questionnaire on April 10, 2018 which showed that 90% of students had difficulty with Global Warming material. Global warming was one of the science materials studied at the seventh grade SMP/MTs level. From the results of learning observations, it was also known that 87% of students were less enthusiastic in learning and 80% of students felt bored with learning media that had been given by the teacher. These conditions would indirectly have an unfavorable impact on the achievement of learning outcomes and the ability of students to understand science concepts.

Schools as educational institutions must be able to support technological developments that can create a variety of interactive, interesting learning media and can increase students' knowledge of subject matter (Aulia & Aina, 2016). SMP A. Wahid Hasyim Tebuireng Jombang has been equipped with adequate ICT supports, such as computers and LCD projectors, but their use has not been optimal. One alternative learning media that can be used as a solution to overcome these problems is in the form of learning videos. According to Tasmalina & Prabowo (2018), for subject matter related to nature, teachers do not have to take students to the field but can be shown through learning videos. Through video media students will be able to understand subject matter that is still abstract so that it becomes more concrete (Soucy et al., 2016; Taqiya et al., 2019). The more concrete students learn the subject matter, the more learning experiences students get (Siregar, 2015). Thus, the use of learning videos on Global Warming materials can explain the concepts and events of Global Warming more concretely and easily to students.

Video is a set of media or components that can show images and sound at the same time (Ramli, 2012; Siregar, 2015). It is further stated that video is able to describe moving objects along with appropriate sound. Videos present information, explain processes, describe complex concepts, teach skills and instill attitudes. Yunita & Wijayanti (2017) added that the use of video media can foster students' curiosity and skills. The use of instructional video media is expected to support the learning process (Kostereliogl u, 2016) and help teachers deliver material more easily and in a shorter time (Panggabean et al., 2021; Viviantini et al., 2015; Yuanta, 2019). By using video, educators can insert materials that will be given to students (Brame, 2016; Woolfitt,

2015). Media that can be heard and seen can help students in learning (Pamungkas & Koeswanti, 2021), especially students who have audio and visual type learning styles (Lodang et al., 2014). Learning videos can make it easier for students to understand the material, so that they can increase students' interest in learning (Brame, 2016; Tegeh et al., 2019; Yusnia, 2019).

The results of the research by Taqiya et al. (2019); Windasari (2019); Yunita & Wijayanti (2017) showed that video media had a significant effect on students' science learning outcomes and academic achievement (Giannakos et al., 2014; Kasilingam et al., 2014). Research conducted by Tasmalina & Prabowo (2018) also showed that the use of media in the form of learning videos has a significant influence on biology learning outcomes. Similar research conducted by Capati (2020) also showed that the application of YouTube Biology videos with focused questions could improve students' ability to understand concepts. Furterhermore, there is a significant increase in science learning using learning videos on the process and student learning outcomes (Aliyyah et al., 2021; Siregar, 2015).

Based on the explanation above, the researchers conducted this research to determine the science learning outcomes of seventh grade students of SMP A. Wahid Hasyim Tebuireng through the use of videos on Global Warming material. This research needed to be done so that the application of media in science learning become amore effective in improving students' cognitive learning outcomes.

▪ METHOD

This research was a quantitative research with a quasi-experimental research method. The research design used was in the form of a posttest only control design (Sugiyono, 2019), in which there were two groups of classes that were set as the research sample, namely the experimental class and the control class. The experimental class was taught by using media of videos and the control class was taught by using Power Point media which was commonly used by teachers. This study aimed to determine the differences in students' cognitive learning outcomes through the application of learning videos and Power Point media. The use of medias was integrated into the Direct Instruction model on Global Warming material. At the end of the material, both classes were given post-test questions to measure students' cognitive learning outcomes. The research design is described in Table 1 below.

Table 1. Research Design

Subject	**Treatment**	***Postest***
Experimental Class	X_1	O_1
Control Class	X_2	O_2

Description:
O_1 and O_2 = Learning outcomes at the end of the material
X_1 = Learning using videos
X_2 = Learning using Powerpoint

The population of this study included all students of class VII SMP A. Wahid Hasyim, totaling 60 people. The sample of this study included 30 students in class VII-B as the control class and 30 students in VII-C as the experimental class. The research sample was determined by using the total sampling technique, where the number of

samples was the same as the population (Sugiyono, 2019). The reason for taking total sampling was because the total population was less than 100 and the entire population was used as the research sample.

The instrument of this research was a cognitive learning result test sheet in the form of a description of 8 questions with a grid of questions including: 1) the definition of global warming, 2) the causes of global warming, 3) the impact of global warming, and 4) efforts to overcome global warming. The research instrument had been empirically validated by a lecturer in the Science Education department, Universitas Hasyim Asy'ari, Jombang.

Data collection in the experimental class was carried out for two meetings, where the researcher acted directly as a teacher. The first meeting was on Wednesday, May 16, 2018 and the second meeting was held on Thursday, May 17, 2018 with a time allocation of 2x40 minutes each. At the first and second meetings, learning media of video was applied. At the end of the learning material, students did a test to get a score for learning outcomes. In the control class, learning was also carried out for two meetings. The first meeting was held on Wednesday, May 16, 2018 and the second meeting was held on Friday, May 18, 2018 with a time allocation of 2x40 minutes each. The learning media applied to the control class was in the form of Power Point. At the end of the learning material, students in the control class did a test to get a score for cognitive learning outcomes.

After obtaining the cognitive learning outcomes data (posttest), then, data analysis was carried out using SPSS 20.00 to determine the differences in cognitive learning outcomes in the experimental class and the control class. Data analysis began with prerequisite tests, namely normality test and homogeneity test, then, continued with hypothesis testing. The normality test used was the One-Sample Kolmogorov-Smirnov Test and the homogeneity test used Levene's Test for Equality of Variances with the provision that the significancescore was > 0.05. The decision-making criteria were as follows:

1. If the significance value > 0.05 means that the data was normally distributed and homogeneous
2. If the significance value < 0.05 means the data was not normally distributed and not homogeneous

The next step after the prerequisite test was hypothesis testing using the Independent Samples Test. The hypothesis of this research is as follows:

1. H_0 = There is no difference in students' cognitive learning outcomes between the experimental class and the control class.
2. H_1 = There is a difference in students' cognitive learning outcomes between the experimental class and the control class.

The decision-making criteria used based on the Independent Samples Test (t Test) were as follows:

1. If the significance value is > 0.05, it means that H_0 is accepted so that there is no difference in students' cognitive learning outcomes taught using videos and students taught using Power Point media.
2. If the significance value is <0.05, it means that H_1 is accepted so that there is a difference in students' cognitive learning outcomes taught using videos and students taught using Power Point media.

▪ RESULT AND DISCUSSION

This study aimed to determine the differences in students' science learning outcomes through the use of videos. Based on the research that had been done, the data obtained from the learning outcomes are as follows.

Table 2. Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Learning Outcomes in Experimental Class	30	85.0000	7.19195	65.00	95.00
Learning Outcomes in Control Class	30	77.0000	7.83449	55.00	90.00

Table 2 shows that the average learning outcomes of the experimental class based on the results of descriptive analysis are 85 and the control class is 77.

Table 3. One-Sample Kolmogorov-Smirnov Test

		Learning Outcomes in Experimental Class	Learning Outcomes in Control Class
N		30	30
Normal Parameters[a]	Mean	85.0000	77.0000
	Std. Deviation	7.19195	7.83449
Most Extreme Differences	Absolute	.200	.199
	Positive	.143	.120
	Negative	-.200	-.199
Kolmogorov-Smirnov Z		1.095	1.091
Asymp. Sig. (2-tailed)		.181	.185

a. Test distribution is Normal.

Based on the results of the normality test using the One-Sample Kolmogorov-Smirnov Test in Table 3, it is known that the significance value of the experimental class learning outcomes data is 0.181, the control class learning outcomes data is 0.185, where both values are more than 0.05 (> 0.05), meaning that the learning outcomes data are distributed normal. Furthermore, the results of the homogeneity test using Sig Levene's Test for Equality of Variances in Table 4 explains that the significance value is 0.594 or > 0.05, meaning that the variance of the experimental class learning outcomes data with the control is homogeneous or the same. After testing the prerequisites using normality and homogeneity tests, then hypothesis testing was carried out.

Based on Table 4 about Independent Samples Test, it can be seen that the value of sig. (2-tailed) 0.000 is lower than 0.05 (0.000 < 0.05), meaning that H_1 is accepted so that there is a significant difference between the cognitive learning outcomes of the experimental class and the control class. Thus, there are differences between cognitive learning outcomes of students taught using video media and Power Point media. The differences between the average cognitive learning outcomes of the experimental class and the control class is 85.00-77.00=8.00 and the difference between these differences

is 4.11331 to 11.88669 (95% Confidence Interval of The Difference Lower Upper). Thus, it can be concluded that there are differences in science learning outcomes of students taught using video media and Power Point media.

Tabel 4. Independent Samples Test

	Levene's Test for Equality of Variances		**t-test for Equality of Means**						
	F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
								Lower	**Upper**
Learning Outcomes	.287	.594	4.12	58	.00	8.00	1.94	4.11	11.89
			4.12	57.58	.00	8.00	1.94	4.11	11.89

The results of this study are supported by research by Yunita & Wijayanti (2017); Viviantini et al. (2015) which explain that there are significant differences in the science learning outcomes of students taught using video media and those taught without video media. By using videos, it will be easier for students to understand the material clearly and concretely (Azis et al., 2018; Dash et al., 2016; Hafizah, 2020 Purwono et al., 2014; Ulyana et al., 2019; Yunita & Wijayanti, 2017). According to Azis et al. (2018), not all biological symptoms and phenomena can be observed directly. In understanding an object, it is not necessary to present a real object but can be replaced with objects that can represent the role of the object (Chalmers, 2011).

According to Simangunsong & Mukhtar (2015), video media is effective when it is used to teach knowledge related to motion because the speed of movement can be adjusted, for example in science subjects to explain science concepts and principles. Furthermore, Azis et al. (2018); Brame (2016) state that the use of videos in Biology subjects is needed to stimulate motivation and improve student learning outcomes. The entire material in the learning using video can stimulate students to ask further questions about the material provided, namely about broader concepts.

Kurniawan (2016); Bourdeau et al. (2017) argue that learning using video media can display information or events without having to experience it directly so that students will also be easy to accept and understand the material presented by the teacher. Furthermore, Fern et al. (2002) and Boateng et al. (2016) say that video is one of the most diverse and different virtual learning media that captures and presents information and offers a sensory learning environment, this allows students to better understand and store information more easily. The use of video media in learning will provide opportunities for students to be more active and explore students' abilities in finding and solving problems contained in learning materials and will directly affect the improvement of students' learning outcomes (Supryadi et al., 2013).

The use of video media can attract more students' interest and attention so that students are more enthusiastic and active in participating in learning (Nurfadhillah et al., 2021). Furthermore, Stockwell et al. (2015) explain that videos have special value for preparing students for biology classes because some students find it more interesting. By using video media, students are more motivated in learning which in turn increases students' understanding (Ismail et al., 2017; Lalian, 2018). In addition, video media can

eliminate student boredom in studying biology lessons (Khairani et al., 2019). Kusumahwardani et al. (2022) assume that the learning process assisted by audio-visual animation media invites students to pay attention, listen and hear directly the information or learning materials presented. The use of audio-visual learning media can attract students' attention so that the learning process can run better. In this regard, Rismark & Sølvberg (2019) explain that videos help students to re-listen to parts that they think need to be elaborated, repeated, or understood better.

Several studies have shown that video can be a very effective educational tool and stimulate independent learning (Bjork et al., 2013; Kay, 2012; Lloyd & Robertson, 2012; Stockwell et al., 2015). It is further stated that practical videos used in learning process can make students learn independently and stimulate students to understand the concept of the material. In the video there are a series of activities and stages so that anyone can follow and practice directly in the independent learning process. The use of video media a role in increasing understanding of the content or learning material observed through the senses of sight and the senses of listeners (Bourdeau et al., 2017; Maheswari & Pramudiani, 2021). Furthermore, Dariyadi (2016) states that video media can provide a better experience because when the media is used, the senses inside will be easier to respond and capture the contents of the media.

▪ CONCLUSION

Based on the results of this study, it can be concluded that there are differences between the cognitive learning outcomes of the students taught using video media and Power Point media. The average students' cognitive learning outcomes taught using video media is higher than the average students' cognitive learning outcomes taught using Power Point media. Thus, it is suggested that learning using video media be applied in science learning. This study is limited to measuring learning outcomes in the cognitive domain, so that further research needs to be carried out to measure learning outcomes in other domain. It is suggested that the use of video media can be applied in learning, especially science learning because it is effective in empowering students' cognitive learning outcomes.

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