

The Effect Of Using Video Learning Media On Critical Thinking Skills On The Topisc Of Environmental Pollution

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Abstrack: This study aims to determine the effect of instructional video media on critical thinking skills. The population of this study were all seventh grade students at SMPN 25 Bandar Lampung. The research design used in this study is a quasi-experimental design in the form of a non-equivalent control group design. The sample in this study were students from 2 classes, namely class VII C and VII D, which were selected using cluster random sampling technique. The research instrument used a pretest-posttest research sheet. Data on the average value of pretest-posttest, n-gain as a result of increasing students' critical thinking skills were analyzed by statistical tests, namely the Mann Whitney test. The results showed that students' critical thinking skills were in the "Medium" category with n- gain in the experimental class of 0.66 and students' critical thinking skills in the "Medium" category with the n-gain value in the control class lower than the experimental class, which was 0.43. From the statement above, it can be concluded that the results of the average data analysis of students' critical thinking skills between the experimental class and the control class were significantly different. This is because video media is able to display all phenomena, especially environmental pollution that occurs in detail into its types so that it can increase students' understanding of concepts which then affect students' critical thinking skills. Thus, it is known that video media can affect critical thinking skills

Keywords: video, learning media, critical thinking skills

PENDAHULUAN

In this 21st century, skills that must be owned by every student include: *critical thinking* (critical thinking), *creativity* (creativity), *collaboration* (collaboration), and *communication* (communication) otherwise known as 4C. These four skills are important to develop in order to be successful in facing the challenges of the 21st century. Critical thinking skills are reflective thinking that focuses on making decisions about what to believe and what to do next (Ennis,

2011). Dwyer, Hogan, and Stewart (2014) stated that critical thinking skills are needed to help individuals become more adaptable, flexible, and better able to deal with today's rapidly evolving information. Currently, to build the nation's young generation who have critical thinking skills and can develop their own potential, the Indonesian government implements the 2013 curriculum which emphasizes a scientific approach by involving process skills in their learning (Hosnan, 2014).

Critical thinking skills are essential abilities, and function effectively in all aspects of life. The learning process to achieve optimal results requires active thinking. This means that the optimal learning process requires critical thinking from the learner. Therefore, critical thinking is very important in the process of learning activities (Ahmatika, 2017). Critical thinking is the skill of analyzing and evaluating thinking with the intention of improving it (Paul & Elder, 2008) Critical thinking is a very important activity to be developed in schools, teachers are expected to be able to realize learning that activates and develops critical thinking skills in students (McMurarry et al, 1991).

Based on interviews conducted on January 7 2022 with science subject teachers conducted at SMPN 25 Bandar Lampung, it is known that the level of students' critical thinking skills in science subjects is still low on indicators of providing simple explanations including focusing questions, analyzing questions, asking and answering question. This indicator appears during the learning process where students seem less active and less enthusiastic in responding to material explanations. According to the teacher, when students are asked questions, only 2 to 3 people answer. Then when the teacher gives students the opportunity to ask questions about things they don't understand, it is also very rare for students to ask, even in every lesson students often don't ask.

Students' critical thinking skills need to be developed in science learning so that students can develop the competencies that exist within themselves and the environment in a more profound and scientific way. In order for learning objectives to be achieved properly and in accordance with predetermined targets, there must also be supporting learning media (Wilujeng, 2012).

In overcoming the problems above, it is necessary to make changes in the learning system by using a learning media that can attract students' interest and increase students' motivation and understanding of the material, so that students are actively involved in learning and the teacher acts as a facilitator. Thus the learning that takes place is no longer centered on the educator or teacher-centered. One of the learning media that can be used to improve critical thinking skills is video media. The use of video as a teaching medium is expected to help students understand the subject matter. This is in accordance with the function of video media according to Arsyad (2013) video media has one function as a learning medium, namely a compensatory function. The compensatory function is to provide context to students whose abilities are weak in organizing and recalling random groups, then the selected group becomes the subject of the research (Hasnunidah, 2017).

The type of data in this research is quantitative data. To see the level of students' critical thinking skills in the form of student scores obtained from grade pretest and *posttest* on environmental pollution. Then calculated the difference between the values *pretest* and *posttest* in form *n-gain*.

METODE

Research Design

This research is an *experimental design* (pseudo-experimental design) which helps a researcher to objectively analyze the relationship between variables, thus increasing the accuracy of the result. The design form in this study is a *non-equivalent control group design* in which there are at least two groups, one of which does not receive a treatment or intervention, and data are collected on the outcome measure after the treatment or intervention (Sugiyono, 2017).

This research consists of two stages, namely pre-research and implementation of research. The steps of the two stages are presented in Figure 1.

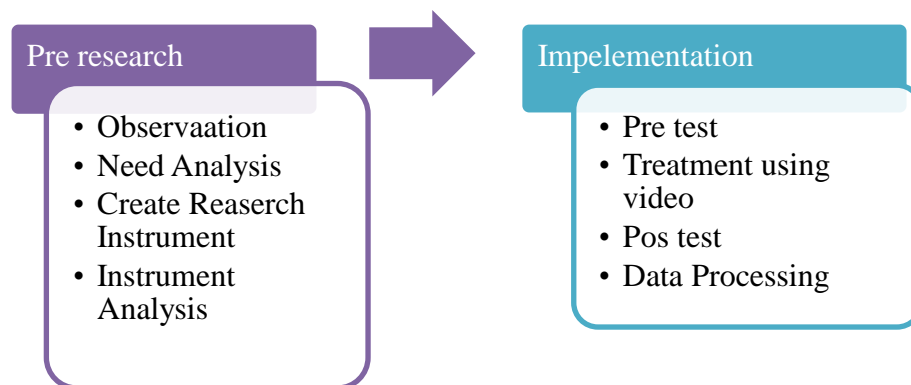


Figure 1. The Procedure of Research

Population and Sample

This research was conducted in class VII C and VII D in the even semester of the 2021/2022 school year from 12 May to 30 May 2022 at SMP Negeri 25 Bandar Lampung. The sampling technique in this study is *cluster random sampling*, where researchers select groups randomly, then the selected group becomes the research subject (Hasnunidah, 2017).

Research Instrument

The type of data in this research is quantitative data. To see the level of students' critical thinking skills in the form of student scores obtained from grades *pretest* and *posttest* on environmental pollution. Then calculated the difference between the values *pretest* and *posttest* in form *n-gain*. The data collection technique used in this study was a test technique in the form of 10 questions or essays made based on indicators of critical thinking.

The prerequisite tests applied were the One Sample Kolmogorov-Smirnov Test to measure normality, and the Levene Test of Equality of Error

Variances to measure homogeneity, each at a significant level of 5%. Data were analyzed with the help of SPSS version 21 for Windows.

RESULT AND DISCUSSION

Result of Research Procedure

Pengolahan dan analisis data pada penelitiann ini dilakukan menggunakan bantuan software analisis statistik yaitu SPSS 26.0 for windows terhadap nilai pretest, posttest, dan n-gain. Data yang diperoleh di analisis melalui uji normalitas, uji homogenitas, dan uji hipotesis (Uji Mann Whitney). Hasil uji statistik dapat dilihat pada tabel 1 berikut:

Table 1. Statistical Test Tabulation Results *Pretest, Posttest, and n-gain*

	Class	$\bar{X} \pm Sd$	Normality test	Homogeneity test	Mann Whitney Test
Pretest	E	32,80 ± 14.97077329	Sig. 0,200 > 0,05	Sig. 0,938 > 0,05	Sig. 0,000 < 0,05
	C	26,74 ± 13.74268056	Sig. 0,002 < 0,05		
Posttest	E	78,11 ± 14.79059962	Sig. 0,038 < 0,05	Sig. 0,008 > 0,05	
	C	58,41 ± 20.29872785	Sig. 0,004 < 0,05		
N-gain	E	0,66 ± 0,21641			
	C	0,43 ± 0,25651			

Description: E = Experiment (using learning video media), C = Control, Sd = Standard Deviation, X = Rate-Rate

Table 1 shows that the Sig value (*2-tailed*) $0,00 < 0,05$ which means H1 accepted and H0 rejected, and the test results average score *n-gain* in the experimental class, namely 0.66, it is included in the moderate criteria, while in the control class the value is *n-gain* 0.43 which is included in the medium criteria. Therefore, it can be concluded that the average score test results *n-gain* in the experimental class is higher than the control class. So this shows that there is a significant increase in critical thinking skills which is much better in the experimental class than in the control class. This can be the basis that the use of instructional video media influences the improvement of students' critical thinking skills at SMPN 25 Bandar Lampung. To be able to find out the differences in student achievement from each aspect of critical thinking, an average analysis was carried out for each indicator of critical thinking. Table 2 shows the average achievement for each critical thinking indicator.

Table 2. Results of the Average Achievement Analysis of Each Critical Thinking Indicator in the Experimental and Control Classes.

Indicators	Experiment Class		Control Class	
	Average of <i>Pretest</i> ± StDev	Average <i>Posttest</i> ± StDev	Average <i>Pretest</i> ± StDev	Average <i>Posttest</i> ± StDev
Simple Explanation	14 (low)	75 (high)	7 (low)	53 (low)
Basic Skills	60 (medium)	84 (high)	48 (low)	51 (low)
Conclude	61 (medium)	86 (high)	53 (low)	71 (medium)
Futher Information	38 (low)	76 (high)	36 (low)	60 (medium)

Indicators	Experiment Class		Control Class	
	Average of <i>Pretes</i> ± StDev	Average <i>Posttes</i> ± StDev	Average <i>Pretes</i> ± StDev	Average <i>Posttest</i> ± StDev
Strategy and Tactic	12 (low)	73 (high)	8 (low)	55 (low)
Average Score ±StDev	33±15 (low)	78±15 (high)	27±14 (low)	58±20 (medium)

Table 2 shows that each indicator of students' critical thinking skills in the experimental class tends to have a greater value when compared to the control class. Data on indicators of critical thinking skills in the experimental class that have the highest pretest average scores are found in the concluding indicator with a score of 61 which falls into the "Moderate" criteria and the average pretest with the lowest score is in the strategy & tactics indicator with a score of 12 which falls into the "low" criteria. Whereas in the control class, the highest score was obtained on the average pretest, namely on the indicator of critical thinking skills, concluding with a score of 53 which is included in the "low" criteria and the average *pretest* with the lowest score found in the simple explanation indicator with a score of 7 which means it is included in the "Low" criteria. On average data *posttest* the experimental class that gets the biggest score is on the indicator concluding with a score of 86 which is included in the "High" criterion then gets the lowest score on the average data *posttest* the experimental class, namely the strategy & tactic indicators which get a score of 73 but are still in the "High" score criteria, while the average data *posttest* the control class that gets the highest score is on the indicator concluding with a score of 71 which means it is included in the "moderate" and average score criteria *posttest* with the lowest score in the control class is obtained on the basic skills indicator with a score of 51 which is included in the "low" criteria

Discussion

The results of research conducted on class VII students at SMPN 25 Bandar Lampung show that the use of instructional video media has an effect on increasing students' critical thinking skills. This can be seen from the results of data analysis in table 2 which shows that the critical thinking skills score experimental class students are higher than the control class. In the experimental class using instructional video media, the average pretest score was 32.80; the average value of the *posttest* 78.11; and n-gain 0.66 ± 0.21 .

In the learning activities in the experimental class the researcher explains environmental pollution material using learning videos. Video is audio (hearing) and visual (vision) based media which can contain messages, language, the application of theory to make it easier for students to understand learning material (Fahrurrozi, Maryono, and Budiyanto, 2017). Learners are referring to streaming instructional videos for the understanding of concepts and theories (Chan, 2010). From this statement it can be concluded that video is one of the effective learning media for conveying information during learning.

This is also supported by the results of research conducted by Erniwati, et al (2014); Rebowo (2014) where students who use video-based media experience

increased learning outcomes compared to those who do not use video media. The difference in increasing learning outcomes is that video media is thought to be able to provide a clearer and more meaningful picture of the material being taught. Using video as a learning medium is thought to motivate students to learn independently. Students who use video-based media experience increased learning outcomes compared to those who do not use video media. The difference in increasing learning outcomes is that video media is thought to be able to provide a clearer and more meaningful picture of the material being taught. Using video as a learning medium is thought to motivate students to learn independently.

The use of learning video media in this study really attracted students' attention in the learning process in class. This can be seen when learning takes place students in the experimental class focus on listening and paying attention to the material shown in the video. By using media in the form of learning videos, students can better capture and collect information from the displayed learning videos. So it significantly influences students' cognitive learning outcomes and the achievement of critical thinking skills. The difference in the achievement of critical thinking skills between students in the experimental class and the control class can be seen in Figure 2 and Figure 3.

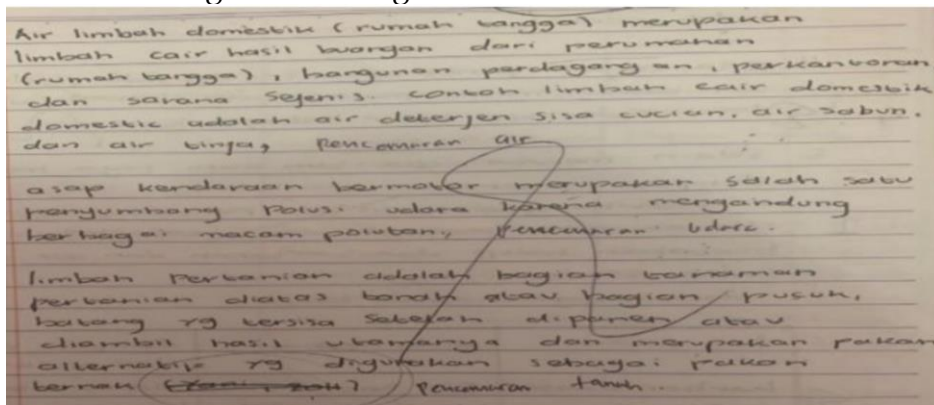


Figure 2. The Example Answers of Experiments Class

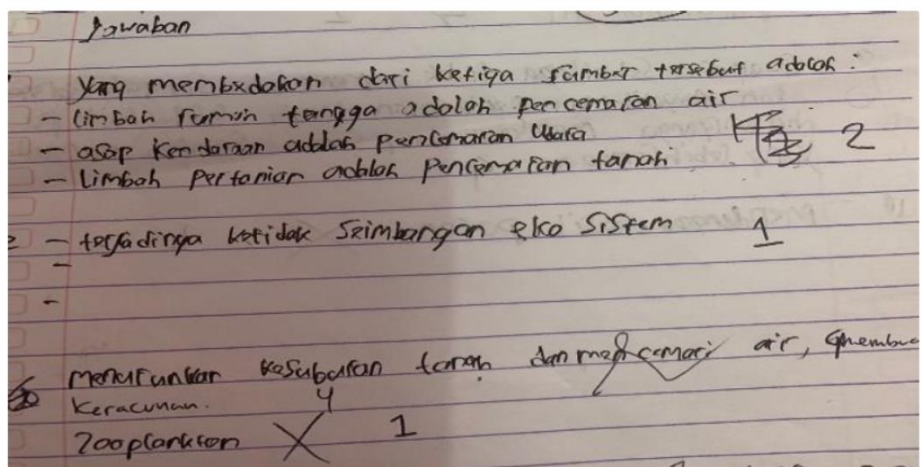


Figure 3. The Example Answers of Control Class

Students in the experimental class were able to provide more detailed, clear and complete explanations than students in the control class. Many of the students in the control class only gave short answers and did not develop their theoretical understanding. From the answers to the pretest and posttest results they worked on, it was evident that the enthusiasm of the students in the control class in answering the questions posed by the teacher was still limited in theory and had not shown development that was in accordance with their potential and abilities. So that it can be said that many of the control class students are still theoretical and do not develop critical thinking skills. Critical thinking is used to systematically investigate students' thinking processes in using evidence and logic in these thinking processes. The answers of students in the experimental class showed that students were able to provide explanations that were clearer and in accordance with the problems in the questions and they answered them by developing explanations from their own language but still using good language and easy to understand. The use of video is able to attract students' attention to dig up information by understanding events related to what they are experiencing, and connecting it with the sources obtained then thinking carefully about the results of observations to make their opinions as an appropriate strategy in solving the problems experienced.

The success of achieving students' critical thinking skills in this study cannot be separated from the role of learning video media which has also been explained above that video media is able to assist teachers in conveying material that is difficult to convey and difficult for students to understand, because this video media has the advantage of being able to provide experience for students. Students in the learning process where the video media has the ability to conjecture objects or events with a high degree of similarity. Presents the results of the impact of the use of videos upon students' motivation (Bravo, et al. 2022) . Futhermore Brame (2016) explained by using both the audio/verbal channel and the visual/pictorial channel to convey new information, and by fitting the particular type of information to the most appropriate channel, instructors can enhance the germane cognitive load of a learning experience. Video may provide a significant means to improve student learning and enhance student engagement in biology courses.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that there is a significant effect of using video as a learning medium on students' critical thinking skills in environmental pollution material. This is evidenced by the fact that the average results of students' critical thinking using learning video media in the experimental class are higher than the control class.

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