



## ARTICLE EVALUATION OF THE USE OF LEARNING TECHNOLOGY ON SCIENCE LEARNING OUTCOMES IN JUNIOR HIGH SCHOOL

**Metra Suraya<sup>1</sup>, Siti Sarifah Hasibuan<sup>2</sup>, Yora Anjeli<sup>3</sup>, Ahmad Walid<sup>4</sup>**

<sup>1,2,3,4</sup>Science Tadris Study Program, Faculty of Tarbiyah and Tadris, Fatmawati State Islamic University Soekarno Bengkulu  
Email: [surayametra@gmail.com](mailto:surayametra@gmail.com)

### Abstract

The use of technology in the field of education is very important to do, because it can support the learning process to be more effective and efficient. Utilization of this technology, for example, the use of media in the form of learning videos. The use of learning videos greatly influences learning outcomes and can help the learning process continue in conveying ideas. The use of learning videos is very helpful in conveying learning material that is difficult to explain. However, until now the use of learning videos is very lacking in teaching and learning activities, especially in learning Natural Sciences (IPA). This study aims to determine the use of learning technology in the form of the presence or absence of the influence of learning videos on students' natural science learning outcomes in junior high schools. The research method used is meta-analysis. Meta-analysis is a literature review or by reviewing the literature, analyzing research results that are on official websites or that have been officially published through campus internal publication media and/or scientific publication media. So the results of this study are that the use of technology in learning in the form of videos has an effect on the learning process and student learning outcomes in junior high schools.

**Keywords :** Evaluation ; Technology ; Learning.

### PRELIMINARY

Education is an activity that is very crucial for humans. This is because education plays an important role in making life better. So through education, humans are expected to be able to improve their quality of life according to Law no. 20 of 2003, Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by themselves, society, nation and country. So with that good education is education. who gave birth to children of the nation who have good character as well. So that education has quite an important role and function for human life, both education in cognitive, affective (attitude, and psychomotor) aspects (Mubin, 2020). UNESCO expressed his opinion about education, namely "Education as organized and sustained communication designed to bring about learning." or education is an organized and sustainable communication by designing it as a form of activity that is able to foster a desire to learn (Hazari, 2020).

Education has an important role in building Indonesia's human resources. According to the Law of the Republic of Indonesia No. 20 of 2002 concerning the National Education System states that education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual strength, religion, self-control, personality, intelligence, noble character, and the skills needed himself, society, nation and state. The use of Information and Communication Technology (ICT) in the form of the internet, educational administration system software, notebooks and LCD projectors in the world of education is now a requirement that must be met in order to produce a generation that is reliable and has global competitiveness (Amalia & Budhi, 2017).

The development of science and technology has brought changes to every aspect of human life, including formal education. Currently, more and more countries in the world are competing for the era of global competition marked by technological advances. The development of science and technology has greatly improved the education model and system. The benefits of science and technology can be felt in the world of education, such as creating



new learning methods and introducing various learning media and resources (Panggabean et al., 2021).

Learning media are tools or facilities used by teachers to convey certain subject matter in the form of knowledge transfer with the help of certain media (Herminingsih et al., 2022). This media serves to facilitate the delivery of learning messages from teachers to students. In addition, the use of instructional media can streamline the teacher's time during the learning process because students can access the media provided by the teacher. As for students, the benefits of learning media will stimulate students' curiosity to learn a new material provided by the teacher. One of the technological media used in junior high schools is learning media in the form of videos.

Video media is a medium that makes students interested and motivated during the learning process, because video media presents views accompanied by sound and images (audio visual) (Wuryanto, 2016). Videos are pictures in motion. If the object in the animation is artificial, then the object in the video is real. Video is a live image that has a visual and audio display (Fadhli, 2015). Based on the understanding according to some of the experts above, it can be concluded that video media is a type of audio-visual media and can describe an object that moves together with a natural sound or appropriate sound. Videos present information, describe processes, explain complex concepts, teach skills, shorten or lengthen time, and influence attitudes.

Various studies on the effect of using learning technology in the form of instructional video media on learning outcomes of Natural Sciences (IPA) in junior high schools have been extensively researched by previous researchers. Journals and previous research that have similar theories and subjects in this study will be used as a reference. The following are some previous studies that discuss the effect of using learning technology in the form of instructional video media on science learning outcomes in junior high schools. One is research conducted by Rusi Rusmiati Aliyyah, et al with the title efforts to improve science learning outcomes through the use of instructional video media. In this study also discussed the effect of instructional video media on student learning outcomes. The similarity with previous research is that they both discuss the effect of learning videos on students' natural science learning outcomes. The difference in this research lies in the object and theory used.

Based on the background of the problems described above, given the importance of using technology in teaching and learning activities as an effort to improve student learning outcomes. Therefore the researcher is interested in taking the title "Evaluation of Articles on the Use of Learning Technology on Science Learning Outcomes in Junior High Schools". So, the purpose of this research is to evaluate several articles related to the use of video learning technology on the learning outcomes of science students in junior high schools.

## METHOD

The research method used is meta-analysis. Meta-analysis is a literature review or by reviewing the literature, analyzing research results that are on official websites or that have been scientifically published. The importance of meta-analysis has been expressed by many experts, one of whom stated that meta-analysis provides solutions to problems observed in the findings of various similar studies (Hernandez, 2020). The formulation of the meta-analysis used is to find the average of the results of all the effect size test results that have been collected. This is also an instrument for data analysis. The dependent variable of this study is science learning in junior high school and the independent variable is learning audio media. The population of this study were journals that were collected in relation to the instructional video media in science learning. The sample in the study was in the form of



articles that had been published nationally, especially articles that discussed the media of science learning videos for junior high schools.

## RESULTS AND DISCUSSION

In the science learning process in junior high schools (SMP), students need learning media that are appropriate and in accordance with student characteristics. Learning media is a tool that can be used as a support in an effective and efficient learning process (Roulina, 2021). The results of this study are strengthened by discussing the benefits of video media, namely, (1) it can take students to places they cannot possibly visit, (2) it is the main means of capturing actual events, (3) it makes students interested, (4) ) can tell a story, (5) manipulate temporal and spatial perspectives, (6) manipulate time, (7) manipulate space, (8) manipulate time and place with animation, and (9) understand conventions (Oktavera, 2015). In addition, there are other opinions which state that if learning activities are combined with video learning media used in the learning process, it will be more profitable because it does not require much role from the teacher, so it will provide direct learning experiences to students (Oktavera, 2015). In this study, the literature review method was used, in which the method consisted of 5 stages or steps, but researchers only used 4 stages or steps (Mulyana et al., 2021), The stages or steps taken by the researcher are as follows:

1. The stage of finding relevant literature At this stage the researcher is looking for literature in the form of journals or articles that are according to the research title, namely the Analysis of Learning Technology Utilization in Science Subjects in Junior High Schools. Researchers collect valid data from previous studies. In searching for literature, researchers used keywords "The effect of video learning on science student learning outcomes in junior high schools", "Harlinda Syofyan", and "Utilization of learning technology". Researchers search for appropriate or relevant literature by using Google Scholar. An article or journal can be said to be good if it has a large number of citations. So, the more citations the journal or article has, the more appropriate it is for researchers to use as an additional source of reference.
2. The stage of evaluating literature review sources. At this stage, the researcher reads all the references that have been obtained for use in the preparation of this study. Researchers also need to read carefully in retrieving information and evaluating each literature reference that has been collected. After reading the researcher will make notes on each literature reference with the aim of making it easier to cite articles or journals that are considered relevant. Then, these results were correlated to this study so that they became one unit in perfecting this research. Use of technology on Middle school level needs to be adjusted and specifically designed to assist in an effective learning process and technology is considered as a solution to various problems that exist in the classroom. With the use of technology, it will certainly affect student learning outcomes, especially in science subjects. Learning outcomes can also be influenced by several factors, namely internal factors in the form of physical, psychological, and fatigue factors and external factors in the form of family factors and school factors (Windasari & Syofyan, 2018). Science learning outcomes can be used as the final result obtained by students who have mastered science knowledge and competence as seen from the learning process (Syofyan, 2018).
3. Create an outline structure. Researchers make arrangements that will be used in this study. in general. For humans, the use of technology is very useful to assist in overcoming various problems and activities in everyday life. Information technology is a set of tools that can help humans work by using information and matters regarding the processing of that information (Budiyo, 2020). The use of technology in learning can also be used to increase students' knowledge and provide motivation to



learn in the use of technology. In the use of technology in learning there are several things that need to be considered, namely 1) Teachers must have a positive attitude towards technology, 2) teachers need to understand the educational potential within the scope of technology and be able to use it effectively, 3) teachers need to understand the management of the use of technology that carried out in the classroom, 4) teachers need to assess the use and utilization of technology, and 5) teachers need to have technical skills or skills in using technology.

In this study, the media used is learning videos. In learning videos there are several characteristics that can distinguish between learning video media and other media, namely 1) learning videos can overcome distance and time, 2) learning videos can provide an overview of real past events and in a short time, 3) learning videos can bring students to feel directly, 4) learning videos can be used repeatedly, 5) in learning videos, the messages conveyed can be easier to remember, 6) learning videos can develop students' thinking power, 7) learning videos can develop students' imagination or imagination, 8) learning videos can clarify things that are abstract in nature, 9) learning videos have a role as the main media that can provide an overview of social reality that will be discussed, 10) learning videos can become storytellers or narrators that are used as a tool to increase student creativity.

Learning outcomes are the abilities that exist in students. The learning outcomes can be measured after experiencing the learning process in the form of abilities that include the cognitive, affective, and psychomotor domains (Octavianingrum & Sofyan, 2019). There are other opinions saying that learning outcomes are changes in behavior that are carried out in general, but not only in one aspect (Roulina, 2021). Natural Science (IPA) is an attempt by humans to obtain a conclusion by understanding the universe through observations made in accordance with appropriate procedures and can be explained by reason. Science learning outcomes for junior high school students are all abilities that can happen to junior high school students related to science subjects that are used as results obtained after participating in the learning process.

4. Compile a literature review review. The number of researchers who have conducted research within 5 years lastly related to the use of learning video technology on science learning outcomes for elementary school students. In this case, researchers can develop and evaluate the use of learning video technology on science learning outcomes for junior high school students. In compiling this literature review, the researcher accesses several reference sources to access scientific journals that are in sync with the topics compiled by the researcher. In this case, researchers limit scientific references or journals published over the past 10 years. The following are the results of scientific journal reviews:

Table 1. Results of Review of 5 Journal

Researcher	Titles	Learning outcomes	Influence
Rusi Rusmiati Aliyyah, Alfatia Amini, Iman Subasman, Endang Sri Budi Herawati, Susan Febiantina (2021)	Effort Increase Science Learning Outcomes Through Usage Learning Video Media	Based on this research shows that student learning outcomes in the use of instructional video media are said to increase by a percentage of 80%	Positive, valid, and significant
Ina Desmaniar, Edi Harapan, Nila	Influence Use of Technology	The use of technology on science learning outcomes	Positive and valid



Researcher	Titles	Learning outcomes	Influence
Kesumawati (2020)	Information and Interpersonal Communication on Student Learning Outcomes	for class IX students of SMP Negeri Indaralaya Selatan for the 2019/2020 academic year.	
Gita Lilis Suarni, M. A. Rizka, zinnurain (2021)	Analysis of the effect of applying the community science and technology learning model on student learning outcomes	The results of this study are that there is an influence of the community science technology learning model (stm) on student learning outcomes in class VIII C biology at SMP Negeri 3 Batuliang.	Positive and significant
Fernando Panggabean, Mariati P Simanjuntak, Mia Florenza, Lastama Sinaga, Sri Rahmadani (2021)	Analysis of the Role of Learning Video Media in Improving Science Study Results Middle School	that medium learning videos as a whole can play a role, and can improve learning outcomes scientific experimental group and group control, with an effect of 1.37 which big impact.	Positive and significant
Dwi Yunita1,A, Astuti Wijayanti(2017)	The Effect of Learning Video Media on Science Learning Outcomes Viewed From Student Activeness	Based on science learning outcomes and student activity, it was found that for the group taught using instructional video media, the mean science learning outcomes (20.78) and student activity (60.09) were obtained.	Positive and significant.

From the table 1 can be seen as clearly positive that the use of video technology learning has influence on student learning outcomes in its use. The results of each researcher with various experiments state that science learning outcomes in the use of learning video media are superior to those who do not use learning video media.

## CONCLUSION

Based on the results of the research review and discussion above, it can be concluded that there are differences in positive and significant learning outcomes for the use of learning media in the form of videos compared to learning that does not use video learning media. So the use of technology in learning has an effect on the learning process and student learning outcomes in junior high schools. The advantages of this study, researchers can find out whether there are differences between the use of learning video media and not using it so that in the future learning videos can be used as a reference as motivation for educators as well as students in the learning process. Besides that The drawbacks of this study are that researchers experience problems in selecting and sorting journal references that are considered relevant.





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