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The use of multimedia in biology learning: MAS Subulussalam Sumberjo student responses

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Abstract

The use of the lecture method in learning biology in the classroom does not provide opportunities for students to develop skills and express their opinions. Multimedia learning media is needed to increase the interest and quality of student learning. This study uses a qualitative method. The subjects of this study were 44 students of MAS Subulussalam Sumberjo, Torgamba District, South Labuhanbatu. The focus of this research is on students of class X MIPA-A and X MIPA-B, and the results obtained are in the form of observation data, interviews and questionnaires to determine student responses to the use of multimedia in learning biology. Indicators that are used as a reference to see student responses to the use of multimedia are learning with the lecture method, the implementation of multimedia learning in the form of animated videos, the quality of multimedia presentation, and the effect of using multimedia in the form of animated videos. In conclusion, the learning indicator using animated video media has a large percentage value compared to the number of other indicators, namely 90%, so that student reactions can be interpreted as follows: The use of multimedia is very good, because the use of multimedia makes students more active and enthusiastic in learning biology.

Abstrak

Penggunaan metode ceramah dalam pembelajaran biologi di kelas tidak memberikan kesempatan kepada siswa untuk mengembangkan keterampilan dan mengemukakan pendapatnya. Media pembelajaran multimedia dibutuhkan untuk meningkatkan minat dan kualitas belajar siswa. Penelitian ini menggunakan metode kualitatif. Subjek penelitian ini adalah 44 siswa MAS Subulussalam Sumberjo Kecamatan Torgamba Labuhanbatu Selatan. Fokus penelitian ini pada siswa kelas X MIPA-A dan X MIPA-B, dan hasil yang diperoleh berupa data observasi, wawancara dan angket untuk mengetahui respon siswa terhadap penggunaan multimedia dalam pembelajaran biologi. Indikator yang dijadikan acuan untuk melihat tanggapan siswa terhadap penggunaan multimedia adalah pembelajaran dengan metode ceramah, pelaksanaan pembelajaran multimedia dalam bentuk video animasi, kualitas penyajian multimedia, dan pengaruh penggunaan multimedia dalam bentuk video Animasi. Kesimpulannya, indikator pembelajaran dengan media video animasi memiliki nilai persentase yang besar dibandingkan dengan jumlah indikator lainnya yaitu 90%, sehingga reaksi siswa dapat diartikan sebagai berikut: Penggunaan multimedia sangat baik, karena penggunaan multimedia membuat siswa lebih aktif dan bersemangat dalam pembelajaran biologi.

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A. Introduction

Education is an attempt that tries to enhance the intensity and quality of student learning (Galuh, 2013). Education is the most essential part of a nation's existence. Education imparts values for living a successful life (Kurniawan et al., 2019). Education's components reveal the nation's development and accomplishments (Wulandari et al., 2019). Through deliberate or planned education, efforts can be made to develop the Indonesian nation as a whole, to educate the nation's life, and to produce individuals who are knowledgeable, capable, autonomous, and accountable (Agustin et al., 2022). Education is one of the means by which quality human resources are developed. To do this, active support to increase the quality of education is required (Pagarra & Idrus, 2018).

Learning is the interaction of facilities, people, procedures, and equipment to achieve learning objectives (Wulandari et al., 2019). Learning must result in processes that occur in the context of social interaction within the society (Galuh, 2013). Learning is the most significant keyword in all educational activities, since it is true that there is no education without learning.

Technology is expanding quickly in Indonesia. Particularly in the creation of learning media. The capacity of teachers to utilize technology has an effect on students' comprehension of biology-related learning materials. In the teaching and learning process, the use of technology as a learning medium may promote communication and interaction with students within and beyond the classroom (Siswa & Sekolah, 2021).

Biology is one of the most essential courses taught in schools. Its knowledge is directly tied to daily existence, from waking up in the morning to falling asleep at night (Oktavera, 2015). Biology is not just a collection of information in the form of facts, concepts, and principles, or the provision of abstract material, but it is also a process of acquiring knowledge and the ability to develop scientific attitudes.

Biology learning in high schools focuses on natural phenomena and their application, which includes the following aspects include (1) biological properties, diversity and grouping of organisms, relationships between ecosystem components, changes in matter and energy, the role of humans in the balance of ecosystems, (2) cell networks, tissue structures, plants. Structure and function, animal and human organs, and their application in the context of science, environment, technology, and society, (3) Processes produced by plants, metabolic processes, genetics, evolution, biotechnology, and science, Impact on the environment, technology and Public. According to Aisyah et al. (2019), The purpose of learning biology in high schools is to increase student activity and participation directly during the learning process to build their own knowledge.

The use of media in learning is very important. According to Sunami & Aslam (2021), learning media is a resource to facilitate learning. Wismadi (2013) reported that learning media can be improved in the student learning process to improve learning outcomes achieved, because learning media have several advantages. According to Galuh (2013), Because they are too large or time-consuming to comprehend, learning media delivers items that are difficult for students to possess, visit, or view. Media can be utilized to overcome these restrictions. Therefore, the function of the teacher is necessary for teaching students in an enjoyable manner. As a teacher, the utilization of learning media is an essential aspect of biology education. Teachers must be certain as to why students' learning incentives vary.

The results of observations on January 10, 2022 at MAS Subulussalam Sumberjo showed that teachers were already actively using technology in the use of learning media. Teachers are able to use multimedia in the form of powerpoints, zoom meetings and animated videos, in the biology learning process. The use of appropriate learning media such as multimedia can increase student interest in learning.

The relevant previous research is, according to Lijana et al. (2018), student responses to comics learning media on ecological material in class X high school. Nunung (2019) reported that student responses to SAVI-based learning modules (somatic, auditory, visualization, intelligence) on ecosystem materials at SMAN 1 explained. Haka et al. (2020) asserted that development of interactive multimedia that integrates the value of science as a solution to improve critical thinking skills for class xi biology subjects at the high school level.

Multimedia is a system of providing educational materials using various learning materials (Agustin et al., 2022). Multimedia is a system of providing educational materials using various learning materials (Latip & Faisal, 2021). Multimedia in a computer context is the use of computers to create and combine text, graphics, audio, and video with tools that users can interact with, create, and communicate with (Galuh, 2013). Multimedia is equipped with a sense of control that can be used by the user to determine what is

desired for the process of using it (Wismadi, 2013). Multimedia as a medium for learning biology in the form of animated videos.

According to Agustin et al. (2022), animated video is a technique that facilitates the learning process via the use of live moving visuals and animations that may modify the shape, size, and color of things. Khomariyah (2018), the use of learning media using animated videos is more effective on student learning activities. The use of learning media is very effective in increasing students' knowledge, attitudes, and skills in increasing interest in learning biology at Madrasah Aliyah.

Using multimedia in the form of animated films, it incorporates information that enables the teacher to observe the students' answers in real time during classroom time. The utilization of multimedia in the form of animated videos boosts students' learning passion. At Madrasah Aliyah, the use of multimedia in the form of animated videos can affect the engagement and success of students in biology classes.

B. Material and Method

This research employs a qualitative descriptive methodology. This research is descriptive because it aims to provide a systematic or comprehensive explanation of the responses of MAS Subulussalam Sumberjo students to the usage of multimedia in biology learning. The research subjects were 44 students at MAS Subulussalam Sumberjo, Torgamba District, South Labuhanbatu Regency and the focus of this research was students of class X MIPA-A and X MIPA-B. The data collected in this study used a questionnaire. The questionnaire consists of questions logically organized around the study subject (Efendi et al., 2021).

Table 1 Student Response Criteria

No	Score Interval (%)	Category
1	81-100	Very good
2	61-80	Goog
3	41-60	Enough
4	21-40	Less
5	0-20	Very less

The method of data collection employed by the researchers consisted of administering a questionnaire to students in the form of questions to ascertain student reactions to the use of multimedia in learning by biology teachers for ecosystem-related materials. Likert scale analysis is employed in the questionnaire. According to Kartini & Putra (2020), likert scale is used to measure the opinions, characteristics, and perceptions of individuals or groups of social phenomena. Analysis of student response criteria can be seen in the Table 1. Furthermore, the student response questionnaire was recapitulated and calculated using the following Formula 1.

$$P = \frac{\Sigma x}{\Sigma i} \times 100\% \quad \text{.....Formula 1}$$

Description:
P = Percentage
Σx = Total number of response responses in all items
Σi = Total number of ideal scores in per item

This analysis aims to identify and conclude students' responses to the use of multimedia in learning biology.

C. Results and Discussion

Interviews and questionnaires were administered to a total of 44 students from classes X MIPA-A and X MIPA-B at MAS Subulussalam Sumberjo in the Torgamba District of the South Labuhanbatu Regency in order to collect data regarding student replies. To examine the extent of students' responses to the use of multimedia in studying biology, observations were conducted. Because biology is one of the teachings, the learning process must take place both inside and outside the classroom.

The outcomes of observations serve as indicators for conducting interviews with several students. The results of interviews with a number of students were compared with the results of the questionnaires in order to optimize the data collected. The primary indications used as themes by researchers are Learning via the lecture method, Implementation of learning utilizing multimedia in the form of animated videos, Quality of multimedia display, and Effects of using multimedia in the form of animated videos.

The outcomes of interviews with six students from X MIPA-A and X MIPA-B classes. The objective of the interview is to improve the quality of the study data. There are a number of answers discovered by researchers, but there are also certain responses that have similarities, as described below.

The first question is, is learning using multimedia in the form of animated videos more fun than just the lecture method in learning biology? The student's response with the initial names "R" and "AN" class X MIPA-A is "videos shown during learning make learning more fun". Another response by a student with the initial name "FH" class X MIPA-A is "not too fun", because

he prefers when the video is shown added with an explanation from the teacher". Another response by students with the initials "H", "MA" and "IS" class X MIPA-B students was "very pleasant" because they really liked the learning process using multimedia in the form of animated videos like this. The answers of various students can be concluded that the use of multimedia in the form of animated videos is more fun than just the lecture method, because by using multimedia in the form of animated videos students can see directly the material that should be taught outside the classroom.

Learning is a dynamic process because learning behavior shows primarily in a dynamic process and not in a silent or passive process, i.e., a process carried out by individuals to achieve general behavioral changes in their interaction with their environment (Surya, 2013). This transformation might be understood as an improvement and progression that is superior to what existed before the unknown became known (Nana, 2010). In the biology learning process, students are expected to be active, but the lecture technique results in students who are less active and creative, who rely only on the teacher's memory, and who may not fully grasp the content that has been presented (Hasanah, 2019). There is a need for interactive learning, such as the use of multimedia as a learning medium (Marjuni & Harun, 2019). Using multimedia for education trains students to use learning resources, interact with selected learning materials and activities, provide guidance during learning activities, and attain learning outcomes (Marjuni & Harun, 2019). The advantages of employing multimedia as a learning medium can create an effective learning environment as well as tools and tactics that teachers and students utilize to acquire learning competency (Rahmat, 2015).

The second question, Do you feel interested in participating in learning activities using multimedia displays in the form of animated videos as learning media in biology learning?. "Interested, because when the animated video was shown I was attracted by the colorful initial display" was conveyed by a student with the initials "R" and "AN" class X MIPA-A. "I'm not too interested, because I prefer the direct learning process especially on ecosystem material," said the student with the initial name "FH" class X MIPA-A. "Very interested, because during the learning process the animated video display on the material in the ecosystem is clear," said the students with the initials "H", "MA" and "IS" class X MIPA-B students. Their answers varied, some stated that they were interested, not too interested and even very interested, this was because the way each student understood the material in learning was different.

Multimedia is one of the most engaging and motivating learning mediums (Yasa et al., 2021). Interactive multimedia is a multimedia combination of various computer-generated material, such as video, audio, photos, and text (Agustin et al., 2022). Interactive multimedia combines text, graphics, audio, and moving images with relevant links or tools allowing users to navigate, interact, be creative, and communicate using computers (Ilmiah & Grafis, 2022). Animated videos are a sort of multimedia learning media that displays learning materials with additional sound and animation to capture students' attention. The design of animated films corresponds to students' subjects and traits (Efendii et al., 2020). The use of multimedia in the form of animated videos engages students in learning and makes it easier for them to comprehend what is difficult or excessively tough (Fakhri et al., 2019).

The third question, do the existing animations make you interested in participating in biology learning with multimedia in the form of animated videos? "The animation is interesting, when the learning process takes place, the animated video displays interesting moving pictures" delivered by students with the initials "R" and "AN" class X MIPA-A. "The animation is not interesting, I noticed that the animated video display when learning the pictures only moves but doesn't make sound," said the student with the initials "FH" class X MIPA-A. "The animation is very interesting, because during the learning process I paid attention to the ecosystem material showing moving images with color combinations that really caught my attention" delivered by students with the initials "H", "MA", and "IS" class X MIPA- B. The answers vary because each student's point of view in viewing animation is different.

Animation is a medium that transforms objects, ideas, and concepts into visuals that influence the world (Ponza et al., 2018). As a source for converting written words into sound and electronic visuals, an engaging animation that consists of audio, images, writing, and motion (Kartini & Putra, 2020). The traits formed by image, sound, and motion can be conveyed via aesthetic aspects and charisma (Johari, 2014). To attract students, animated visuals blend motion, sound, music, and color. This animated media can exhibit sequential images of events such as actual happenings. Animation makes the learning process more enjoyable, helps students remember the

subject for longer, and clarifies the topic's meaning (Sudianto et al., 2013).

Fourth question, Does multimedia in the form of animated videos interest you in learning biology? "interesting or not". "Interests me to study science" was conveyed by students with the initials "R" and "AN" class X MIPA-A. "It doesn't really interest me" which was conveyed by students with the initials "FH" class X MIPA-A. "multimedia in the form of animated videos really interests me" was conveyed by students with the initials "H", "MA", and "IS" students of class X MIPA-B. Students' answers are more dominant in attracting their interest in learning in biology learning, because students can see directly the learning media in the form of animated videos.

Students are able to select the pace of learning, the amount of educational hours, and the sequence of lessons when multimedia is used in the classroom. Multimedia also helps students improve their grades while they enjoy learning (Wijoyo, 2018). The usage of multimedia in the form of animated videos has the advantage of engaging both the visual and auditory senses, making it easier for students to comprehend abstract concepts in a more concrete manner (Dewi, 2017). Because it engages two senses, the usage of multimedia in the form of animated videos is highly effective. Multimedia has an effect on learning because it combines text, narrative, and animated graphics, making it simpler for students to retain information. Students can see, hear, and interact using multimedia in the form of animated videos. The influence of multimedia learning in the form of animated films encourages students to be more engaged than when they rely just on textbooks and images (Jannah, 2020).

The results of the study can be viewed from the four aspects of the indicators that have been studied. The four aspects of the indicators are, firstly learning using the lecture method, secondly implementing learning using multimedia in the form of animated videos, thirdly the quality of multimedia presentation, and fourthly the effect of using multimedia in the form of animated videos. It was concluded that the largest percentage value was on the indicators of the implementation of learning using multimedia in the form of animated videos which had a larger number than other indicators, namely 90%, so it could be interpreted that students' responses were very good towards the use of multimedia in biology learning. The review was carried out directly that the learning media played an important role in student activity, especially in learning biology. It was also concluded that although the highest percentage score was occupied by the second indicator, students also gave good responses to each indicator that increased interest, talent and learning quality in learning biology.

Table 2 Results of Student Response Criteria X MIPA-A

No	Student Response Indicator	%
1	Learning by using the lecture method	83%
2	Implementation of learning using multimedia in the form of animated videos	90%
3	Multimedia presentation quality	84%
4	The effect of using multimedia in the form of animated videos	85%

Table 2 show that the responses of class X MIPA-A students are based on 4 aspects of indicators, namely, learning using the lecture method gets a very good rating of 83%, Implementation of learning using multimedia in the form of animated videos 90%, Multimedia display quality 84%, The effect of using multimedia in the form of video animation is 85%. Based on observations of class X MIPA-A it can be concluded that the highest percentage in class X MIPA-A is on the indicators of implementing learning using multimedia in the form of animated videos with a percentage of 90%, so it can be said that class X MIPA-A is very good. Students pay close attention and pay close attention to the implementation of biology learning in the classroom.

Table 3 Results of Student Response Criteria for Class X MIPA-B

No	Student Response Indicator	%
1	Learning by using the lecture method	87%
2	Implementation of learning using multimedia in the form of animated videos	89%
3	Multimedia presentation quality	88%
4	The effect of using multimedia in the form of animated videos	90%

The results of filling out the questionnaire obtained from class X MIPA-B showed some significant differences with class X MIPA-B, namely, very good student responses to learning indicators using the lecture method 87%, while the highest percentage level based on indicators was found in indicators of learning implementation using multimedia in the form of animated videos 89%, the quality of multimedia display 88%, the influence of the use of multimedia in the form of animated videos 90% (see Table 3). It can be concluded that the students of class X MIPA-B gave

very good responses to the use of multimedia in the form of animated videos in biology learning.

The results of filling out the questionnaire and the results of interviews conducted by researchers with students at MAS Subulussalam Sumberjo, Torgamba District, South Labuhhanbatu Regency, can be concluded through the Figure 1.

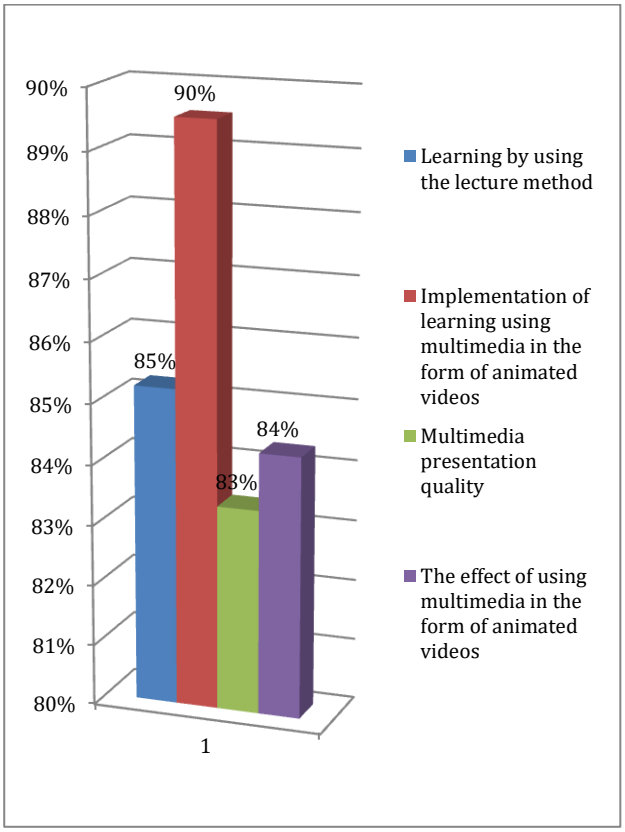

Figure 1
Results Conclusion of the overall response criteria of class X Mathematics and Natural Sciences

The results obtained from observations at MAS Subulussalam Sumberjo to find out how much students' responses to the use of multimedia in the form of animated videos in biology learning can be viewed from 4 aspects of indicators that have been researched using questionnaire media. The four aspects of the indicator are learning by using the lecture method, on this indicator the student's response is very good with a percentage of 85%. Second, the implementation of learning uses multimedia in the form of animated videos, on this indicator the highest percentage of student responses is 90%, so that it can be interpreted that students' responses are very good for the implementation of biology learning using learning media such as multimedia in the form of animated videos. The third quality of multimedia display, on this indicator the percentage is good, namely 83%, student responses to the quality of multimedia in the form of animated videos are very interesting for students to pay attention to biology learning. The fourth effect is the use of multimedia in the form of animated videos, on this indicator the student's response is good with a percentage of 84%, so it can be interpreted that the use of multimedia in the form of animated videos as learning media plays an important role in student activity in improving the quality of student learning on aspects of knowledge, attitude and skills in learning biology.

According to Lijana et al. (2018), 73.9 percent of student responses to comics-based learning media on ecological topics are rated as strong. According to Nunung (2019), 81.9% of students responded positively to the SAVI-based learning module on ecosystem content. According to Haka et al. (2020), The incorporation of science into the creation of interactive multimedia is regarded as highly viable. Based on the three relevant investigations, the researchers are able to determine the responses of MAS Subulussalam Sumberjo students to the use of multimedia in biology learning. This research compares the responses of students to the use of multimedia to the lecture method approach used at the school.

According to Azizah & Alberida (2021), kelemahan pembelajaran biologi menggunakan metode ceramah yaitu pembelajaran dikelas membosankan karena tidak memberikan kesempatan kepada siswa untuk mengembangkan keterampilan mereka dan mengungkapkan pendapat mereka dan siswa hanya aktif mencatat, maka dibutuhkannya media pembelajaran yang interaktif untuk meningkatkan minat dan kualitas belajar siswa. Media pembelajaran yang interaktif seperti multimedia. According to Surasmi (2016), multimedia is an interactive computer-based communication system that can produce, store, send, and retrieve text, graphics, animation, and audio systems. Multimedia in the form of animated videos is more effective since it encourages direct student engagement.

The use of interactive multimedia in the form of animated movies has numerous advantages for the study of biology. According to Yudianto (2017), The advantages of multimedia in the form of animated videos can improve students' drive to comprehend and make it feasible for them to attain their learning goals. According to Dewi & Negara (2021), the advantages of multimedia in the form of animated videos: (1) attract the attention and attention of students, (2) beautify the appearance in the teaching and learning process, (3) facilitate lesson placement, (4) increase student understanding, (5) explain material that may be difficult. In addition, the attractive multimedia

display in the form of animated videos also affects students' interest in learning biology.

According to Mashuri & Budiyono (2020) Animation is a collection of videos in the shape of objects that have been enhanced with special effects to make them appear real and engaging. This thing may or may not be alive. With the use of audio/speech, animations become more engaging by utilizing the proper color combinations and supporting text. Multimedia in the form of animated videos has a greater impact on biology education because it engages two human sensory receptors, namely the eyes and ears. According to Apriansyah (2020), 75% of a person's learning experience is derived from sight (eyes), 13% from hearing (ears), and the remainder from other senses. Using animated videos as a form of multimedia learning media during the learning process can boost students' motivation, interest, and learning results. Teachers can enhance students' comprehension by providing engaging learning materials and media.

D. Conclusion

The conclusion derived from the observations and interviews regarding the usage of the lecture technique are that in the classroom, students are less engaged and even creative in the learning process since I, as the teacher, am more dominant in the process. In the use of multimedia in the form of animated videos in the learning process, students pay more attention to the ongoing material because they see directly what the components of the ecosystem are without having to study outside of the classroom. Furthermore, students become active during the learning process because they can directly respond and respond. On the basis of the quality of the animated video display, namely the image display on the animated video, students are more attentive during the learning process. This is especially true for moving images. The impact of using multimedia in the form of animated videos on the learning process has a very positive effect on students because students can see firsthand the ecosystem material that should be viewed outside of the classroom but can be viewed in the classroom; in addition, the display of interesting animated videos such as a blend of live action and animation has a positive impact on students. Colors and dynamic images improve students' concentration. In addition, the material is delivered in the form of concise and understandable animated videos that facilitate student comprehension.

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