

Optimization of Photos and Videos as Science Media in Elementary Laboratory of Gorontalo State University

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Abstract

This study aims to determine the use of photo and video media in science learning at Elementary School Laboratory of Gorontalo State University, the role of photo and video media in helping students understand science learning materials at Elementary School Laboratory of Gorontalo State University and teachers' strategies in utilizing photo and video media to support science learning at Elementary School Laboratory of Gorontalo State University. This study uses a qualitative approach. The data collection technique is to conduct observations and interviews with teachers at the Laboratory Elementary School of Gorontalo State University. The results of the study show that the use of photos and videos can increase learning motivation, student involvement, and understanding of learning materials in a more interesting and easy-to-understand way. Visual media is also considered very relevant to the characteristics of students, including students with special needs, because it is able to create a more active, inclusive, and fun learning environment. In addition, teachers utilize various digital learning platforms such as Canva, Quizizz, and Nearpod to support the implementation and evaluation of visual media-based learning. However, there are several obstacles in its implementation, especially related to the instability of the internet connection. However, school facilities, teacher competence, and the implementation of learning strategies such as Project-Based Learning (PBL) support the effective use of these media.

Keywords: Photos, Videos, Learning Media, Science Learning.

Introduction

The development of information and communication technology in the digital era has brought significant changes in various aspects of life, including in the field of education. The learning process that was previously dominated by conventional methods is now transforming towards a more interactive, innovative, and technology-based approach. This change requires educators to be able to utilize various learning media that are relevant to the characteristics of students so that the learning process takes place more effectively and meaningfully.

In the context of basic education, the use of learning media has a very important role because elementary school students are at the stage of concrete operational cognitive development, where understanding of concepts is easier to obtain through visual experience and direct experience.

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Therefore, teachers need to present media that is able to bridge abstract concepts into more real and easy to understand. Engaging learning media not only helps improve student understanding, but can also foster learning motivation, increase active participation, and create a more enjoyable learning atmosphere.

One of the media that has great potential in supporting learning is photos and videos. Photos can present concrete visual representations of certain objects or phenomena, while videos are able to present information dynamically through a combination of images, sounds, and movements. In Natural Science (IPA) learning, the use of this kind of visual media is very relevant because many materials require observation of processes, events, or phenomena that are difficult to understand only through verbal explanations.

Elementary School Laboratory of Gorontalo State University (UNG) is one of the elementary schools that has a learning environment that supports the use of technology in the educational process. As a laboratory school integrated with higher education institutions, this school has adequate learning facilities as well as an academic culture that encourages innovation in learning. This condition makes the UNG Laboratory Elementary School a relevant location to study the optimization of the use of photo and video media in science learning.

Although photo and video media have been widely used in learning activities, their use is not necessarily carried out optimally according to the learning objectives to be achieved. In practice, the use of visual media is often still limited to complementary functions, not systematically directed to improve concept understanding, student involvement, and learning effectiveness. Based on these conditions, this study is focused on examining how to optimize the use of photos and videos as science learning media in SD Laboratory UNG.

This study aims to determine the use of photo and video media in science learning at Elementary School Laboratory of Gorontalo State University, the role of photo and video media in helping students understand science learning materials at Elementary School Laboratory of Gorontalo State University and teachers' strategies in utilizing photo and video media to support science learning at Elementary School Laboratory of Gorontalo State University. The results of this research are expected to make a practical contribution for elementary school teachers in developing more innovative learning, as well as becoming a reference for the development of technology-based learning media at the elementary education level.

The scope of this research is limited to the use of photo and video media in Natural Science learning at the Elementary School Laboratory of Gorontalo State University, with a focus on the effectiveness of its use in supporting the student learning process.

Methodology

This study uses a descriptive qualitative approach to describe the use of photos and videos as science learning media in the Elementary School Laboratory, Gorontalo State University. The research was conducted at the UNG Laboratory Elementary School with the research subjects of teachers and students involved in the science learning process. Data was collected through observation, interviews, and documentation. Furthermore, the data was analyzed using qualitative analysis techniques through the stages of data reduction, data presentation, and conclusion drawn.

The validity of the data is tested through triangulation of sources and techniques to ensure that the data obtained is in accordance with conditions in the field.

Results

The Use of Photo and Video Media in Science Learning in Elementary Laboratories, Gorontalo State University

The results of the study show that the use of photo and video media in science learning at the Elementary School Laboratory of Gorontalo State University has been actively implemented by teachers as part of the learning process. The teacher stated that the use of visual media helps create a more interesting and interactive learning atmosphere, because students show a positive response to the material presented through photos and videos. The use of this media is assessed in accordance with the needs of science learning which contains many concepts that require visualization.

In terms of competence, teachers feel that they have sufficient ability to utilize photo and video media. This is supported by previous experience in making learning videos and the habit of following the development of educational technology. In addition, the availability of existing media is considered to be in accordance with the applicable curriculum, especially in supporting learning outcomes and student needs.

However, there are several obstacles in the application of the media, especially related to the problem of unstable internet networks. This obstacle causes the process of video playback or image loading to be disrupted, which can hinder the course of learning. However, in general, teachers consider that as long as the media used is designed in an attractive and relevant way to the material, the learning process can take place well without significant obstacles.

The Role of Photo and Video Media in Helping Students' Understanding of Science Materials at Elementary School Laboratory, Gorontalo State University

The results of the study show that photo and video media have an important role in helping students understand science material. Teachers consider that visual media is very relevant to the characteristics of elementary school students, especially grade V students who tend to understand the material more easily through concrete and visual displays than through only verbal explanations. The presence of photo and video media helps students see firsthand examples or illustrations of learning materials so that the concepts conveyed become easier to understand.

The use of visual media also provides benefits for students with special needs, because it is able to increase focus on learning and reduce boredom during learning. In addition, the classroom atmosphere becomes more active and lively as students show higher enthusiasm as learning progresses.

To measure the effectiveness of the media used, teachers evaluate through assessments based on educational games such as Quizizz, Canva, Wordwall, and Nearpod. Through this method,

teachers can find out the level of students' understanding directly, identify parts of the material that have not been understood, and assess whether the media used is effective or still needs adjustment. Teachers also stated that the use of technology in general is very helpful in the learning process because it makes the delivery of material more varied, interesting, and easier for students to understand.

Teachers' Strategies in the Use of Photo and Video Media to Support Science Learning in Elementary Laboratories, Gorontalo State University

The results of the study show that teachers apply several strategies in optimizing the use of photo and video media in science learning. One of the strategies that is considered important is to improve teacher competence through practice-based training, especially training on the use of digital learning applications. Teachers consider this kind of training to be very helpful in improving the skills of creating and using learning media effectively.

In terms of institutional support, schools play an active role in providing supporting facilities and infrastructure such as LCDs, computers, and access to digital learning media. The support of this facility makes it easier for teachers to design and implement visual media-based learning.

In its implementation, teachers combine the use of photo and video media with the Project Based Learning (PBL) learning model. This model is considered effective because visual media can be used as a problem starter or initial stimulus, then students are invited to discuss, think critically, and complete learning projects based on the material that has been displayed. This strategy makes students not only passive spectators, but also actively involved in the learning process.

In addition, schools also apply a collaborative approach in the preparation of guidelines or operational standards for the use of photo and video media. The preparation is carried out through joint discussions between teachers and schools so that the rules for the use of media are in accordance with learning needs and can be applied effectively by all educators

Discussion

Based on the results of interviews with grade V teachers of SD Laboratory at Gorontalo State University, the use of photo and video media in science learning has a positive impact on the student learning process. The teacher explained that when visual media is used, students look more enthusiastic and more focused on learning. This response shows that photo and video media are able to attract students' attention, especially in science learning which often contains concepts that require visualization to make it easier to understand. These findings are in line with the research of Sablić et al. (2021) who explained that video-based learning can increase student engagement because information is presented in a more concrete and engaging way, thus helping the process of understanding the material.

In addition to increasing students' interest in learning, the results of the interviews also showed that the effectiveness of media use was influenced by teachers' readiness to utilize learning technology. The teacher said that he was quite used to using digital media and was able to adapt it

to the learning needs and the applicable curriculum. This shows that teacher competence is one of the important factors in the successful use of learning media. These findings are supported by research by Tondeur et al. (2021) which confirms that teachers' digital competencies play an important role in the effective integration of technology in the learning process.

On the other hand, technical obstacles in the form of internet network disruptions are still obstacles in the use of video as a learning medium. The teacher revealed that this condition sometimes interferes with the course of learning, although it can be overcome by preparing alternative material delivery. These findings show that the success of the use of digital media is not only determined by the ability of teachers, but also by the support of school infrastructure. This is in line with research by Ismiyanti et al. (2023) who found that the use of video media in learning will be more optimal if supported by the readiness of adequate technological facilities.

The results of the interviews show that photo and video media have a considerable role in helping students understand science material, especially in abstract material. The teacher explained that elementary school students are faster at grasping explanations when the material is presented in visual form than only through verbal explanations. In science learning, this becomes relevant because many concepts are difficult to understand if only explained verbally, such as natural processes, changes in the shape of objects, or scientific phenomena that cannot be observed directly in the classroom. With the help of photos and videos, the material that was initially abstract becomes more real for students. This condition is in line with the findings of Ismiyanti et al. (2023) who show that the use of video in elementary school learning can improve students' cognitive understanding because the information conveyed is easier to process through clear visualization.

In addition to helping the understanding of the material, teachers also see changes in students' learning responses during learning. Based on interviews, students become more focused, more active in answering questions, and more enthusiastic about participating in learning activities when photo and video media are used. Teachers also consider that visual media is quite helpful in dealing with the diversity of student learning characteristics, including students who understand the material more easily through the display of images or visual movements. These findings show that the use of visual media not only makes it easier to deliver material, but also creates a more lively learning atmosphere and encourages more active student engagement. This is in line with Sablić et al. (2021) who explain that video-based media is effective in increasing student attention and engagement because it combines audio and visual elements that make the learning process more engaging.

Another interesting finding from the interview results is the use of digital media that does not only stop at the delivery of material, but is also used in learning evaluation. Teachers use interactive quizzes based on educational games to see how well students understand the material they have learned. According to the teacher, this approach makes students more excited to participate in the evaluation because the assessment process feels like a game, not just doing a test. This shows that teachers are not only using technology as a presentation aid, but also as part of a more adaptive learning strategy. In this context, Tondeur et al. (2021) emphasized that effective technology integration in learning is greatly influenced by the teacher's ability to choose and use technology in accordance with pedagogical goals. This can be seen in the teacher's ability to adjust visual media and evaluation forms to students' learning needs.

Overall, the results of this study show that photo and video media provide real benefits in science learning in elementary schools. These media help students understand difficult concepts, increase engagement during learning, and make the evaluation process more interactive and fun. The most visible from the interview data is that the success of the use of media lies not only in the technology, but in how the teacher uses it appropriately according to the characteristics of the students and the learning objectives.

Based on the results of the interviews, the strategies carried out by teachers in increasing the use of photo and video media in science learning at the Elementary School Laboratory, Gorontalo State University showed that the success of the use of learning media did not only depend on the availability of technology, but also on the readiness of teachers and the support of the school environment. The teacher said that practical training is more needed because it provides direct experience in creating, managing, and using digital learning media according to material needs. This experience is considered to be able to increase teachers' confidence in applying technology during the learning process. These findings are in line with research by Rahayu et al. (2024) which shows that training with a collaborative, practical, and reflective approach is effective in improving the TPACK competence of elementary school teachers, especially in integrating technology into learning.

In addition to improving teacher competence, school facility support is also an important factor in supporting the use of photo and video media. Based on the interview results, the existence of LCDs, computers, and access to digital learning resources are very helpful for teachers in delivering material in a more visual and interactive way. This shows that the use of technology-based learning media requires adequate infrastructure support so that its implementation can run optimally. These findings are supported by Ismiyanti et al. (2023) who explain that the use of video media in learning has a positive impact on student learning outcomes when supported by the readiness of adequate learning facilities.

The results of the interviews also showed that teachers did not use photo and video media separately, but combined them with the *Project Based Learning* (PjBL) model. According to the teacher, this approach makes students more active in discussing, analyzing information, and being directly involved in learning activities. In science learning, this strategy becomes relevant because the material requires not only conceptual explanations, but also student involvement in the process of observation and problem-solving. These findings are in line with research by Kurniahtunnisa et al. (2020) which shows that the application of *Project Based Learning* is able to improve students' critical thinking skills and learning outcomes, because learning provides greater space for students to actively explore and build their own understanding.

In addition, the coordination between teachers and schools in compiling guidelines for the use of learning media shows that the use of technology has become part of a joint effort, not just an individual initiative of teachers. This approach is important because the use of learning media will be more effective when supported by clear planning and a conducive learning environment. As explained by Sablić et al. (2021), the effectiveness of video-based learning media is not only determined by the quality of the media used, but also by implementation strategies that are appropriate to the learning context.

Conclusion

The use of photo and video media in science learning at the Laboratory Elementary School of Gorontalo State University has been actively applied as a learning support media. The use of visual media has been proven to be able to create a more interesting learning atmosphere, increase student attention, and help teachers in delivering material more effectively. Although there are still technical obstacles, such as internet network disruptions, these obstacles can be overcome through the readiness of teachers in preparing alternative learning.

Photo and video media also have an important role in helping students' understanding of science material, especially abstract concepts. The presentation of material in visual form makes it easier for students to understand information, be more focused during learning, and be more active in participating in learning activities. In addition, the use of digital media also supports the learning evaluation process through the use of interactive quizzes that make students more enthusiastic in showing their understanding.

The strategies carried out by teachers in increasing the use of photo and video media are carried out through increasing competence in the use of technology, the application of appropriate learning models such as *Project Based Learning*, and the use of available school facilities. Coordination between teachers and schools in compiling guidelines for the use of learning media is also an important part in creating a more directed, effective, and appropriate use of media in accordance with the needs of science learning in elementary schools.

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