

THE INFLUENCE OF DIGITAL MEDIA ON LEARNING OUTCOMES OF SCIENCE MATERIAL EVALUATION IN ELEMENTARY SCHOOLS

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ABSTRACT

Technological advances have brought significant changes in the world of education, including in the teaching of Natural Sciences (IPA) in elementary schools. This study aims to analyze the effect of the use of digital media on the evaluation results of Natural Sciences (IPA) learning in elementary schools (SD). Digital media, such as interactive learning applications, animated videos, and online quizzes, are increasingly being used to support the learning process. This study used a quantitative method with a quasi-experimental design, involving two groups of fifth grade elementary school students, namely the control group with conventional methods and the experimental group using digital media. Data were obtained through pretests and posttests to measure the increase in understanding of science concepts in both groups. The results showed that students who learned using digital media experienced a significant increase in evaluation results compared to students who used traditional learning methods. In addition, digital media has been shown to increase student interest in learning and involvement in science learning. This study concludes that the integration of digital media in science learning can be an effective strategy to improve learning outcomes in elementary schools.

Keywords : *Digital Media, Evaluation Results, Science Learning, Learning Effectiveness.*

INTRODUCTION

The development of digital technology in recent years has had a significant impact on various fields, including education. Digital media has begun to be implemented as one of the strategies to support the teaching and learning process. Digital media includes various forms of technology, such as interactive videos, learning applications, virtual simulations, and online quizzes. The implementation of digital media is expected to be able to answer educational challenges, including improving the quality of learning at the elementary school level.

Natural Science (IPA) Education in Elementary Schools is one of the important fields of study that aims to build students' understanding of basic science concepts and develop critical thinking and problem-solving skills. However, science learning is often faced with challenges, such as limited learning facilities and infrastructure and less interesting teaching methods. In practice, science learning in elementary schools is still dominated by one-way lecture methods, which tend to make students passive and less motivated to understand the material being taught. As a result, the results of the evaluation of science learning are often not optimal. (Wulandari et al., 2023)

Digital media is present as one of the solutions to overcome these limitations. The advantages of digital media lie in its ability to present interesting visualizations, present information interactively, and provide a flexible learning experience that suits students' needs. In science learning, digital media can be used to simulate abstract concepts, such as the process of photosynthesis, water circulation, or electrical and magnetic phenomena, so that students can understand them more easily. In addition, digital media also allows teachers to deliver material more creatively, increase student involvement in learning, and accommodate various student learning styles. (Smith et al., 2020)

The results of learning evaluation are one of the main indicators for assessing the success of the teaching and learning process. Learning evaluation aims to measure the extent to which students are able to understand the material being taught and to identify which parts need to be improved. In science learning, evaluation results not only reflect students' mastery of science concepts, but also their ability to apply these concepts in real situations. However, evaluation results are often influenced by the learning methods used, such as conventional methods that are less interesting, resulting in low evaluation results, while innovative approaches, such as the use of digital media, are believed to be able to significantly improve evaluation results.

This study focuses on the analysis of the influence of the use of digital media on the results of the evaluation of science learning in elementary schools. This study is important because science learning requires an approach that is not only effective but also relevant to the needs of students in the

digital era. By using digital media, students are expected to be able to learn more actively, and can understand science concepts better, and improve their critical and creative thinking skills. In addition, this study is also relevant in supporting the implementation of the Independent Curriculum which encourages technology-based learning and student character development. In the Independent Curriculum, technology is considered an important tool to help teachers create an inclusive, adaptive, and interactive learning environment. Therefore, this study also aims to provide input for teachers and education policy makers on how to integrate digital media in science learning effectively. (Apriyanti et al., 2020)

Through this study, it is expected to obtain a clearer picture of the extent to which digital media can improve the results of science learning evaluations in elementary schools. The results of this study are also expected to contribute to the development of more innovative and technology-based learning strategies, so that science education in elementary schools can be more interesting, relevant, and meaningful for students. Thus, this study does not only focus on improving evaluation results, but also on developing the quality of science learning as a whole.

METHODS

This study uses a quantitative approach with a quasi-experimental design to examine the effect of digital media on the results of science learning evaluation in elementary schools. The subjects of the study were fifth grade elementary school students who were divided into two groups, namely the experimental group and the control group. The experimental group used digital media in learning, such as interactive videos, virtual simulations, and online quizzes, while the control group used conventional learning methods in the form of lectures and discussions.

Data collection was conducted through pretest and posttest using multiple-choice test instruments arranged based on HOTS (Higher Order Thinking Skills) thinking levels. The validity and reliability of the instruments were tested before use. Additional data in the form of observations and questionnaires were also collected to determine the level of student engagement during learning.

Data analysis was conducted using descriptive and inferential statistical tests. The t-test was used to compare posttest scores between the two groups, with the aim of determining whether digital media had a significant effect on the evaluation results. In addition, qualitative analysis was conducted to evaluate aspects of student motivation and engagement.

This method is expected to provide a comprehensive picture of the effectiveness of digital media in improving the results of science learning evaluations in elementary schools.

RESULTS AND DISCUSSION

This study aims to evaluate the effect of using digital media on the results of science learning evaluation at the elementary school level. The results of quantitative data analysis show significant differences between the experimental group (using digital media) and the control group (using conventional learning methods).

1. Pretest and Posttest Results

Before the treatment was given, the average pretest scores of both groups were relatively balanced, indicating that both groups had similar initial abilities. After the treatment, the experimental group showed a higher increase in posttest scores compared to the control group.

Table 1. Presents the average data of the pretest and posttest scores of both groups.

Group	Number of Students	Average Pretest	Average Posttest	Improvement
Control Group	30	61,2	71,8	10,6
Experimental Group	30	62,5	85,4	22,9

Based on these data, the experimental group experienced a more significant increase in evaluation results compared to the control group.

2. Statistical Test Results

The t-test was conducted to test the difference in the average post-test scores between the two groups. The test results showed a significant value ($p < 0.05$), which indicated that the use of digital media contributed significantly to improving student evaluation results.

3. Student Motivation and Engagement

In addition to improving evaluation results, qualitative data from observations and questionnaires showed that students in the experimental group were more motivated and actively involved during learning. Digital media, such as virtual simulations and interactive videos, made students more interested in following the lessons.

The results of this study support previous findings which state that digital media has a positive influence on learning, especially in improving student learning outcomes. (Arsyad, 2019; Widyatiningtyas & Herlina, 2021).

Digital Media and Understanding Science Concepts

Science learning often requires visualization to help students understand abstract concepts. In this study, the use of digital media such as virtual simulations allows students to understand scientific processes in a concrete and visual way. This is in line with the constructivist learning theory, which emphasizes the importance of direct experience in building student understanding. For example, the concept of the water cycle can be visualized with animations showing the movement of water from the ocean to the atmosphere and back to land. Students can see the process directly in a short time, making it easier to understand compared to just hearing a verbal explanation.

Increased Motivation and Engagement

Student learning motivation is an important factor in successful learning. Digital media, which presents materials in an interesting and interactive way, can increase student enthusiasm. In the experimental group, students were more active in discussing and answering questions during learning. This supports Warsita's research (2008), which states that digital media can increase student involvement in learning.

Challenges and Solutions

Despite the positive results, the implementation of digital media is not without challenges. Infrastructure limitations, such as internet access or technological devices, can be a barrier, especially in schools with limited resources. In addition, teacher competence in using digital media also needs to be improved through training and workshops. To overcome these challenges, the government needs to invest in providing technological facilities for schools. In addition, collaboration between schools, teachers, and digital education content providers is needed to ensure that the digital media used is in accordance with the curriculum and student needs.

CONCLUSION

This study shows that the use of digital media has a significant influence on the results of the evaluation of science learning at the elementary school level. Digital media, such as interactive learning videos, virtual simulations, and online quizzes, have been shown to improve students' understanding of abstract science concepts. The group of students who learned using digital media showed a greater increase in evaluation results than the group using conventional learning methods.

In addition to improving evaluation results, digital media also has a positive impact on student motivation and engagement during the learning process. Students become more enthusiastic and actively involved in learning because digital media presents materials in an interesting and interactive way.

This supports the theory that learning that is fun and relevant to students' needs can increase the effectiveness of the teaching and learning process. However, the implementation of digital media in learning also faces several challenges, such as limited technological infrastructure in schools and the need for teacher training to utilize digital media effectively. Therefore, collaborative efforts are needed between the government, schools, and related parties to provide adequate facilities and infrastructure, while improving teacher competence in using technology.

Overall, this study confirms that the integration of digital media in science learning in elementary schools is an effective strategy to improve the quality of learning. With the right support, digital media can be a powerful tool to help students understand the material, increase learning motivation, and achieve better evaluation results. These findings can be the basis for the development of technology-based education policies in the future.

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