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Implementation of Video-Based Hypermedia Learning in Science Material for Grade III Elementary Schools

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ABSTRAK

Penelitian ini memiliki tujuan untuk menjelaskan pelaksanaan penggunaan media hypermedia yang didasarkan pada video pembelajaran untuk materi Ilmu Pengetahuan Alam dan Sosial (IPAS) di kalangan siswa kelas III SD Negeri Deles 01. Metode yang digunakan dalam penelitian ini adalah pendekatan kualitatif deskriptif dengan total subjek sebanyak 18 siswa serta satu orang guru. Data didapatkan melalui kegiatan observasi, wawancara, dan dokumentasi, lalu dianalisis dengan teknik pengurangan data, penyajian data, serta penarikan kesimpulan. Temuan dari penelitian ini menunjukkan bahwa pemanfaatan video interaktif dalam pembelajaran IPAS dapat meningkatkan partisipasi siswa, mempermudah pemahaman terhadap konsep-konsep yang bersifat abstrak seperti siklus air, dan menciptakan suasana belajar yang menggembirakan. Siswa tampak aktif mengajukan pertanyaan, memberikan jawaban, serta dapat menjelaskan kembali materi yang telah ditonton setelah melihat video. Guru merasakan manfaat dari media ini karena memungkinkan penyampaian materi yang efisien dan menarik perhatian. Oleh karena itu, penggunaan media hypermedia berbasis video dianggap efektif untuk diterapkan dalam pembelajaran IPAS di tingkat sekolah dasar sebagai upaya untuk mewujudkan pembelajaran yang kontekstual, berbasis visual, dan sesuai dengan tahap perkembangan kognitif siswa.

Kata Kunci: hypermedia; video pembelajaran; IPAS.

ABSTRACT

This study aims to explain the implementation of the use of hypermedia media based on learning videos for Natural and Social Sciences (IPAS) material among third-grade students of SD Negeri Deles 01. The method used in this study is a descriptive qualitative approach with a total of 18 students and one teacher as subjects. Data were obtained through observation, interviews, and documentation activities, then analyzed using data reduction, data presentation, and conclusion drawing techniques. The findings of this study indicate that the use of interactive videos in IPAS learning can increase student participation, facilitate understanding of abstract concepts such as the water cycle, and create a joyful learning atmosphere. Students appeared active in asking questions, providing answers, and were able to re-explain the material they had watched after watching the video. Teachers felt the benefits of this media because it allows for efficient and attention-grabbing delivery of material. Therefore, the use of video-based hypermedia media is considered effective for implementation in IPAS learning at the elementary school level as an effort to realize contextual, visual-based learning, and in accordance with the stage of students' cognitive development.

Keywords: hypermedia; learning videos; science.

INTRODUCTION

Learning Natural and Social Sciences (IPAS) in elementary schools plays a strategic role in building students' foundational understanding of science and social life. In lower grades, such as third grade, the material presented includes abstract concepts such as the water cycle, changes in the state of matter, and human interaction with the environment. However, many students still struggle to grasp this material. This is due to the predominantly lecture-oriented learning methods and the use of textbooks (Firmansyah & Lestari, 2023).

According to Piaget's theory of cognitive development, students aged 8–9 are in the concrete operational stage, meaning learning is more effective when integrated with visual, tangible, and interactive media (Mayer, 2021). This is reinforced by Bruner's theory, which emphasizes the importance of enactive and iconic approaches in delivering material to elementary school-aged children (Susanto, 2022). In this context, the use of technology-based learning media such as hypermedia is a potential solution.

Hypermedia is an information presentation system that combines various media formats—such as text, images, sound, and video—in a single, interactive, non-linear display (Dewi & Astuti, 2021). The application of hypermedia in basic learning provides opportunities for students to develop understanding independently, at their own pace (Widodo, 2023). Furthermore, this model also encourages active student participation, in line with the principles of active learning in constructivism theory (Nurhidayati & Permana, 2022).

One of the most effective forms of hypermedia is interactive learning videos, as they can present complex concepts in dynamic and engaging visuals (Putra & Mustadi, 2022). Mayer's (2020) theory in Multimedia Learning states that learning will be more effective if information is presented verbally and visually simultaneously (dual-channel processing). Furthermore, cognitive load theory also asserts that video media can reduce cognitive load if designed with relevant visual and narrative elements (Andayani & Kurniawan, 2023).

A study by Wahyuni and Sari (2022) showed that interactive videos increased elementary school students' interest and motivation to learn by 45%. This indicates that students' emotional engagement in the learning process also increased through the use of this media. Furthermore, the use of video media in a hypermedia context has been shown to significantly improve student information retention (Maulidina & Ridwan, 2022).

However, the main challenges in implementing hypermedia media in the classroom are teacher readiness and ICT infrastructure in elementary schools (Pratama & Sulisworo, 2023). Many teachers have not received intensive training in developing and managing digital learning media, including interactive videos. Furthermore, limited equipment such as projectors, speakers, and internet access are also obstacles (Utami et al., 2021). Therefore, implementation studies are needed that focus not only on the media itself but also on how teachers integrate it into learning.

Two previous studies reinforce the urgency and relevance of this study. First, research by Dwiastuti (2021) showed that elementary school students understand scientific processes such as the water cycle more easily when using animated media compared to conventional lectures. Second, research by Firmansyah and Lestari (2023) found that the use of hypermedia-based videos can improve science learning outcomes by up to 31% compared to a control class.

Through this approach, students become not only passive recipients of information but also active participants in the learning process. Therefore, this study aims to describe the implementation of video-based hypermedia media in science learning in third-grade elementary school, with the hope of providing a concrete picture of its effectiveness and the challenges of its implementation in practice.

METHOD

This study used a descriptive qualitative approach to provide an in-depth description of the implementation of video-based hypermedia in science learning in third-grade elementary schools. This approach was chosen because the researchers wanted to explore

how the media was applied naturally in the classroom, how teacher-student interactions occurred during the learning process, and how students responded to and engaged with the media. The study was conducted at Deles 01 Public Elementary School, with 18 third-grade students and one science teacher as subjects. The subject matter covered was "The Water Cycle and Changes in the State of Matter," which is included in theme 6 of the Independent Curriculum Science textbook.

Data collection techniques included observation, interviews, and documentation. Observations were conducted to record student and teacher activities during the learning process using hypermedia videos. Interviews were conducted with teachers and several students purposively to obtain in-depth information about their experiences using the media. Documentation in the form of photographs and video screenshots served as supporting data. The data were analyzed through three stages: data reduction, data presentation, and conclusion drawing (Miles & Huberman, 2014). Data validity is maintained using source and technique triangulation techniques, namely carefully comparing the results of observations, interviews, and documentation to obtain an objective and accurate picture of the implementation of hypermedia video-based learning.

RESULTS

The implementation of video-based hypermedia learning for science in third grade at Deles 01 Public Elementary School was conducted over three sessions. The topic was "The Water Cycle and Changes in State of Matter." The teacher used a 7–10-minute interactive animated video that visually illustrated scientific processes such as evaporation, condensation, and precipitation. The video was interspersed with short questions, moving images, and explanatory text to reinforce student understanding. The teacher played the video using an LCD projector and directed students' attention to key points. Each session was interspersed with short discussions to encourage students to actively respond to and reason about the video's content.

Observations showed that students appeared enthusiastic during the lesson. Most students displayed interest and focus throughout the video. When the teacher asked questions about the video's content, most students were able to answer correctly. Of the 18 students, 14 actively raised their hands during the question-and-answer session, and 16 students were able to complete simple exercises based on the video without assistance. Documentation in the form of photographs shows that students not only passively watched but also took notes, pointed to parts of the video, and discussed with their classmates. Teachers were also seen actively guiding, emphasizing key points from the videos, and adjusting their explanations based on student responses.

Interviews with teachers revealed that the use of hypermedia-based videos was very helpful in explaining material that had previously been difficult for students. Teachers stated that the abstract concepts of "evaporation" and "condensation" became easier to understand because they were visualized in moving animations. According to teachers, students were also more active in asking and answering questions after watching the videos compared to when learning using lecture methods. Meanwhile, students interviewed said they enjoyed learning using videos because "the images and sound were clear" and "learning was like watching a cartoon, but they could understand why it rains."

In general, the implementation of video-based hypermedia media in third-grade science lessons had a positive impact on student engagement, conceptual understanding, and classroom interaction. All activities took place in an active, enjoyable, and communicative atmosphere. Data from observations, interviews, and documentation consistently

demonstrated an increase in student interest in learning and understanding of concepts presented through interactive videos.

The results of the study showed that the use of hypermedia media based on learning videos in the science subject of grade III SD Negeri Deles 01 had a positive impact on the learning process and outcomes of students. This finding was marked by high student participation in discussions, increased understanding of concepts, and an enthusiastic attitude during the learning process. Students' activeness in answering questions and their ability to work on problems after watching the video showed that the material was optimally absorbed through a visual and interactive approach.

The increase in student participation during the learning process is in line with the Cognitive Theory of Multimedia Learning by Mayer (2021) which states that learning is more effective when information is delivered in verbal and visual formats simultaneously. In this case, hypermedia videos provide dual representations — audio and visual — that can stimulate short-term memory work and integrate it into long-term memory. This is very helpful for grade III students who are still at the concrete operational stage, where understanding of the material will be better if delivered through real, dynamic, and interesting media.

Hypermedia videos also play a role in simplifying abstract concepts in science, such as the processes of evaporation, condensation, and precipitation. When the concept is visualized in the form of moving animation, students find it easier to associate the material with phenomena they see in everyday life, such as rain or dew. This finding is supported by research by Wahyuni & Sari (2022) which shows that the use of interactive videos in science learning can increase students' absorption by up to 45%, because it provides a concrete picture of previously abstract material.

In addition to improving understanding, the implementation of this media has also succeeded in creating a more lively and enjoyable learning atmosphere. Teachers are no longer the only source of information, but act as facilitators who help students interpret the contents of the video and build understanding through discussion. This approach is in accordance with the characteristics of 21st century learning which emphasizes collaboration, communication, creativity, and critical thinking (4C). Students appear to be more actively involved in learning, which shows that the use of hypermedia videos can support the achievement of these competencies.

This study also confirms the results of research by Firmansyah & Lestari (2023), which found that the implementation of animated videos in science learning significantly increased the motivation and learning outcomes of elementary school students. Their study involved 28 fourth-grade elementary school students and showed an increase in the average pretest and posttest scores of 22 points after using hypermedia-based videos. The same thing is reflected in this study, where students showed a better understanding, even being able to re-explain the water cycle process in sequence.

From the results of observations and interviews, it was also found that students were more comfortable and interested in learning using videos. Several students said that they felt like they were watching a movie, not studying. This indicates that hypermedia media has the potential to reduce student boredom with monotonous conventional learning. This is in accordance with the findings of Maulidina & Ridwan (2022) which showed that narrative and visual-based learning videos can create a pleasant learning atmosphere and increase elementary school students' interest in learning by 60%.

Furthermore, teachers also feel helped by the existence of learning videos because they can save time in explaining difficult concepts. Teachers can focus on clarification,

deepening the material, and facilitating discussions. This is in line with the results of research by Dwiastuti (2021), which states that teachers tend to find it easier to manage classes and deliver science material when using animated videos that are adjusted to students' cognitive levels.

However, the implementation of video-based hypermedia still faces several challenges, such as the availability of projectors, electricity, and sound quality. In this study, teachers anticipated these challenges by adjusting the video screening schedule and ensuring that the media was pre-tested before the lesson began. These challenges align with those expressed by Putra & Mustadi (2022), who stated that infrastructure readiness and teachers' digital literacy are crucial factors in the successful implementation of technology-based media in elementary schools.

Overall, the results of this study indicate that video-based hypermedia is not merely a supplement, but an effective primary medium for conveying complex and abstract science and science material to elementary school students. Learning becomes more visual, communicative, and meaningful. Video allows students to access information comprehensively, from both the process and the outcome, and facilitates various learning styles, including visual, auditory, and kinesthetic.

Taking into account the results of this research, theoretical studies, and previous findings, the use of hypermedia video can be recommended as a strategic alternative in science and science teaching in elementary schools. This medium can be integrated into daily lesson plans (RPP) and become part of a technology-based learning approach aligned with the Independent Curriculum, which encourages contextual, exploratory, and enjoyable learning.

CONCLUSION

Based on the results of the study, it can be concluded that the implementation of hypermedia media based on learning videos in the science subject of grade III SD Negeri Deles 01 is able to improve the quality of the learning process and students' understanding of the concepts taught. Students showed high enthusiasm when participating in learning, actively answered questions, and were able to re-explain the material presented in the video. Interactive video media provides strong visual support for abstract concepts such as evaporation, condensation, and the water cycle, making it easier for students who are at the concrete operational stage to understand.

Teachers also feel helped in delivering the material because the video shortens the explanation time and provides more space for student discussion and exploration. Data from observations show that out of 18 students, 16 students were able to answer questions correctly and actively participate. Interviews show that students feel that learning is more enjoyable and not boring. These results are in line with multimedia learning theory and previous research which confirms that video-based hypermedia media has high effectiveness in supporting meaningful learning at the elementary school level. Therefore, this media is worthy of being recommended as an alternative strategy for learning science that is contextual, interactive, and in accordance with the characteristics of lower grade students.

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