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Development of Animated Video Media to Improve Elementary School Students' Learning Comprehension

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ABSTRACT

This research is motivated by the lack of variety in the use of learning media in the subject of science and science on the topic of force in grade IV elementary school. The learning process is still dominated by lecture methods and the use of textbooks so that students are less active and have difficulty in understanding abstract material. Therefore, interesting and interactive learning media are needed to help students understand the material more easily. This research aims to: (1) develop Animaker-based animated video media on the topic of force for grade IV elementary school students, and (2) determine the level of feasibility of Animaker-based animated video media based on validation by material experts and media experts. This research is a research and development (R&D) using the ADDIE model limited to the analysis, design, and development stages. The analysis stage is conducted through observation, interviews, and learning needs analysis. The design stage includes the preparation of storyboards, materials, visual displays, and research instruments. The development stage is carried out by creating animated video media using the Animaker application and conducting media validation by material experts and media experts. Data collection techniques used observation, interviews, and validation questionnaires. The data obtained were analyzed using quantitative and qualitative descriptive analysis. The research results show that the Animaker-based animated video media for the topic of style was categorized as "Very Good" based on validation by material experts and media experts. The developed media was deemed appropriate for the learning outcomes and characteristics of elementary school students, and featured engaging visuals, audio, and animation. Animaker-based animated video media also helped students understand the topic of style more concretely and created a more active and enjoyable learning environment. Based on the research results, it can be concluded that the Animaker-based animated video media for style is suitable for use as a learning medium for fourth-grade elementary school science.

Keywords: *Animaker, Animated Videos, Learning Media, Science, Style Materials.*

INTRODUCTION

Developments in educational technology have significantly impacted the learning process in elementary schools. The use of technology-based learning media is one way to create more engaging, interactive, and student-centered learning. Learning media plays a crucial role in helping teachers deliver material more concretely, making it easier for students to grasp the

concepts being studied. This development aligns with the view that learning media helps students construct knowledge in various educational institutions worldwide, where technology makes media increasingly easy to use (Setyaningsih, 2023). Today, digital multimedia integration no longer includes just voice and text, but also includes full text, graphics, animation, images, and audio/video, which has had a tremendous impact on shifting educational issues (Setyaningsih, 2023). However, the reality on the ground presents significant challenges. The learning process in elementary schools still largely relies on lectures and textbooks as the primary learning resources. This situation leads to a lack of student interest and difficulty understanding the material, especially abstract topics such as the topic of force in science. The problem of student boredom and low learning achievement is often caused by teachers' teaching methods that lack variety and tend to be boring (Fitriani & Ridhani, 2025). Teachers often teach conventionally, resulting in students becoming fixated and less active (Fitriani & Ridhani, 2025). This lack of variety creates an urgency for teachers to be more creative in combining methods, media, and interactions to create an inclusive, adaptive classroom atmosphere that supports 21st-century skills (Arifin et al., 2025).

The need for interactive and adaptive digital media to facilitate multimodal learning is growing (Yasni et al., 2025). Traditional approaches are often considered ineffective in accommodating students' holistic developmental needs, encompassing cognitive, social, emotional, and motor skills (Nongko et al., 2025). Therefore, innovative learning models are needed that can increase children's engagement in a fun atmosphere (Nongko et al., 2025), as well as the implementation of problem-based learning strategies combined with instructional differentiation to create an interactive and motivating learning environment for students (Pawitra et al., 2025). Teachers play a role not only as instructors but also as role models in shaping students' emotional intelligence and character by creating a safe and supportive classroom environment (Septyventia et al., 2024). In today's digital era, mastery of digital technology and the ability to solve technical problems are important capacities that must be honed from an early age to be relevant to future demands (Vitariyanti et al., 2024). The use of advanced technologies such as shared virtual spaces or metaverses is even beginning to be developed to offer immersive and natural learning experiences as a future educational trend (Alhakimi, 2023).

Efforts to improve the quality of higher-level cognitive learning also require a systematic digital learning management strategy (Sasongko et al., 2025). The use of cloud computing-based technology has been proven to significantly improve the efficiency, effectiveness, and quality of student learning outcomes (Purnama et al., 2024). However, the use of this technology must not ignore the importance of appropriate guidance and control from an early age, considering that technology has become an integral part of the foundation for the formation of children's habits and character (Pinilih, 2023). On the other hand, conceptual challenges are still often encountered in digital learning assessments, particularly in authentically measuring cognitive regulation and metacognitive strategies (Buwono et al., 2025). This demands pedagogical innovations such as Game-Based Learning (GBL), which integrates systematic development models like ADDIE to increase motivation, engagement, and problem-solving skills (Raziana & Wibawanto, 2025). Educational technology also plays a vital role in facilitating post-pandemic screen-to-screen learning to improve learning outcomes according to students' needs and characteristics (Peramtasari, 2023).

Animated videos are a learning medium that can be used to help students understand material more concretely. Animated videos combine visual, audio, text, and animation elements, making learning more engaging and easier for students to understand. The use of animated videos also aligns with the characteristics of elementary school students, who tend to prefer interactive and colorful visual displays. Animaker is a digital-based application that can be used to create interactive and easy-to-use animated learning videos. This application

provides various features such as character animation, illustrations, audio, scrolling text, and visual effects to support the learning process. In this study, an animated video was developed using the Animaker application on the topic of stylistics for fourth-grade elementary school students. The developed media is equipped with subtitles, practice exercises, and reflective questions to encourage students to be more active in the learning process. This study aims to develop Animaker-based animated video media on the topic of stylistics for fourth-grade elementary school students and to determine the media's suitability based on validation results from media experts and material experts.

METHODS

This research used the Research and Development (R&D) method with the ADDIE development model, which includes analysis, design, and development stages. The ADDIE model was chosen because it has systematic stages and is easy to apply in developing learning media.

Analysis Phase

The analysis phase was conducted to identify learning needs, student characteristics, learning materials, and learning conditions at SD Negeri 4 Jatisrono. Observations showed that learning was still dominated by lecture methods and the use of textbooks, resulting in a lack of student engagement. Furthermore, students needed more engaging and interactive learning media to facilitate their understanding of the science material.

Design Phase

The design phase included formulating learning objectives, developing storyboards, designing visual displays, preparing learning materials, audio narration, and evaluation instruments. The media was designed using bright colors, engaging animated characters, and concise text to suit the characteristics of elementary school students.

Development Phase

The development phase was carried out by creating animated video media using the Animaker application. The resulting product was an MP4-format animated video containing force material, animated illustrations, audio narration, explanatory text, examples of real-life events, and reflective quizzes. At this stage, validation by material experts and media experts was also conducted to determine the feasibility level of the learning media. Data collection techniques included observation, interviews, documentation, and validation questionnaires. The research instrument employed a Likert scale to assess the feasibility level of the media based on evaluations from material experts and media experts.

RESULTS AND DISCUSSION

Results

1. Results of the Animated Video Media Development

The product developed in this study was an animated learning video on the topic of force for fourth-grade elementary school students. The media was created using the Animaker application in MP4 format, allowing it to be played on laptops, projectors, and smartphones. The animated video consisted of several main sections, namely the opening page, presentation of learning objectives, force material, animated illustrations, reflective quizzes, and closing section. The material presented included muscular force, frictional force, spring force, magnetic force, and gravitational force. The media was designed with an attractive visual appearance using a combination of bright colors, animated characters, concise text, and audio narration. In addition, the animated video media was equipped with subtitles and highlighted important text to help students understand concepts more easily. The material was presented gradually so that students could follow the learning process effectively.

2. Results of Material Expert Validation

Material expert validation was conducted to assess the suitability of the material content with the curriculum, conceptual accuracy, systematic presentation, and language usage. Based on the validation results, the animated video media obtained a “Very Good” category and was declared feasible for use in learning activities. The aspects assessed included: (1) Suitability of the material with learning outcomes, (2) Accuracy of force concepts, (3) Clarity of material presentation, (4) Suitability of learning evaluation, and (5) Use of communicative language. The material expert also provided several suggestions for improvement, such as simplifying sentences and adding contextual examples to make the material easier for students to understand.

3. Results of Media Expert Validation

Media expert validation was conducted to evaluate aspects of visual appearance, layout, interactivity, audio quality, animation, and ease of media use. The validation results indicated that the animated video media achieved a “Very Good” category. The aspects assessed included: (1) Visual appearance of the media, (2) Suitability of colors and layout, (3) Quality of audio and narration, (4) Suitability of animations, (5) Ease of media use, and (6) Suitability of the media with student characteristics. The media expert suggested adjusting the font size and optimizing animation transitions to improve viewing comfort.

Discussion

The findings of this study indicate that animated video media is feasible to be used as a learning medium for science subjects in elementary schools. The use of animated videos provides a more engaging learning experience because the material is presented through a combination of visual and audio elements simultaneously. These findings are consistent with Mayer's Multimedia Learning Theory, which states that students can understand material more easily when information is delivered through visual and verbal channels simultaneously. The use of animations, images, text, and audio narration helps students understand abstract concepts in a more concrete way. In addition to improving learning comprehension, animated video media also increases students' attention and learning motivation. Students become more actively involved in learning activities because the media presentation is attractive and not monotonous. The reflective quizzes included in the video also help students identify their level of understanding directly.

The implications of these findings strengthen the urgency of using integrated digital multimedia which is capable of presenting text, animation, images and audio simultaneously in order to encourage major changes in the effectiveness of science learning (Setyaningsih, 2023). The successful development of this Animaker-based animated video aligns with the effectiveness of interactive digital media based on systematic instructional design models—such as the Dick & Carey and ADDIE models—which have been shown to significantly increase student engagement and support creative thinking in 21st-century learning (Yasni et al., 2025). Through dynamic visual presentation, this animated video overcomes the weaknesses of conventional approaches, which tend to be monotonous and under-facilitate children's developmental needs (Nongko et al., 2025). Furthermore, the use of media combined with interactive methods has been shown to reverse the low classical student mastery levels caused by boring teaching methods, leading to optimal scientific understanding (Fitriani & Ridhani, 2025). The active engagement generated by the reflective quizzes in this media also supports the creation of a motivated learning environment, similar to the positive outcomes of the Problem-Based Learning model supported by differentiation (Pawitra et al., 2025).

From an educator perspective, teachers' development of independent media using applications like Animaker demonstrates that varied teaching through creative media

integration and interaction is key to reducing classroom boredom (Arifin et al., 2025). This also facilitates teachers in strengthening their role in the digital classroom, not only as content deliverers but also as facilitators who build emotional closeness and a supportive environment for students (Septyventia et al., 2024). In the modern era, students' ability to respond to digital technology-based media is a crucial initial asset for developing technical intelligence and future career readiness (Vitariyanti et al., 2024). In the long term, the development of interactive animated videos even lays the foundation for the adoption of more sophisticated and immersive educational technologies such as 3D virtual spaces or the metaverse (Alhakimi, 2023). The structured digital instructional management of Animaker videos reinforces the theory that systematic digital content management has a significant impact on improving students' higher-level cognitive processes (Sasongko et al., 2025).

The implementation of this media also emphasizes the benefits of the efficiency and effectiveness of digital technology in the classroom, such as the use of cloud computing-based technology that optimizes learning outcomes (Purnama et al., 2024). However, the use of digital media in elementary school children must still be accompanied by appropriate control and guidance from educators, so that character formation and learning habits in the digital era are meaningful (Pinilih, 2023). The development of this Animaker-based media also offers an alternative solution to conceptual challenges in digital assessment by providing reflective quizzes directly within the video, which helps bridge the gap in formative evaluation of students' cognitive regulation (Buwono et al., 2025). The product development structure, packaged through interactive visual elements, reflects authentic scenario-based pedagogical innovations such as Game-Based Learning, which has been proven successful in triggering motivation and problem-solving skills (Raziana & Wibawanto, 2025). Ultimately, the transformation from conventional learning to screen-to-screen media emphasizes the role of educational technology in facilitating and improving the quality of learning outcomes relevant to the characteristics of today's generation of learners (Peramtasari, 2023). The use of the Animaker application has proven to facilitate teachers' independent and sustainable production of digital learning media.

CONCLUSION

Based on the study results, it can be concluded that this study successfully developed an animated video learning media on the topic of force for fourth-grade students of SD Negeri 4 Jatisrono using the ADDIE development model. The animated video media was developed using the Animaker application in MP4 format, containing learning materials, visual illustrations, animations, audio narration, subtitles, and reflective quizzes. The results of material expert and media expert validations indicated that the animated video media obtained a "Very Good" category and was therefore considered feasible for use in the learning process. The animated video media was able to help improve students' learning comprehension through the presentation of material in a more concrete, engaging, and interactive manner. Furthermore, this multimedia integration provides strong theoretical and practical implications in bridging the gap between limited teaching variations and teachers, increasing motivation, and supporting the strengthening of 21st-century cognitive skills through systematic management of educational technology.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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