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Development of Video-Based Learning Media Using Sparkol Videoscribe on the Solar System Topic for Sixth Grade Elementary Students

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ABSTRACT

This study aims to develop a valid and effective video-based learning media using Sparkol Videoscribe for teaching the Solar System topic in the sixth-grade science curriculum at SD Negeri 1 Lawak. The research employed a 4D development model (Define, Design, Develop, Disseminate). Data were collected using expert validation sheets, student response questionnaires, and student activity observation forms. The validation results showed that the developed media was highly valid, with media expert validation scoring 96%, design expert validation scoring 96%, and content expert validation scoring 96.5%. Furthermore, the student response instrument achieved a score of 94.5%, and the student activity instrument scored 95.5%. The media was also considered effective based on students' active engagement and positive feedback during the learning process. Therefore, Sparkol Videoscribe-based learning media is deemed appropriate as an alternative instructional tool in science learning, particularly for abstract topics such as the Solar System.

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1. Introduction

The rapid development of information technology has brought significant changes to the field of education, including the learning process at the elementary school level. One of the major challenges in teaching Natural Sciences is delivering abstract material that is difficult for students to comprehend, such as the topic of the Solar System. This topic requires visual explanations to help students understand the concepts effectively (Sukerni, 2020). Unfortunately, the learning process is still largely dominated by lecture methods and the conventional use of textbooks, which tends to reduce students' interest and motivation to learn (Utami, 2021).

Instructional media plays a vital role as a supporting tool in the learning process. Well-designed and innovative media can help deliver information more effectively, accommodate various student learning styles, and enhance students' interest and understanding of the material being taught (Sadiman et al., 2011; Arsyad, 2020). Theoretically, instructional media refers to all forms of tools used in the teaching and learning process to transmit learning messages from the source (teacher) to the receiver (student), in order to make the learning process more effective and efficient (Arsyad, 2020; Sadiman et al., 2011). According to communication theory in education, media can also serve as a stimulus that helps students understand the material, as it engages their senses in absorbing information.

Instructional media can be classified into three main categories: (1) audio media, which rely solely on sound, such as radios and audio recordings; (2) visual media, which use only images or text such as posters, pictures, and maps; and (3) audiovisual media, which combine both sound and visuals simultaneously, such as educational videos, animations, and films (Miftah, 2021). Selecting the appropriate type of media is crucial to ensure that it supports the learning objectives and aligns with students' characteristics. Various studies have shown that visual media can bridge students' understanding of abstract concepts by presenting content in an engaging and contextualized manner (Fitriani & Sari, 2021; Handayani & Putra, 2020).

One of the rapidly growing media in recent years is instructional video based on the Sparkol Videoscribe application. This application enables the delivery of material through animated whiteboard visuals that integrate text, images, narration, and motion. Such media has proven to improve learning outcomes and student participation (Agustina & Permana, 2022; Prasetyo & Mulyani,

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2021). Sparkol Videoscribe is also known for its accessibility and ability to deliver content interactively, thus increasing students' attention and focus (Kustandi & Darmawan, 2018).

Previous studies have shown that the use of instructional video media can positively impact student achievement, especially when delivering conceptual and visual materials such as the Solar System (Wibowo & Astuti, 2020; Maulida, 2021). Moreover, interactive video learning also increases student activity and supports teachers in presenting material in a more structured and enjoyable way (Rahmawati, 2019. Studies also reveal that the use of animated videos can motivate students to be more actively involved in the learning process (Wijaya & Lestari, 2023).

These findings highlight the opportunity to integrate media technology into science learning to make the teaching and learning process more effective and meaningful. This study focuses on developing a Sparkol Videoscribe-based instructional video that is valid and effective in supporting the teaching of science material on the Solar System in grade VI of elementary school. The uniqueness of this research lies in the application of technology-based media that has not been widely implemented in science learning at the elementary level, particularly at SD Negeri 1 Lawak. The objective of this research is to produce an instructional video that has been validated and proven effective, as well as to evaluate student engagement and responses during the learning process. Therefore, the results of this study are expected to contribute to the development of technology-based instructional media and serve as a reference for teachers in improving the quality of science education.

2. Methods

This study employed a research and development (R&D) method using the 4D model, which consists of four stages: Define, Design, Develop, and Disseminate. The purpose of this research was to develop an instructional video based on Sparkol Videoscribe for teaching the Solar System topic to sixth-grade elementary school students.

Data collection techniques included observation, interviews, expert validation questionnaires, and learning outcome tests. Observations were conducted to identify the initial conditions of the learning process, while interviews with the sixth-grade teacher were carried out to obtain supporting information regarding the need for instructional media. Validation questionnaires were distributed to subject matter experts and media experts to assess the feasibility level of the developed product. The learning outcome test was used to determine the effectiveness of the instructional video.

The collected data were analyzed using descriptive quantitative analysis techniques. Validity analysis was performed by calculating the average score from the expert validation questionnaires. To measure the effectiveness of the media, a comparison between the students' pretest and posttest results was used. The research was conducted at SD Negeri 1 Lawak with a total of 15 sixth-grade students as the experimental group.

3. Result and Discussion

Result

The results of this study indicate that the video-based learning media developed using Sparkol Videoscribe underwent a validation process by subject matter experts, media experts, and design experts, as well as instrument validation for student response and activity questionnaires. Based on the validation results, the media expert validation received a score of 96% (classified as "very valid"), the design expert validation also received 96% ("very valid"), and the subject matter expert validation received the highest score of 96.5% ("very valid"). In addition, the validation of the student response instrument scored 94.5%, and the student activity instrument scored 95.5%, both categorized as "very valid".

Based on these findings, the Sparkol Videoscribe-based learning media is considered highly feasible for use in teaching science on the topic of the Solar System, as it has met the eligibility criteria according to expert evaluations and the instruments used in this study.

Table 1. Summary of Validation Results

No	Validation Aspect	Score	Category
1	Media Expert	96	Highly Valid
2	Design Expert	96	Highly Valid
3	Subject Matter Expert	96,5	Highly Valid
4	Student Response Instrument	94,5	Highly Valid
5	Student Activity Instrument	95,5	Highly Valid

Source: Sekar Diah Ayu Dinuli, (2025).

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The media was then tested on 15 sixth-grade students to evaluate its effectiveness in improving learning outcomes and student engagement. The average pre-test score was 59, while the post-test average reached 84, indicating an improvement of 25 points. Additionally, the results of student questionnaires indicated a very positive response and high engagement with the use of the media.

Table 2. Average Test Scores and Student Questionnaire Results

No	Data Type	Average Score (%)	Category
1	Pre-Test Score	59	-
2	Post-Test Score	84	-
3	Score Improvement	25	-
4	Student Response	89%	Very Good
5	Student Activity	92,67%	Very Active

Source: Sekar Diah Ayu Dinuli, (2025).

The results of the student response questionnaire toward the learning media showed an average score of 89%, categorized as “very good”, while the student activity questionnaire received an average score of 92.67%, categorized as “very active”. These results indicate that the media is not only effective in improving learning outcomes, but also well-received by students during the learning process.

Figure 1. Opening Screen Display.

Source: Sekar Diah Ayu Dinuli, (2025).

The video begins with an opening screen that displays the media title and subject identity, accompanied by dynamic animations of the solar system and educational background music. This introductory segment is intended to capture students' attention and foster engagement prior to the presentation of the core material.

Figure 2. Start Screen Display

Source: Sekar Diah Ayu Dinuli, (2025).

Following the opening screen, the video directly presents the initial display containing the lesson title, “Science Learning Media: Solar System Material”, along with engaging visual illustrations such as images of the sun, planets, and their orbits. This display is automatically generated using animations from Sparkol VideoScribe without the need for navigation buttons. There are no interactive elements such as a “START” button or help icons, as the entire instructional sequence is designed to run automatically and linearly from the introduction to the closing section. This approach facilitates students in following the material in a structured and sequential manner without requiring direct interaction with the media. The initial display functions as an introduction before transitioning into the core content, which is delivered visually and narratively through whiteboard animation.

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Figure 3. Display of learning objectives on the Solar System

Source: Sekar Diah Ayu Dinuli, (2025).

The objective page presents the learning goals that students are expected to achieve after using the instructional media. These goals outline the competencies targeted as outcomes of the learning process facilitated by the developed media.

Figure 4. Learning material display: Definition of the Solar System

Source: Sekar Diah Ayu Dinuli, (2025).

The content page presents instructional material on the Solar System, covering its definition, components, characteristics of the planets, as well as the movements of the Earth and Moon and their effects on life. All materials are systematically structured to support students' understanding of fundamental astronomical concepts in alignment with the learning objectives.

Figure 5. Learning material display: Components of the Solar System

Source: Sekar Diah Ayu Dinuli, (2025).

The background image displays a complete illustration of the Solar System, featuring a large Sun in the lower-left corner and planets orbiting around it in proper sequence. This visual representation is intended to support students' understanding of the composition of the Solar System.

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Figure 6. Display of material on the characteristics of planets

Source: Sekar Diah Ayu Dinuli, (2025).

The image presents information on the characteristics of the planets through engaging visual illustrations accompanied by bullet-point texts. This visual aid is designed to help students better understand the unique features of each planet in a clear and structured manner.

Figure 7. Display of material on the movements of the Earth and Moon and their impacts

Source: Sekar Diah Ayu Dinuli, (2025).

The image illustrates the movements of the Earth and the Moon along with their impacts on life on Earth. This visual aid helps students understand that the Earth and the Moon are constantly in motion and explains the effects of these movements on daily life, such as the occurrence of day and night and the phases of the Moon.

Figure 8. Display of material on the benefits of the Solar System for life

Source: Sekar Diah Ayu Dinuli, (2025).

The image presents information about the various benefits of the Solar System for human life. This visual aims to promote understanding that the Solar System is not merely a system of celestial bodies, but also has direct impacts on daily life, such as providing light, heat, and time regulation.

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Figure 9. Display of the material summary

Source: Sekar Diah Ayu Dinuli, (2025).

Figure 10. Closing display

Source: Sekar Diah Ayu Dinuli, (2025).

The summary and closing sections present a conclusion of the material that has been learned. This component is designed to reinforce students' understanding of key concepts related to the Solar System. Following the summary, the closing section serves as the final part of the entire instructional sequence within the media.

Discussion

Based on expert validations subject matter, media, design, and instruments he instructional video developed using Sparkol Videoscribe is highly suitable for science learning. All validation aspects scored above 86%, indicating that content quality, visual design, and assessment tools meet the criteria for effective learning media (Kustandi & Darmawan, 2018).

The effectiveness of the media is also reflected in the significant increase in students' post-test scores, with an improvement of 25 points from the pre-test. This suggests that the media helped students grasp abstract science concepts more effectively. This finding aligns with Fitriani and Sari (2021), who noted that interactive visual media enhances students' conceptual understanding. Similarly, Sadiman et al. (2011) emphasized that visual media strengthens memory and clarifies concepts, contributing to more meaningful learning experiences. Rahmawati (2019) also confirmed that animated media boosts student motivation and engagement. In line with this, Wijaya and Lestari (2023) found that interactive videos significantly improve student focus and learning motivation.

Student responses and activity levels further support the media's effectiveness. Students showed strong enthusiasm and active participation throughout the lessons. This is consistent with Ramadhani and Yuliani (2022), who reported that whiteboard animation media promotes greater student engagement. Wibowo and Astuti (2020) also demonstrated that video-based learning media motivates students to stay focused. Additionally, Handayani and Putra (2020) showed that video media positively influences students' understanding of abstract science concepts.

The shift from verbal to visual and interactive learning fosters a more engaging and enjoyable classroom atmosphere. Thus, the findings of this study confirm that the developed instructional video is not only valid in terms of content and presentation, but also effective in enhancing student learning outcomes and experience. This addresses the research problem while highlighting the advantages of digital media over conventional instruction and reinforcing the urgency to adopt innovative digital technologies in elementary science education (Prasetyo & Mulyani, 2021; Nurfadillah & Syamsuar, 2020).

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4. Conclusion

This study produced a Sparkol Videoscribe-based instructional video that is valid and effective for teaching the Solar System topic in sixth-grade science. The validation scores from media, design, and content experts were 96%, 96%, and 96.5%, respectively, indicating a high level of feasibility. Student response results showed a practicality percentage of 94.5%, while student activity reached 95.5%. These findings suggest that the developed media significantly enhances student engagement and comprehension of abstract concepts. The implementation of the media also supports the achievement of learning objectives through a visual-interactive approach aligned with the characteristics of elementary school students. Therefore, this media is feasible to be used as an innovative alternative in science learning and is recommended for broader implementation as part of the digital transformation of elementary education.

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