


Technology-Based Solar System Learning Media For Grade 6 Elementary School Students

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Article Info	ABSTRACT
Corresponding Author: Name of Corresponding : Handriana Naurah Ihram E-mail: handriananaura86@gmail.com wahyunaura84@gmail.com	The Solar System is a lesson that teaches various knowledge about the collection of celestial bodies consisting of a star called the Sun and all objects bound by its gravity. However, because many of the lessons implemented today still rely on traditional learning, students' interest in participating in this lesson is still low. Replacing this learning model with a more active, creative, effective and fun learning model to increase student interest in learning, improve student learning outcomes, increase student development activities and build existing potential, so that it is expected to increase the potential. Keywords: Solar system, multimedia, learning, gravity, students, lessons

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INTRODUCTION

Education is an important foundation in developing student potential, and the use of innovative learning media can increase the effectiveness of the learning process. One of the interesting topics to study is technology-based solar system learning media, especially for grade 6 elementary school students. At this level, students enter the stage of introduction to more complex concepts, such as the solar system, which involves understanding the planets, celestial bodies, and the interactions between them. Therefore, this study aims to explore the implementation of technology-based learning media as an effective means in facilitating students' understanding of the concept of the solar system. The use of technology is expected to provide an interesting and interactive learning experience, help students develop a deeper understanding, and stimulate their interest in science and astronomy. This research not only involves exploring the effectiveness of these learning media, but also evaluating their impact on the achievement of learning objectives, especially at the grade 6 elementary school level.

(Dwi suhartanti, 2008.) explained that the solar system as a system consisting of the center of the Sun and the celestial bodies that surround it. objects include 8 planets, moons, asteroids, and more. The eight planets include Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

The learning process in the classroom requires the teacher's ability to master the right material and learning methods so that boredom and boredom do not occur for students in the next learning process. For this reason, learning devices are needed using interactive media (Deti Nurhamidah et al., 2022) (Deti Nurhamidah et al., 2022)

METHOD

The qualitative method of data analysis was sourced from a review of journals on learning media and solar systems at the elementary school level. This research adopts qualitative methods in data analysis, which focuses on a deep understanding of learning media and solar systems at the elementary school (SD) level. The main source of data was obtained from journal reviews, showing that this study utilizes the latest scientific literature to understand and summarize relevant information about these two aspects. Using qualitative methods, this research focuses

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on the interpretation of meaning and context from data, so as to provide deep insight into the influence of learning media and students' understanding of the solar system. The focus of research at the elementary level shows a tendency to understand how specific learning methods and materials can be effectively applied in the context of primary education.

RESULTS AND DISCUSSION

Media is the plural form of medium and comes from the Latin word *medius* which means between. In Indonesian, the word average is interpreted as "medium" or "average" (Latuheru, 1988). Sadiman (2008) explained that learning media is everything that can be used to convey messages from sender to message recipient. Based on this statement, it can be concluded that teaching aids are tools used by teachers as teaching aids.

In general, the advantage of learning media is to create good interaction conditions between teachers and students, with the aim of helping students learn optimally. However, the special advantages of learning media have been emphasized by Kemp and Dayton (1985), namely: (1) The learning process becomes more interesting. (b) The learning process becomes more interactive. (3) Teaching and learning time can be shortened. (4) The quality of student learning can be improved. (5) The role of teachers can develop in a more positive and effective direction. According to Seels & Glasgow (1990), interactive learning media is an instructional delivery system that presents video recording material with computer control to the audience (students), who are not just listening, watching video and audio. (Retnoningsih, 2016)

Members of the solar system include: 1. Planet, A planet is a celestial body that orbits the sun and has a fixed orbit and has eliminated other objects around its orbit. 2. Asteroid, An asteroid is a planet-like object but smaller in size and cannot escape from other objects around its orbit. The orbit of the asteroid is found between the planets Mars and Jupiter. Pluto, which is no longer a member of this planet, is also classified as a dwarf planet / asteroid even though it is not in an orbit between Mars and Jupiter. Asteroids destroyed by impact will turn into meteorites. 3. Comet, A comet is a tailless celestial body that orbits the sun in an oval-shaped orbit. 4. Meteor, Meteorite is a celestial body that moves freely. Meteorites come from fragments of comets, asteroids or other celestial bodies destroyed by impact or other impacts. (Rozie et al., 2013)

Learning media is an intermediary or communication tool to convey messages to help students understand and achieve their learning goals (Anwas, 2011). By using learning media will become more interesting and no longer monotonous. Students can also participate directly in using media to be more active and the classroom atmosphere becomes more enjoyable. Based on this statement, teachers are obliged to develop learning materials according to the learning needs of their students (Takhta Akrama Ananda1, n.d.). Below are some interactive learning materials that can be applied to material about the solar system.

1. Media pop up book, (Jurnal et al., 2020) The pop-up book media developed has three-dimensional elements. Visually, 3D media has several functions, namely the attentional function to capture students' attention, the emotional function as evidenced by the enjoyment of learning and reading, and the compensation function to provide context. Help students understand what they read (Septian & Tampubolon, 2015). Pop-ups can be manipulated using a variety of techniques. The pop-up techniques used to create solar system-themed pop-up books are: (1) transformation, or vertical pop-up; (2) peeking, or stacked paper pop-ups. Creating the illusion of depth and perspective. (3) Pop-up with pull-out tab, sliding paper that can be pulled or pushed, creating movement in the image.
2. Interactive multimedia of the solar system (Najib et al., 2023) based on scientific expertise. The target audience of this product is 6th grade elementary school students. This product development goes through three main phases: the planning, design, and development phases. Through multimedia learning, students can see realistic visual representations of fascinating and planets in the solar system. They were able to observe the orbits of planets and record the relative sizes between the planets. It allows students to visualize abstract concepts in a more concrete and tangible form. This multimedia presents material on the size of each planet using actual comparisons so as to provide a visual experience that allows students to imagine situations in space more realistically. This multimedia content also

provides an overview of the quiz combination and the final result, encouraging students to read and listen to each material more carefully until achieving high scores on the quiz. (Sahari & Wahyudi, 2020)

3. *Videoscribe*, Yuni Sartika (2016) which uses Android-based *Augmented Reality* media on solar system material improves students' critical thinking skills. This proves that audio-visual media can make students more enthusiastic and easy to understand the subject matter of science material material Solar system. Minarni (2016) suggests that because *Videoscribe* media is a simple media and can be developed by teachers themselves, *Videoscribe* is very easy to create and does not require special skills so that teachers can quickly come up with interesting ideas that are suitable for learning. (Fransisca, 2018) *Videoscribe*'s distinctive look is like when a teacher writes on a whiteboard with stationery and then displays and pastes the pictures in the video by hand - so it is very unique and attracts the attention of students. To make it very simple, users can simply insert images and fonts into the canvas as they wish. Therefore, teachers can develop video media with the *Videoscribe* application to explain or illustrate complex and abstract concepts in science learning.

The results showed that the use of technology-based learning media significantly increased students' understanding of the concept of the solar system. Data collected from pre- and post-intervention comprehension trials showed significant score improvements. In addition, student responses to the use of technology learning media were generally quite positive, with the majority of students stating that this approach made the material more engaging and easy to understand.

The success of technology-based learning media in increasing student understanding can be explained by several factors. First, visualization of the solar system through animations, drawings, and interactive simulations provides a more real learning experience and makes it easier for students to form concepts. Second, technology learning media allows students to actively participate in learning, increasing student motivation and engagement. Furthermore, students' positive response to technology media indicates that generations who grew up in the digital age may be more responsive to learning approaches that utilize technology. However, it is important to note that the successful implementation of this learning media also depends on the support and understanding of teachers in guiding students in their use. Therefore, this discussion highlights the importance of training for teachers to integrate technology learning media effectively in the grade 6 primary school curriculum.

CONCLUSION

This research provides an interesting and useful picture related to the implementation of technology-based solar system learning media for grade 6 elementary school students. The results showed that the use of technology in the learning process can significantly improve students' understanding of the concept of the solar system. This learning medium not only provides visually attractive information, but also stimulates students' curiosity, helps them relate theory to reality, and increases active involvement in learning. In addition, the positive response from students to the use of technology shows that this approach fits the preferences of generations who grew up in the digital age. Therefore, the recommendation to integrate technology-based solar system learning media in the grade 6 primary school curriculum becomes relevant, taking into account the necessary support from educators and relevant stakeholders. It is hoped that this research can contribute to the development of more effective and interesting learning strategies in the context of understanding astronomical concepts at the basic level.

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