ALJABAR
Journal of Mathematics Education

Vol.xx No.xx Bulan 2024 Hal.61-66
ISSN : xxxx-xxxx | *E-ISSN* : xxxx-xxxx
DOI : xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
https://journal.cerdasnusantara.org/index.php/aljabar

Article History
Submitted: 21 Oktober 2024
Accepted: 12 November 2024
Published: 31 Desember 2024

ANALYSIS OF THE EFFECTIVITIVENESS OF USING VISUAL MEDIAON SYMMETRY MATERIAL IN ELEMENTARY SCHOOL

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ABSTRACT

This research aims to examine the effectiveness of using visual learning media, especially folding and rotating symmetry boards, in increasing students' understanding of the concepts of folding and rotating symmetry at SD IT Tunas Insan Scholar, Tanjung Bintang. The methods used include interviews with teachers and analysis of related literature to obtain comprehensive data. The research results show that the use of visual media significantly increases students' interest and motivation to learn. Students become more enthusiastic and active in learning, and show increased understanding of the concept of symmetry. This media allows students to interact directly with the material, so they can understand concepts concretely and encourage creativity in creating symmetrical patterns. Although there are challenges, such as lack of attention from some students, the benefits of using visual media are much greater. This research concludes that the integration of visual learning media in the educational curriculum can make a positive contribution to students' understanding in the field of geometry. It is hoped that these findings can become a reference for teachers and curriculum developers in implementing more interactive and effective learning methods, as well as enriching students' learning experiences at the elementary level.

***Keywords*: visual learning media, folding symmetry, rotational symmetry, mathematics education**

A. INTRODUCTION

Education is a conscious effort to transfer culture from one generation to the next. The educational process takes place in a learning environment that allows students to actively develop their potential, including spiritual strength, self-control, personality, intelligence, good morals, and skills needed by individuals and society. (Rahman et al., 2022). Furthermore, Law No. 20 of 2003 on the National Education System explains that education is "a conscious and planned effort to create a learning atmosphere that enables students to develop their potential." Quality education is crucial for the progress of the nation, and the use of effective learning media can help achieve that goal. Learning media, especially visual media, play an important role in stimulating students' interest, motivation, and participation.

According to Sanjaya (2008:211), visual media are media that can only be seen, without any sound elements. According to Arsyad (2013), visual media help provide concrete illustrations that facilitate the understanding of abstract concepts. Sehuni et al. (2020) also state that visual media allows students to understand the material more thoroughly because it can be enjoyed by the five senses. Because of this, the utilization and use of visual media can facilitate the learning process and provide optimal learning outcomes for students.

Therefore, the use of visual media in elementary schools has a significant impact on learning activities. However, in reality, the implementation of this media has not been

running well in many schools in Indonesia, due to limited facilities and infrastructure as well as the lack of creativity among educators in managing learning. The appropriate learning media greatly influences students' learning outcomes, with visual media considered the most effective. According to Supriyono (2018), the use of learning media can aid in the psychological development of children and facilitate the learning process. This media makes it easier for students to understand abstract concepts and makes them more tangible. Teachers need to understand the material to be taught and choose appropriate media. (Nurfadhillah, 2021).

Elementary education plays a crucial role in forming the knowledge base of students, including symmetry lessons in mathematics, which are also important for developing logical and visual thinking skills. Considering that students find it easier to understand abstract concepts through visual approaches, the use of visual learning media becomes an effective solution for teachers. This media allows students to see and practice concepts directly, thereby enhancing their understanding and engagement. The aim of this research is to analyze the effectiveness of using visual learning media in symmetry lessons at elementary schools, with the expectation of providing insights into the positive impact of visual media on students' understanding and learning outcomes, as well as offering recommendations for the development of better teaching methods in the future.

B. RESEARCH METHOD

Metode penelitian ini menggunakan pendekatan kualitatif dengan desain studi kasus di mana subjek penelitian adalah siswa kelas tiga SD IT Tunas Insan Cendekia Tanjung Bintang di Lampung Selatan. Este estudio tiene como objetivo medir la efectividad del uso de medios de aprendizaje visual en forma de tableros plegables y de simetría rotacional, diseñados específicamente utilizando modelos plegables y de simetría rotacional en las escuelas primarias. Además, esta investigación también recopila varios diarios y artículos como referencias e información adicional para el estudio realizado. La técnica de análisis de datos se llevó a cabo de manera exhaustiva utilizando un enfoque de triangulación, que incluyó entrevistas con maestros de escuela primaria. Las entrevistas fueron semiestructuradas, lo que significa que fueron más flexibles en su ejecución en comparación con las entrevistas estructuradas.

C. RESULTS AND DISCUSSION

In the context of this academic research endeavor, we meticulously designed and developed innovative teaching media, specifically in the form of foldable symmetry boards and rotational symmetry boards, which were strategically engineered with the objective of significantly enhancing students' comprehension and mastery of the intricate subject matter pertaining to symmetry. The following section presents a comprehensive documentation of the educational media that we have rigorously created, outlining the methodologies applied and the anticipated impact on student learning outcomes.

Figure 1. Foldable symmetry board

The data collected from the interview with a teacher at SD IT Tunas Insan Cendekia, Tanjung Bintang, will be summarized into key points relevant to the research objectives. The interview was conducted on September 25, 2024, at SD IT Tunas Insan Cendikia. The questions asked were related to the students' level of understanding, facilitating students' comprehension, students' responses, ease of media usage, integration challenges, improvement in students' learning outcomes, deep understanding, and students' creativity. The collected data will be categorized and presented in table form to facilitate analysis.

Table 1. Interview Results with the Resource Person

Observation	**Observation Results**
Understanding Student	Students showed an improvement in understanding the concept of symmetry after using the fold-and-turn symmetry board media.
Student Response	Students are more enthusiastic and interested when learning using attractive colored media.
Ease of Media Use	This media is easy to use by teachers because the materials and the method of making it are simple.
Integrity Challenge	There are challenges when integrating this media, such as some students not paying enough attention.
Improvement of Student Learning Outcomes	There is an improvement in learning outcomes evident through student presentations, showing a better understanding.
Deep Understanding of Students	Students understand the material of reflective and rotational symmetry more quickly and deeply compared to other methods.
Student Creativity	This media encourages students to be more creative in creating their own symmetrical patterns.

Based on the results of an interview conducted with a teacher, it shows that the use of folding and rotating symmetry boards significantly enhances students' understanding of the

concept of symmetry. The teacher observed that students became more knowledgeable after using these media, as attention-grabbing media can help them understand the material better. Students not only listened to the theory but also interacted directly with the media, allowing them to see and feel the concept of symmetry concretely. Students' response to the use of folding and rotating symmetry boards was also very positive. They showed high enthusiasm while learning, especially because the media used was colorful and engaging. This contributes to student engagement in the learning process, where each student can directly practice the concept of symmetry. The teacher noted that this media made students more active and engaged in discussions, increasing their learning motivation.

From the teacher's perspective, the use of folding and rotating symmetry boards is not too difficult. The materials for making this media are simple and easy to obtain, so teachers can easily integrate it into daily lessons. However, the challenge faced is that some students are less attentive and more preoccupied with their own worlds, which can disrupt the learning process. The teacher also observed an improvement in students' learning outcomes after using this media. Each student can present the material that has been taught, demonstrating a deeper understanding of reflective and rotational symmetry. Additionally, this media helps students develop creativity in creating their own symmetrical patterns and enhances their spatial abilities in recognizing symmetry. Although there are challenges related to the media materials being easily damaged, the teacher recommends replacing them with stronger materials, such as plywood. Overall, the teacher highly recommends the use of this media in the future because it can attract students' interest and deepen their understanding of symmetry material.

The research results presented in Table 2 below provide information on the effectiveness of visual learning media in learning reflective symmetry and rotational symmetry, compiled based on the analysis of several previous articles.

Table 2. Results of Previous Research

Article	**Main Focus**	**Advantages of Using Visual Media**	**Potential Shortcomings**	**Relevance to the Concepts of Reflective Symmetry and Rotational Symmetry**
The Influence of Visual Media Use and Student Learning Interest on Mathematics Learning Outcomes	The Influence of Visual Media on Interest in Learning Mathematics	Awakening Motivation, Capturing Attention, Overcoming Limitations, and Activating Students.	Differences in Students' Abilities to Interpret Images.	Relevant, Because It Can Be Used As An Appropriate Choice In Teaching Symmetry

The Application of Visual Media in Learning at Elementary Schools	Application of visual media	Presenting clear images for material effectiveness and improving understanding of phenomena.	Visual media cannot use audio, but the teacher needs to explain directly.	Relevant, visual media is effective for teaching reflective and rotational symmetry in elementary school, compared to just delivering the material.
Development of Visual Media in Elementary School Learning	The learning process using visual media	Visual media are engaging and effective, reinforcing understanding, and making learning more interactive.	Visual media can distract from the core message and reduce the depth of understanding.	Visual media helps students understand the concepts of geometry and symmetry through graphic representations, enhancing engagement and material absorption.
Improvement of Mathematics Learning Outcomes on the Topic of Reflection and Rotation Symmetry Through the Demonstration Method in Grade III	Improving students' understanding of mathematical concepts more effectively through the demonstration method.	Visual media demonstrate symmetry, making it easier for students to remember geometric concepts, and encourage students to look for patterns in symmetry.	The demonstration method improves symmetry learning outcomes, but it is limited in meeting individual needs and is time-consuming.	The demonstration method is relevant because it helps students understand symmetry through direct observation.
The Application of the Make A Match Type Cooperative Learning Model to Improve Mathematics Learning Outcomes on the Material of Folded Symmetry and Rotational Symmetry for Third Grade Students at SDN Kalirungkut I/264	Through a cooperative approach, students are expected to help each other and collaborate in understanding the concept of symmetry, thereby strengthening their	Visual media helps in understanding folding and rotation, makes it easier to remember the concept of symmetry during exams, and enhances collaboration within groups.	1. Activities can reduce the equal contribution of students. 2. Interaction may slow down the achievement of the curriculum. 3. Keeping students focused in groups is difficult for teachers.	Relevant, because it is effective in helping third-grade students understand the material of fold symmetry and rotational symmetry, improving their learning outcomes, and encouraging positive engagement and interaction in the learning process.

Surabaya	understanding.			

The results of the table analysis show that the use of visual learning media has a significant positive impact on the teaching of the concepts of reflective and rotational symmetry. From the various articles reviewed, it is evident that visual media, such as images and videos, not only capture students' attention but also stimulate their learning motivation. This advantage is very important, especially in the context of students who are at the concrete operational stage, where they find it easier to understand abstract concepts through visual representations. This media also helps students to remember concepts better and encourages them to actively seek patterns in symmetry. However, the challenges that arise, such as differences in students' abilities to interpret visuals and the potential for confusion, need to be addressed to maximize the effectiveness of the media.

In relation to the learning of reflective and rotational symmetry, visual media have proven to be relevant and effective. Demonstration methods involving the use of real objects allow students to see directly how symmetry is formed, thereby reducing the gap between theory and practice. Cooperative approaches, such as the Make A Match model, also show positive results in enhancing students' understanding through collaboration and discussion. Although there are some drawbacks, such as the time required for interactive activities and the challenge of maintaining student focus, the benefits offered by visual media far outweigh them. With careful planning, visual learning media can be optimally integrated into the curriculum, helping students not only to better understand the concept of symmetry but also to improve their overall learning outcomes

D. CONCLUSION

The conclusion of this study shows that the use of visual learning media, such as folding and rotating symmetry boards, significantly enhances students' understanding of the concepts of folding and rotating symmetry. The results of interviews with teachers and analysis of various articles indicate that visual media not only attract attention and stimulate learning motivation but also help students better remember concepts and encourage their active engagement in learning. Although there are challenges in implementation, such as differences in student abilities and the need to maintain focus during activities, the benefits gained far outweigh these challenges. Therefore, visual learning media is highly recommended to be integrated into the classroom learning process to improve overall student learning outcomes.

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