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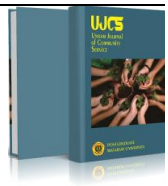

Magic Paper Becomes Teacher: Revolutionary Pop-Up Book for Learning Mathematics in Grade IV of SD 38 Janna-Jannaya

A. Lisdayanti[1*], Naimah Paronda[1*], Andi Muhammad Irfan Taufan Asfar[1]

[1] Fakultas Keguruan dan Ilmu Pengetahuan, Univerisiras Muhammadiya Bone, Indonesia.

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Corresponding Author:
Naimah Paronda
naimahparonda@gmail.com

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Abstract: Mathematics is often seen as a difficult subject by elementary school students, especially because it is abstract and less interesting. In this article, we will discuss the implementation innovative learning media in the from of a pop-up book entitled "Magic Paper to Become a Teacher" in class IV at SD 38 Janna-Jannaya. The is to improve students' understanding of mathematical concepts. This activy was carried out in two stages: first, the pop-up book was introduced, and second, it increased students' direct internation with the visual and mechanical elements of the book. The results obtained show an increase in students' understanding and interest, create a more interactive learning atmosphere, and show more satisfactory evaluation results compared to conventional methods. Even though there are several obstacles, such as limited time and the number of books available, the use on this media has proven to be effective in creating a fun and meaningfull learning experience. Thus, pop-up books have great innovative solution that can be widely applited increasing the effectiveness of mathematics learning for elementary school students.

Keywords: Education; Mathematics; Pop-up Book Media; Interactive learninf Educational Innovation.

Introduction

Education is the main pillar or foundation in shaping a smart, creative and innovative future generation. In this era, the biggest challenge in education is not only the transfer of knowledge, but how to provide material that is interesting and easy for students to understand (Hartinah et al., 2024). At the primary school level, especially in class IV, maths is often a daunting task for many students (Anggraini et al., 2023). In the world of education, the curriculum is the core of every educational process. Therefore, curriculum development must involve various parties, including teachers, students and parents. According to Hidayani (2018: 377), explaining that the curriculum occupies a central position in a variety of educational activities, in order to create educational goals, the curriculum must be able to improve its quality, where the curriculum must be able to adapt to the situation of each school both considering the needs and stages of student development (Moerti et al., 2023). Mathematics is an important foundation in all levels of education in Indonesia, in line with the values of Pancasila and the 1945 Constitution which aims to develop students' thinking skills (Wulandari, 2020). Mathematics is the main key in opening the door to advances in science and technology, as well as a powerful tool to develop a person's ability to think better, so it is important to learn it early (Hardianto et al., 2023).

The use of learning media has proven to be effective in improving students' understanding of mathematics subject matter, especially for abstract concepts so that students can more easily understand the material being taught (Triana & Crestiani M, 2023). In a time where technology has become an integral part of life, digital literacy is as important as ever, and the media is growing rapidly. The utilisation of technology and information as a tool in the teaching and learning process is a must to make learning more interesting and not fixated only on the role of the teacher (Zahwa & Syafi'i, 2022). Apart

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from pop-up books, other learning media also have many benefits. Learning media can present information visually and interactively, so that students more easily understand abstract concepts and can obtain information more easily, increase thinking, feelings and stimulate student motivation and interest in learning (Nugrahaeni et al., 2023).

According to Montaro, pop-up books bring a new dimension to maths learning. With its interactive three-dimensional elements, the pop-up book manages to transform material that is often considered abstract into more concrete and danceable, so that students can more easily understand and remember mathematical concepts (Nisaa' & Adriyani, 2021). Poop-up books are well known as children's storybooks that provide a more immersive and engaging reading experience by featuring elements that are real and move when the pages are opened. The concept, once popular in entertainment and children's literacy, can now also be applied to education, allowing students to explore mathematical concepts in a more fun and immersive way.

In Class VI of SD 38 Janna-Jannaya, the use of pop-up books as a mathematics learning tool could be an important change. By utilising pop-up books, students can uncover the potential of objects through direct interaction in learning mathematics that appear in three-dimensional form, rather than just listening to the teacher's explanation or reading the text in the textbook. This pop-up book facilitates students to experience and understand mathematical concepts in greater detail and clarity. For example, when learning geometry, students can create and assemble spatial shapes such as cubes, blocks or pyramids from paper folds that are easy to reach and play with. Similarly, other topics, such as fractions or arithmetic operations, can be illustrated in a visual and exciting way, enriching students' engagement and understanding.

This article will discuss in more depth the application of pop-up books as a revolutionary mathematics learning media in class VI of SD 38 Janna-jannaya. By looking at the use of this method in practice, it is expected to see the extent to which pop-up books act as an effective tool to help students in a student-centered approach to learning, allowing them to find new ways to understand mathematics that are fun and more meaningful. This article will also discuss the obstacles that teachers and students can face when incorporating pop-up books into teaching, and provide suggestions to further develop the use of this technique in the primary education curriculum.

It can be concluded that mathematics is an important subject at the education level, especially the elementary school level by exploring pop-up books, it is hoped that it can be an innovative option that brings changes in mathematics learning methods. It will also present a fun, memorable and useful learning for students IV of SD 38 janna-jannaya. By exploring creativity and utilizing simple technology, learning mathematics can be more interesting and can facilitate students in the process of learning mathematics. Although it requires refinement, this media is very relevant to harmonize into the basic education curriculum, so it is necessary to conduct a more in-depth study.

Method

The implementation of this community service directly involves fourth grade students of SD 38 Janna-Jannaya, Bonto Majannang Village, Sinoa sub-district, Bantaeng Regency.

Figure 1. The first stage focuses on the introduction of Pop-up book media

In the first stage, students actively discovered interesting surprises on each page of the pop up book 'Magic Paper So Teacher' to students of class IV 38 Janna-Jannaya. In this phase, students are introduced to the physical form and unique features of the media, including captivating three-dimensional illustrations, movable visual elements, and interactive mechanisms designed to facilitate understanding of mathematical concepts. This approach aims to foster an interest in reading and help them understand how Pop-up Books can be an effective teaching aid in various subjects.

The images and visual elements on each page of the pop-up book are described in detail, allowing students to see how this media can transform material that is often abstract into something more concrete and easy to understand. This introduction is done in an interactive way, where students are invited to touch, open, and try various features of the pop-up book. This creates an active and engaging learning environment that makes the learning experience more interesting for students.

Figure 2. In the second stage, students observe the various visual and mechanical components of the Pop-up book.

In the second stage of this activity, students are invited to observe the various visual and mechanical components contained in the pop-up book. They are given the opportunity to explore elements such as pictures, numbers and movable parts of the book, which are designed to visualize mathematical concepts in an interactive way. With this approach, students not only read the material but also interact between the various elements. They can open and move certain parts, such as flaps or moving images, allowing them to see and feel first-hand how the mathematical material is translated into visual and mechanical forms. By actively involving students in the mathematics learning process, it is more interesting and meaningful for students, so they can easily understand complex concepts and apply them in problem solving.

Result and Discussion

In learning mathematics, it is important to present concrete experiences through media, props, or real activities. Effective learning makes it easier for students to understand useful things, such as facts, skills, values and concepts. This approach is in line with the characteristics of students in elementary school who tend to think at the concrete operational stage (Adawiah, Lestari, & Ma'ruf, 2023).

The results of the implementation of community service activities by utilizing pop-up book media entitled "Sulap Kertas Jadi Guru" showed that fourth grade students of SD 38 Janna-Jannayam experienced an increase in understanding of the mathematical concepts taught. In the initial stages, students showed great enthusiasm for the media, thanks to the visual and mechanical elements that attracted their attention. The pictures of numbers, as well as the movable parts help them visualize mathematical material that previously seemed difficult so that it is easy to understand. Direct interaction with pop-up books provides a fun learning experience, so students are more motivated to actively participate in learning.

In the evaluation process, the student exercises showed an increase in the average comprehension score compared to the conventional learning method. Students who previously had difficulty understanding abstract material are now able to understand the concept easily after using pop-up book media. In addition, there is evidence of positive changes in the classroom atmosphere, where students look more focused and involved during the learning process. This media is proven to be effective in overcoming obstacles that are often faced in learning mathematics, such as boredom and low interest in learning.

During the implementation of the activity, we faced several obstacles. One of them is the limited time to integrate all math materials into the pop-up book. In addition, not all students have the same level of understanding in this media, so additional assistance is needed for those who have difficulties. Another factor that must be considered is the limited number of books available, which forces the author to implement the learning process alternately.

This activity has a positive impact on both students and teachers. Students became more motivated to learn math, while the role of the teacher gained new experiences in applying creative learning media. This interactive learning process not only helps reduce students' boredom with abstract material, but also creates a more fun and inspiring learning atmosphere. To ensure the sustainability of this activity, we will improve the pop-up book based on the evaluation results and feedback from students and teachers. Hopefully, the results of this activity will become an innovative learning model that can be applied in other schools and continue to develop in the future.

Conclusion

The development of an innovative learning tool in the form of a pop-up book entitled Sulap Kertas Jadi Guru has had a major impact on mathematics learning in class IV SD 38 Janna-Jannaya. This pop-up book was created as an interactive tool that not only attracts students' interest, but also explains math concepts that are often difficult in a more concrete and understandable way. By combining visual elements, movement, and stories. Pop-up books create a fun learning experience and increase students' active participation.

The findings of this research and the use of pop-up books show that students are more motivated to learn and can understand the material better compared to traditional teaching methods. This media successfully overcomes various problems that teachers usually face in teaching mathematics, as well as the tendency of students to feel bored when learning abstract material.

In addition, pop-up books also provide an opportunity for teachers to present very creative, varied and student-focused learning.

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