



Article History

Rangkiang Mathematics Journal
Volume 3, No. 1, 2024

Subject Areas:

Mathematics Education

Keywords:

Instructional Media, Multiplication Wheel

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Multiplication Wheel Learning Media Design in Mathematics Learning Material for Multiplication of Numbers in Elementary Schools

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Abstract- The mathematical abilities of second-grade elementary school students in the multiplication operation material are still relatively low. Seeing this condition, teachers must pay attention to teaching students variations in the use of learning media that invite students to play while learning so that teachers can instil the mindset that multiplication is very easy. One learning media that can be used is the multiplication wheel learning media. This research aims to describe the design of multiplication wheel learning media on number multiplication material. This research is library research. Using the multiplication wheel learning media in Mathematics subjects in class II SD/MI can improve student learning outcomes because learning activities are carried out by playing while thinking. With learning media like this, students will not get bored and bored when participating in learning activities. The multiplication wheel learning media is also very easy for lower-grade students to use. This multiplication wheel learning media is three-dimensional. Because the media does not move and does not make sound, in learning mathematics, especially in improving material, the teacher must be able to instil the mindset that addition is very easy. Using the learning media of the accretion wheel in Mathematics in class II SD/MI can improve student learning outcomes because learning activities are carried out by playing while thinking. The existence of learning media like this will make students not bored and not bored in participating in learning activities. Improved learning media is now also very easy for low-grade students to use. This accretion wheel learning media includes three-dimensional learning media because the media does not move on its own and does not make sound.

1. Introduction

Education, in a broad sense, is all learning experiences.

That students go through in all environments and throughout life (Ramaliyus, 2015). In essence, life

contains elements of education because there is interaction with the environment, but what is important is how students adapt and place themselves in the environment as well as possibly interact with everyone or anyone in the environment. The Minangkabau traditional proverb says, 'Alam takambang becomes a teacher', meaning nature stretches out to be a teacher (Ramaliyus, 2015). The role of the teacher is not only as a single source of learning, but the teacher acts as a mediator and facilitator for students; for this reason, teachers must be creative and innovative in learning, both in terms of the use of methods, models, strategies, media and other learning tools. Teachers have a very important role in learning activities, namely as educators whose task is to educate students. Substantially, this task begins with the formation of character, thought patterns, personality, attitudes, mentality and knowledge, which are transferred through the teaching and learning process in the classroom. In the teaching and learning process, teachers not only teach knowledge but also teach attitudes, mentality and thought patterns that must be developed by students (Faizi, 2013). Likewise, in mathematics, especially in elementary schools,

However, currently, it is found that students' low interest in learning mathematics has resulted in low students' mathematical abilities in multiplication operations in class II elementary school students (Risqi & Siregar, 2023). Apart from that, the reality is that mathematics learning is still very monotonous, so students are bored with formulas and numbers that they are forced to memorize (Lestari, Safirah, Alfadillah, & Sari, 2023). Learning seems classical without the help of demonstration media or stimulation, resulting in learning becoming less interesting and boring (Hariyanto & Pujiyono, 2013). Mathematics learning in the classroom is identical to one-way learning that is teacher-centred and is more about the ability to use formulas and remember formulas (Muthma'innah, 2023).

Elementary school students' cognitive abilities regarding multiplication material are still in the low category. This is due to the lack of adequate learning media, so students become bored, less interested and less directly involved in learning (Amanda, Kanzunudin, & Fathurohman, 2023).

Learning outcomes are not just aspects of human potential but changes in overall behaviour. This means that the learning outcomes achieved by students must cover all cognitive, emotional and psychomotor aspects of students. Applying appropriate learning media and methods is one solution to achieving satisfactory student learning outcomes. The use of learning media greatly influences the success of learning activities (Rahmatunnisa, Mutjaba, Pinasti, Barokah, & Rahmah, 2022).

Numeracy is a basic skill development that must be prepared for learning. To be able to develop numeracy skills and make it easier to learn to count, it is necessary to use interesting learning media so that the learning material can be conveyed (Machdarini & Hidayat, 2024).

Therefore, teachers must create learning media that is fun for students and in accordance with their abilities. One learning media that can be used is the multiplication wheel learning media in multiplication material in class 2 SD/MI, so it will be easy for students to know and memorize multiplication.

This learning media aims to improve students' understanding of multiplication material in class II SD/MI by using multiplication wheel media. This media also helps teachers overcome passive students and can choose interesting learning media so as to improve student learning outcomes (Ismail, 2008).

A teacher's ability to design and implement targeted learning strategies is part of their professionalism as an educator. Teachers who have a professional attitude as educators are able to build relationships by creating a fun and enthusiastic learning atmosphere so that learning provides satisfaction, pride and happiness for students (Darmansyah, 2010).

Based on the explanation above, researchers are interested in studying "Multiplication Wheel Learning Media Design in Primary School Number Multiplication Material Mathematics Learning". This research aims to describe the design of multiplication wheel learning media in mathematics learning for the multiplication of numbers in elementary schools.

2. Methods

This research is library research, namely research in the form of library research and designing simple designs related to multiplication wheel learning media. The data collection technique that the researcher carried out was in the form of documentation both from books and journal articles related to the use of multiplication wheel learning media in class II SD/MI mathematics learning on number multiplication material. Apart from that, the researchers also designed a multiplication wheel using simple tools and materials. The data analysis technique used is descriptive data analysis technique, namely describing the design of the multiplication wheel media in class II SD/MI mathematics learning on the Multiplication of Numbers material.

3. Results and Discussion

This multiplication wheel learning media can be used in class 2 SD/MI on multiplication material. This media is very easy for lower-grade students to use.

Steps for making multiplication wheel learning media:

1. Prepare all tools and materials. Such as cardboard, origami, duct tape, glue, scissors, pencils, markers and sticks. This step is seen in Figure 1.



Figure 1. Step 1 in making multiplication wheel media

2. Cut the cardboard into small circles into 10 pieces. This step is seen in Figure 2.



Figure 2. Step 2 in making multiplication wheel media

3. Then, each round cardboard box is covered with origami and given a stick. This step is seen in Figure 3.



Figure 3. Step 3 in making multiplication wheel media

4. After covering the origami and giving it sticks, then write one number on each stick, starting from numbers 1-10. This step is seen in Figure 4.

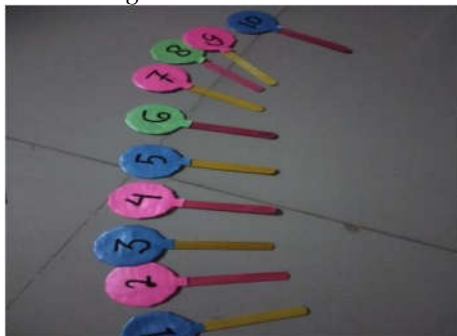


Figure 4. Step 4 in making multiplication wheel media

5. After that, cut the cardboard again to form a larger circle and a hexagonal space, then cover it with HVS paper. Make a small hole in the middle of the circle and at the top of the hexagon space. This step is seen in Figure 5.



Figure 5. Step 5 in making multiplication wheel media

6. Then, the 10 sticks are arranged at a distance between the two larger circles and become a pinwheel. This step is seen in Figure 6.

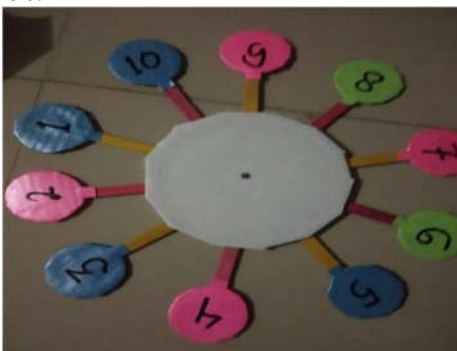


Figure 6. Step 6 in making multiplication wheel media

7. Then, attach the pinwheel to the top of the hexagonal space, which has been given a small hole, using a pen cap. This step is seen in Figure 7.



Figure 7. Step 7 in making multiplication wheel media

The steps for using the multiplication wheel learning media are:

- a. The teacher asks one of the students to come forward to spin the multiplication wheel.
- b. After the wheel stops spinning, two numbers will appear in the small circle below the wheel.
- c. After students calculate the product of the two numbers, students write the results in the space provided (under the two small circles). If the results written by students are wrong, then other students will answer them. If the results written by the students are correct, then the other students will repeat the process to spin the multiplication wheel.

With learning media like this, students will not get bored with learning activities. Teachers can also add to their learning activities by using strategies in learning activities. With the existence of learning media and strategies, students may be even more enthusiastic about following and receiving the learning material presented by the teacher.

As Nabila stated, through the use of game media, children tend to be more motivated to participate in learning. They feel the joy of spinning the pinwheel and seeing the numbers that appear, which can help increase children's interest and motivation in counting (Nabila & Basri, 2023). As a learning medium, games should allow students to spend more time learning (Faujiah, Usman, Khomsin, & Shelfiana, 2022).

Apart from that, the use of spin wheel media influences students' numeracy skills, makes it easier for students to recognize numbers, helps students learn to count the number of objects, and helps students calculate additions. In learning activities using this media, learning is student-centred so that students appear active, while the teacher only acts as a facilitator. Thus, this media can make it easier for students to understand learning and be able to solve problems directly (Machdarini & Hidayat, 2024).

Apart from that, based on the findings of Hidayat, wheel learning media on shape material can make it easier for students to carry out mathematics learning in class. Through this media, it was also found that students' mathematics learning outcomes also increased (Hidayat & Ritonga, 2023). Wheel learning media in mathematics learning in elementary schools is very influential because, through this media, students will be more interested, enthusiastic, and effective. Apart from that, teachers become more creative and enthusiastic in teaching students (Rohmah & Saputra, 2021).

This multiplication wheel learning media can not only be used in class II elementary school. However, this media can be used in grades I to III of elementary school because the numbers used do not exceed 100. The advantages and disadvantages of this learning media are the advantage is that it makes learning mathematics not difficult and scary, while the disadvantage is that it makes students focus on the numbers printed on the wheel. So, it is possible that if students are given questions with different numbers, they will think longer.

4. Conclusion

Using the multiplication wheel learning media in Mathematics subjects in class II SD/MI can make it easier for students to understand the material on the multiplication of numbers because learning

activities are carried out by playing while thinking. With learning media like this, students will not get bored with learning activities. Teachers can also add to their learning activities by using strategies in learning activities. With the existence of media and learning strategies, students may be even more enthusiastic in following and accepting the learning delivered by the teacher. Elementary school teachers should be more active than middle and high school level teachers in planning the learning that will be carried out in class, both in terms of models, methods, media and learning strategies that will be presented during class learning, because in elementary/MI teachers will dealing with children who could be said to be far from middle school and high school age. Elementary/MI children find it difficult to focus and concentrate on following the learning carried out in class.

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