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# Community Service Application of Puzzle Straw Teaching Aids in Mathematics Learning at Coastal Elementary School in Silo Baru Village Dusun X

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**ABSTRACT**

This community service (PKM) activity aims to overcome the problems experienced by teachers at Pesisir Elementary School. new silo village, X hamlet, Silo Laut District, Asahan Regency. Namely the difficulty of teachers in cultivating students' interest in studying mathematics and the lack of a fun learning approach, one of which is the use of the Puzzle Straw mathematics props. Mathematical Straw Puzzles are puzzles that involve arranging straws to complete a challenge or achieve a certain goal. This can be a creative and fun form of puzzle or game involving the manipulation or arrangement of straws. This service activity was attended by 6 Pesisir Elementary School teachers. The results of this PKM activity are: 1) Students are more enthusiastic in learning mathematics, especially in geometric geometric material. This is because the Puzzle Straw teaching aid allows students to directly explore geometric concepts of geometric shapes. Students not only sit and listen to the teacher's explanation, but can also see directly all the objects in the props, carry out gradual exploration, and demonstrate the physical objects of the props. 2) Teachers' enthusiasm for responding to PKM program material has increased. This is indicated by the number of teachers asking questions, suggestions and criticism, as well as providing solution views on the application of Puzzle Straw teaching aids in elementary schools. 3) There has been a significant increase in teachers' knowledge and understanding of elementary school mathematics concepts, as well as the benefits of the Puzzle Straw teaching aids in elementary school mathematics learning, especially the concept of spatial geometry. This can be seen from the number of teachers who can answer questions about elementary school mathematics concepts, and can explain the benefits of the Puzzle Straw teaching aids in elementary school mathematics learning.

**Keywords** *Straw Puzzle Props, Mathematics Learning, Spatial Geometry*

## INTRODUCTION

Mathematics in elementary schools (SD) generally focuses on building the basics of students' skills and aims to build a strong foundation for understanding material concepts. Mathematics lessons in elementary school are usually taught using concrete and fun methods to build basic understanding. Teachers often use games, activities, and pictures to help students understand these concepts so that the learning process is more enjoyable. In accordance

with the current curriculum, namely the independent curriculum. The Merdeka Curriculum emphasizes the importance of fun and meaningful learning for students. This is in line with research conducted in coastal elementary schools (SD) showing that students who learn in a fun and meaningful way will understand the material more easily and are more motivated to learn. Based on limited interviews with a number of Pesisir Elementary School teachers and students, it turns out that there are still students who view mathematics as something interesting, challenging, and not too difficult.

Students' views of mathematics are often influenced by various factors, including their level of understanding, learning experiences, and the teaching they receive. These factors can create variations in students' perceptions of the subject. It is natural that students who have higher abilities or are more comfortable with mathematics tend to see it as interesting and challenging. For them, mathematics may provide pleasure and satisfaction when they successfully solve problems or understand more complex concepts. It is important to recognize that each student has different strengths and weaknesses. A positive view of mathematics can motivate students to learn more, while students who may struggle or lack confidence in mathematics may need extra support.

A teacher must be able to choose and determine various aspects that can support the learning process so that it runs well and effectively, one of which is choosing appropriate teaching aids and learning methods so that students easily accept learning and are not passive during teaching and learning activities (Arifuddin, Maufur & Farida , 2018). This may involve the use of the Puzzle Straw maths prop. Mathematical Straw Puzzles are puzzles that involve arranging straws to complete a challenge or achieve a certain goal. This can be a creative and fun form of puzzle or game involving the manipulation or arrangement of straws. puzzles or games that also involve mathematical concepts. Puzzle props are very interesting props and can support the learning process because puzzle props can increase students' interest in learning mathematics (Lestari, Raga, & Sudatha, 2014).

Using puzzle props with a play and discussion approach can create an interactive learning environment, support student creativity, and build the skills needed for problem-solving. It also provides variety in teaching strategies, making learning more interesting and effective. By utilizing puzzle props in learning, teachers can create a learning environment that is interactive, and fun, and supports the development of various students' cognitive and social skills. The location of Pesisir Elementary School is in the village of Silo Baru, Dusun X, Silo Laut District, Asahan Regency. Pesisir Elementary School is quite far from

the main road and is at the end of the village. Learning facilities at school are also inadequate, as there are no mathematics teaching aids. Based on information from the principal of Pesisir Elementary School, there are 6 teachers at the school and the school still lacks teachers. There are also no extra facilities and activities at the school.

The lack of facilities and extracurricular activities has at least an influence on children's learning and learning outcomes. Based on a request from the principal of Pesisir Elementary School, he hopes that the service will provide good training and mentoring for elementary school teachers. To assist teachers in developing and creating mathematical teaching aids that can improve students' understanding of concepts, service activities are carried out in the form of implementing Puzzle Straw in mathematics learning at coastal elementary school in Silo Baru Village, Dusun X.

## METHOD

This implementation method is divided into several stages, namely

1. Observation stage
   In the observation stage to obtain information about mathematics learning and problems that may arise in the specified place or location.
2. Socialization stage
   The socialization stage in the context of mathematics learning at school involves efforts to introduce and integrate Pesisir Elementary School teachers and students in a fun mathematics learning process through the application of the Puzzle Straw props. This was done by gathering several teachers who taught mathematics at Pesisir Elementary School, Silo Village, Dusun X.
3. Provide an understanding of basic mathematics, especially the mathematical concept of spatial geometry, to students and teachers at Pesisir Elementary School.
4. Provide an explanation of how to apply the Puzzle Straw mathematics teaching aids for elementary school mathematics.
5. Demonstrate the method of applying the Puzzle Straw mathematical props with the topic how to make spatial figures from the Puzzle Straw? and other elementary school mathematics concepts. Next, provide solutions for teachers who experience difficulties.
6. Monitoring and evaluating training for teachers and students. Reflection on the implementation of this program is carried out by the chief executive and members. This activity was carried out to review all the advantages.

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**Figure 1.**
**Servant makes observations**

The subjects of this service are all 6 Pesisir Elementary School teachers. Furthermore, the instrument in this community service activity is an observation sheet, while data collection techniques through observation are used to observe all participant activities during the socialization activity. The data that has been obtained will then be processed and presented in descriptive form using a quantitative approach.

The implementation of the PKM program is aimed at Pesisir Elementary School teachers located in the new silo village, Dusun X, Silo Laut District, Asahan Regency. The method used is community education in the form of outreach activities to increase participants' knowledge/understanding of how to use the Puzzle Straw mathematics teaching aids.

## RESULTS AND DISCUSSION

The community service activity (PKM) implementation of the Puzzle Straw teaching aids in mathematics learning at coastal elementary schools was attended by 6 teachers at Pesisir Elementary School, Silo Baru village, X hamlet. Based on the results of observations made at Pesisir Elementary School. Place of implementation and participants who take part in the activity. The Puzzle Straw props were chosen because they can be linked to a variety of mathematics subject matter so that teachers can use and be creative with these props. Teachers are also helped to design learning that is more enjoyable for students.

Learning elementary mathematics by applying the geometric geometric shape of the Straw Puzzle props, it is very clear that teachers and students have very high motivation and curiosity, this can bring out the teacher's ability to innovate better, and students are very enthusiastic and enjoy the mathematics learning process.

**Potential benefits of using mathematical teaching aids in the form of Puzzle Straw in learning geometric shapes at elementary school (SD) level**

1. Attract Attention and Motivation
   The Straw Puzzle props can provide a creative and interactive element in learning geometric shapes. Students' involvement in constructing geometric structures with straws can increase their interest and motivate learning.
2. Clear teaching materials
   The use of mathematical teaching aids, such as the Puzzle Straw, can make spatial geometric concepts more concrete and easier to understand. The visualizations produced by Puzzle Straw help students understand the meaning of concepts more realistically.
3. Variations in Learning Strategies
   Puzzle Straw allows for variations in teaching methods. Teachers can use various learning strategies, such as project-based learning, group discussions, and exploration so that students do not feel bored and learning becomes more varied.
4. Various Learning Activities
   The Puzzle Straw props can support students in carrying out various learning activities. They not only listen to the teacher's explanation but are also involved in observing, exploring and demonstrating directly using teaching aids.
5. Use of the Five Senses
   By assembling and arranging Straw Puzzles, students can use their five senses to directly observe and explore geometric concepts of spatial shapes. This is in accordance with the characteristics of the concrete thinking stage of elementary school students.

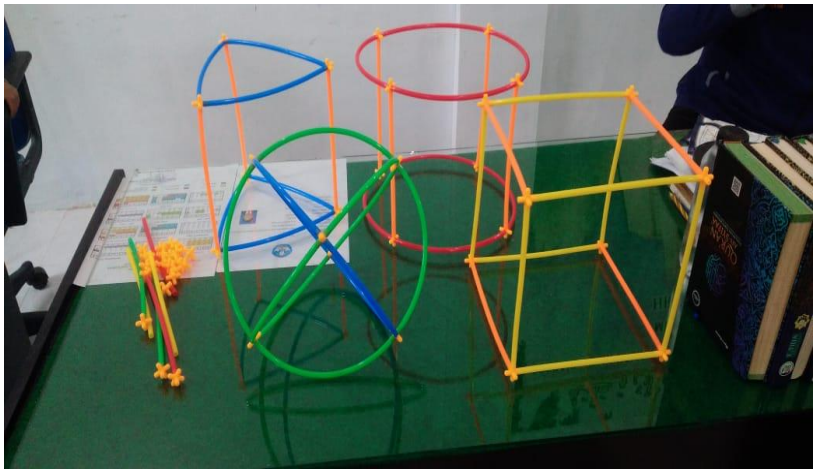

**Figure 2.**
**Puzzle Straw props for geometric shapes**

The use of math props, such as the Straw Puzzle, can increase students' active interaction with math concepts, helping them build a deeper understanding. In addition, interesting and varied learning can create a more dynamic and enjoyable learning environment for students.

**Increasing the Ability/Knowledge of Mathematics Teachers**

Increasing Teachers' Ability and Knowledge in Applying Straw Puzzle Props in Spatial Geometry Learning means that teachers' abilities and knowledge in applying Straw Puzzle props in spatial geometric learning are increasing. This can be seen from several indicators, namely:

1. The teacher is enthusiastic in following the guidance regarding the application of the Puzzle Straw props.
2. The teacher asked many questions about the application of the Puzzle Straw props.
3. The teacher is actively involved in discussions about the application of the Puzzle Straw props.
4. The teacher is able to explain mathematical concepts using the Puzzle Straw props.

This increase in teacher abilities and knowledge can be caused by several factors, including:

1. Guidance provided by a competent facilitator/resource person.
2. Teachers' enthusiasm and high motivation to improve their abilities.
3. Direct practice in applying the Puzzle Straw props.

This increase in teacher abilities and knowledge is a positive thing. This means that teachers increasingly understand the importance of using teaching aids in mathematics learning. The use of teaching aids can help teachers to:

1. Increase students' motivation and interest in learning.
2. Make it easier for students to understand the lesson material.
3. Develop students' critical and creative thinking skills.

Therefore, guidance regarding the application of teaching aids in mathematics learning needs to continue to be provided to improve teachers' abilities and knowledge. Apart from that, teachers also need to be given the opportunity to practice directly in applying teaching aids in learning.

**Figure 3.**
**The teacher applies the Straw Puzzle props in class**

## CONCLUSIONS

Based on the results of discussions with the principal, teachers, and students, the application of the Puzzle Straw props in learning geometric shapes in the classroom has gone as expected. The positive response from school principals, teachers, and students shows that this teaching aid is effective and efficient in increasing students' interest in learning, increasing teacher enthusiasm, and increasing teachers' knowledge and understanding of elementary school mathematics concepts, especially the concept of spatial geometry. The following are several important points from the results of the discussion:

1. Students are more enthusiastic about learning mathematics, especially in spatial geometry material. This is because the Puzzle Straw teaching aid allows students to directly explore geometric concepts of geometric shapes. Students not only sit and listen to the teacher's explanation, but can also see directly all the objects in the props, carry out gradual exploration, and demonstrate the physical objects of the props.
2. Teachers' enthusiasm for responding to PKM program material has increased. This is indicated by the number of teachers asking questions, suggestions and criticism, as well as providing solution views on the application of Puzzle Straw teaching aids in elementary schools.
3. There has been a significant increase in teachers' knowledge and understanding of elementary school mathematics concepts, as well as the benefits of the Puzzle Straw teaching aids in elementary school mathematics learning, especially the concept of spatial geometry. This can be seen from the number of teachers who can answer questions about

elementary school mathematics concepts, and can explain the benefits of the Puzzle Straw teaching aids in elementary school mathematics learning.

Overall, the application of the Puzzle Straw teaching aid in learning spatial geometry in the classroom has shown positive results. This teaching aid is effective and efficient in increasing students' interest in learning, increasing teacher enthusiasm, and increasing teachers' knowledge and understanding of elementary school mathematics concepts, especially the concept of spatial geometry.

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