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# EFFORTS TO IMPROVE STUDENT LEARNING OUTCOMES USING PUZZLES MEDIA SDN 1 MIMBAAN SITUBONDO STUDENTS

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***ABSTRACT***

*This study examines the impact of using puzzle media in math learning on student learning outcomes at SDN 1 Mimbaan, Indonesia. The study aimed to improve students' understanding and motivation in math by applying an interactive and fun learning tool. A classroom action research method with two cycles was conducted, involving 28 grade II students. The study focused on addition and subtraction materials, using puzzle media to promote student engagement. Pre-action test results showed that 86% of students had not reached the minimum completeness criteria. However, after implementing the puzzle media, the results improved significantly in Cycle I, where 64% of students reached the completeness target. In Cycle II, 93% of students achieved completeness, exceeding the expected target. The study concluded that puzzle media effectively improved students' understanding and motivation in mathematics, making learning more interactive and fun. The research recommends the integration of puzzle media in the learning process to improve learning outcomes and student engagement in basic education.*

*Keywords: Puzzle Media; Student Learning Outcomes; Mathematics Education; Interactive Learning; Primary Education.*

## INTRODUCTION

Education has an important role in the development of the country, and has been regulated in the Law of the Republic of Indonesia No. 20 of 2003. Basic education as an initial foundation plays an important role in realizing these goals, considering that at this stage students begin to be creative which will form abilities for the future (Nasarudin et al., 2024). However, although the objectives of education are clearly stated in the law, implementation in the field still faces various obstacles that can hinder the achievement of optimal results (Maskur, 2023). One of the prioritized challenges is the low learning outcomes that are often influenced by learning methods that are less varied and tend to be monotonous (Yuliantari & Kesuma, 2024). Many teachers still rely on lecture methods that only prioritize one-way knowledge transfer, so that students become less creative in exploring themselves (Saparuddin & Nisa, 2024).

Student involvement in learning is an important point to achieve maximum results (Azhar & Wahyudi, 2024). If students are not interested or not engaged, their understanding of the material will be very limited, and this will affect the achievement of the expected competencies (Arimbawa et al., 2024). In addition, students' low motivation to learn can also reduce their desire to achieve (Murip et al., 2024). Therefore, it is very important to apply innovations in methods and through learning media so that the student learning process becomes effective, interesting, and can stimulate student potential to the fullest (Fitri, 2023). One of the innovations that can be applied is the use of fun and interactive learning media (Haryani et al., 2024). Learning media can change the way students interact with material, make them more active in thinking, and provide opportunities to develop cognitive skills and creativity (Hajar, 2024). Thus, innovations like this are needed to create an atmosphere conducive to improving overall learning outcomes (Fitriatunnisa et al., 2024).

The use of appropriate learning media is very important to improve the effectiveness and quality of learning (Azizah et al., 2024). The right media can attract students' attention, facilitate understanding, and create an interactive and fun learning experience (Saman, 2023). The right media can increase students' interest in learning, with media such as puzzles or games that can reduce boredom and increase their motivation and academic achievement (Ulfahyana & Sape, 2024; Wulandari et al., 2023). In addition, it creates a more dynamic atmosphere and reduces boredom in the learning process (Wulandari et al., 2023). Thus, media utilization is necessary for student development and has a positive impact on the future so that students learn more openly and are not fixated on previous methods.

Puzzle media is a tool used to increase the effectiveness of the learning process in a fun and interesting way (Tedy et al., 2023). Puzzle is a form of game that involves pieces of images, numbers, or symbols that must be arranged in a certain pattern to form a complete unit (Khoirunnisa et al., 2024). In education, puzzle media aims to actively involve students in the learning process by utilizing game elements. Thus, students not only learn passively, but can also develop more creative thinking skills in problem solving (Rahmawati et al., 2023). In the context of mathematics teaching subjects, puzzle media serves to introduce mathematical concepts through more interesting and applicable visualizations, so that students can more easily understand the material being taught (Rustini & Hadi, 2024).

The use of puzzle media in education is very diverse, especially in improving students' memory and cognitive skills (Setiawati et al., 2024). Through puzzle media, students can learn to organize separate information into one overall concept. Puzzles hone their fine motor skills, such as hand skills in arranging puzzle pieces (Novita & Astuti, 2022). In addition, puzzles improve students' social skills in working in groups, this is because there are many variations of puzzles that require cooperation between group members to solve problems (Sari & Utomo, 2024). Thus, puzzle media not only helps in understanding academic concepts, but also in developing students' social and emotional skills (Marfilinda et al., 2024).

Based on observations made at SDN 1 Mimbaan Situbondo, there are several problems that affect the math learning process. First, student learning outcomes are still below the Minimum Completion Criteria (KKM), which indicates that student understanding of mathematics material is not optimal. Second, many students feel bored and less interested during learning activities, especially when the methods used are limited to lectures. This leads to low levels of motivation and active participation of students in learning. In addition, students' understanding is not optimal, which is most likely caused by the lack of variety of learning media used by teachers. Monotonous learning, without innovation that attracts students' attention, is a major factor that hinders the achievement of expected learning outcomes. Therefore, to increase student motivation and

understanding, efforts are needed to improve the learning process by utilizing more interactive and interesting media, such as the use of puzzle media, which can support students to be more active and understand the material more deeply. This study aims to identify the impact of the application of puzzle media on students' understanding and motivation to learn in mathematics lessons at SDN 1 Mimbaan Situbondo, and to evaluate whether this media can be an effective alternative to improve student learning outcomes which are still relatively low. Thus, it is hoped that the results of this study can contribute to the development of more interesting and effective learning methods at the basic education level.

## RESEARCH METHODOLOGY

This research was conducted involving 28 second grade students of SDN 1 Mimbaan Situbondo. This study was motivated by the low learning outcomes of mathematics students, which is a major problem in schools. Inadequate learning outcomes indicate that improvements are needed in the learning methods used, especially to overcome problems of student motivation and understanding of mathematics material.

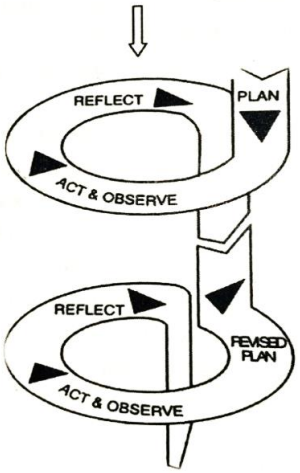


**Figure 1. Procedure PTK (Kemmis et al., 2014)**

The research procedure consists of four main stages, namely planning, action, observation, and reflection (Farhin et al., 2023). This method is designed to identify and overcome problems that arise in learning, as well as to improve student learning outcomes in a sustainable manner through structured action cycles (Rahayu et al., 2024). The planning stage is a very important first step in an effort to improve learning. At this stage, a strategy is prepared to overcome the problem at hand. After planning, the next stage is action, where the strategies that have been designed are implemented in practice. In this study, the actions taken include the application of puzzle media in learning mathematics, with a focus on addition and subtraction material. In the observation stage, the learning process carried out using puzzle media will be observed directly. During observation, attention is also focused on aspects of student attitudes and behavior, such as independence, accuracy, and creativity that develop during learning. This reflection aims to assess the success of the actions that have been taken and to identify aspects that still need to be improved. Discussions with Supervisor 2 were also held to discuss the results of observations and evaluations that had been obtained. Each research cycle will involve students in math learning activities using puzzle media. This approach is expected to increase the attractiveness of students (Saputro et al., 2023). This method is expected to increase understanding and motivation to learn math material more effectively. The main focus of this research is to improve math achievement results through the application of interesting and interactive media, in order to overcome the obstacles found in the previous cycle.

## RESULTS AND DISCUSSION

The initial test was conducted to get an overview of students' math learning outcomes before treatment or the use of new learning media. This test aims to determine the extent of students' initial abilities in mathematics material that will be improved through the use of puzzle media. The following table shows the distribution of pre-action test scores :

**Table 1. Students' Math Test Results at Pre-Action Time**

| No. | Degree | Completion Rate | Student | Percentage |
|---|---|---|---|---|
| 1. | < 75 | Complete | 24 | 86% |
| 2. | ≥ 75 | Complete | 2 | 14% |
| | | | **28** | **100%** |

These test results illustrate that most students have not achieved the expected level of completeness in math lessons. To clarify this data, the test results can also be illustrated in the form of a bar chart, which will provide a visual representation of the significant difference between students who completed or met the specified target and did not complete the math learning before corrective action was taken.

Initial test results showed that most grade II students at SDN 1 Mimbaan Situbondo had not yet achieved mastery in learning mathematics. Further observations showed that many students were unfocused, passive, and inactive in interacting or seeking a deeper understanding of the practice during the lesson. Therefore, this study focused on the application of puzzle media for more interesting learning, a practical example of which is puzzle media, to increase students' involvement and attention and is expected to improve their learning outcomes.

**Cycle I**

In the first cycle of this research, the steps of planning, implementation, and evaluation were carried out to assess the effectiveness of the application of puzzle media in learning mathematics for grade II students of SDN 1 Mimbaan Situbondo. This process begins with designing learning actions, which involves preparing various learning needs such as modules, assessment sheets, and puzzle media. After that, the action was carried out through one meeting that focused on addition material. At the end of the cycle, a learning outcome test was conducted to evaluate student achievement. Observations were made to see how the application of puzzle media affected the learning process and the results achieved by students, with the aim of identifying weaknesses that need to be improved in the next cycle.

**Table 2. Math Learning Outcomes Cycle I**

| No. | Value | Completion Rate | Student | Percentage |
|---|---|---|---|---|
| 1 | < 75 | Complete | 10 | 36% |
| 2 | ≥ 75 | Complete | 18 | 64% |
| | **Number of students present** | | **28** | **100%** |

Based on the table above, the results of students' math puzzle media learning at the stage in Cycle I found that 64% of students managed to achieve the expected level of completeness, namely obtaining a score ≥ 75, while the other 36% of students had not achieved completeness with a score below 75. The learning results in cycle I showed significant progress compared to the conditions before the intervention, which indicated that the application of puzzle media could have a positive effect on student understanding. Despite the progress, the level of learning completeness had not reached the set target of at least 85%. Therefore, remedial measures were taken to improve learning outcomes in the next cycle.

**Cycle II**

The implementation of cycle II was conducted in one meeting lasting 60 minutes. In the opening activities, the teacher conducted greetings, prayers, and ice breakers. After that, the teacher delivered the addition material and distributed the puzzle media for students to learn. During the core activities, students work on the puzzles that have been prepared and complete the LKPD given. The closing activity ends with an evaluation, reinforcement of the material, and a closing prayer before students go home.

**Tabel 3. Math Learning Outcomes Cycle II**

| No. | Value | Completion Rate | Student | Percentage |
|---|---|---|---|---|
| 1 | < 75 | Complete | 2 | 7% |
| 2 | ≥ 75 | Complete | 26 | 93% |
| | **Number of students present** | | **28** | **100%** |

A total of 25 students (93%) achieved completeness with a score of ≥75, while only 2 students (7%) had not completed it. The class average score in the second cycle increased to 87.56, exceeding the prescribed standard of completeness (85%). This media shows that the use of puzzle media has succeeded in increasing student understanding and engagement, as well as encouraging more optimal learning outcomes. In cycle II, the application of puzzle media resulted in more optimal achievement, with an increase in the pass rate of 93%, exceeding the predetermined target. This showed that this learning approach was successful in improving students' understanding and collaborative skills. Although the first cycle showed good progress, the improvements implemented in the second cycle had a much more significant impact.

**Comparison of Pre-Action, Cycle I and Cycle II Learning Outcomes**

The results seen in the comparison diagram show that the actions taken in cycle II were more successful than those taken in cycle I, resulting in more significant progress and closer to the desired completion target. Although the results are still students who have not reached the target, cycle II can be considered successful in improving the quality of student mathematics learning in this class.

Previous research also supports these findings, showing that puzzle media has a positive impact on student learning outcomes. Relevant and engaging learning media can improve students' attention, understanding and quality of learning (Azizah et al., 2024; Samantha, 2023). In addition, other studies also emphasize the importance of choosing the right media to improve students' academic achievement (Ulfahyana & Sape, 2024; Wulandari et al., 2023).

The general implications of this study suggest that the use of puzzle media in learning mathematics can have a broad positive impact on education as a whole. The use of engaging and effective media, such as puzzles, has the potential to increase motivation to learn and create a more dynamic classroom atmosphere. In addition, the application of puzzle media can support the development of students' cognitive, social, and motor skills, which in turn can contribute to improving the overall quality of education (Siregar et al., 2024; Setiawati et al., 2024).

The implications for SD Muhammadiyah 01 Jember from this study show that the application of puzzle media in learning mathematics has a positive impact. By utilizing puzzle media, teachers or teachers can make the atmosphere and learning experience more interesting, interactive, and fun, so that it can increase students' motivation to learn, especially in mathematics subjects that are often considered difficult by some students. This can have a direct impact on improving student learning outcomes, both in terms of cognitive, affective, and psychomotor aspects. Therefore, the use of puzzle media at SD Muhammadiyah 01 Jember is expected to improve the quality of learning and support the achievement of more optimal educational goals.

**CONCLUSION**

The application of puzzle media in math learning at SDN 1 Mimbaan Situbondo proved to be an effective strategy in improving student learning outcomes. Results from both cycles showed significant improvements in student participation and comprehension, with the second cycle reaching a completion rate of 93%, surpassing the 85% target. This shows that the use of puzzle media successfully engages students, making learning more interactive and fun, which in turn improves their understanding and motivation. The positive impact of puzzle media in fostering cognitive, social and motor skills is in line with previous research, confirming its potential to improve educational outcomes across multiple domains.Puzzle media can serve as a valuable tool in overcoming the challenges of low motivation and limited engagement in traditional teaching methods. The findings suggest that incorporating interactive and fun learning media such as puzzles can create a more dynamic classroom atmosphere, encourage active participation, and improve academic achievement. Based on the success of this study, it is recommended that educators at SDN 1 Mimbaan Situbondo, and in similar contexts, continue to integrate puzzle media into their teaching practices. Further studies could explore the long-term effects of such media on various subjects and in different educational settings to validate its wider applicability.

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