

Application of Multiolication Pocket Board Media to Improve Student Understanding in Mathematics Learning in Elementray Schools

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Abstract

Thus, the implementation of learning media can help develop student understanding in learning grade 3 mathematics. Observations in class 3 UPTD SDN Bojong 1 Tangerang in September 2024 also showed the problem of students' lack of understanding in learning mathematics on multiplication material. Nurhamidah said that students' lack of understanding of learning can affect their learning outcomes. Therefore, learning media able to be the solution to develop student understanding in learning mathematics (Sellafeni et al., 2023). For that reason, it is necessary to carry out study to identify factors that influence student understanding in learning mathematics. This research tends to identify factors that influence students' understanding of mathematics learning and develop effective learning strategies to improve students' understanding of mathematics learning, especially on multiplication material. The use of multiplication bag board media in grade 3 school basic multiplication material has a positive influence on student understanding in learning mathematics. As one of the factors, Learning media plays an fundamental role in the teaching and learning process. Teachers in learning usually employ learning media as an intermediary in delivering material to make the students understand it. This research uses the development method (Research and Development), which was developed with the ADDIE development model, namely Analysis, Design, Development, Implementation, and Evaluation. By using the R&D method, researchers can develop innovative and effective products, processes, or systems to solve problems or meet needs. This study was held at SDN Bojong 1 Tangerang, while the subjects involved in this research were grade 3 students. The data obtained from the research subjects were collected through observation methods and student grades.

Keywords: *Media, Multiplication Pocket Board, Students, Mathematics.*

INTRODUCTION

Education plays an important role in developing a person's potential through systematic efforts to improve various aspects of religion, spirituality, self-control, personality, intelligence, noble character, and skills necessary for the welfare of individuals, communities, nations, and countries. According to Article 1 Paragraph 1 of Law Number 20 of 2003 concerning the National Education System, one of the three objectives of the Indonesian state is to improve the quality of life of the nation (Muttaqin, 2024). Education also plays a fundamental role in the life of the nation and state, and is one of the means of improving and developing quality human resources (Midya Yuli Amreta et al., 2023). The most important process in education is learning (Kurniawati & Ekayanti, 2020). One educational program that can develop critical, systematic, logical, and creative thinking skills in the mastery of information and knowledge is mathematics (Indrawati, 2019). However, one subject that students find difficult is mathematics. This makes mathematics an unpopular subject among students. This problem is the reason why many students find mathematics difficult to understand (Permatasari, 2021). Mathematics education is one of the fundamental aspects of the educational process. Mathematics is not merely a science, but also a means of developing critical, systematic, and logical thinking skills. However, many students still find it difficult to understand various mathematical concepts. The learning process will not be effective without professionals who guarantee the performance of educators. Professional educators will provide optimal education by creating learning programs that encourage students to learn, achieve, and continue to improve their abilities (Indrawati, 2019). Based on the results of a survey conducted by the author during the implementation of the Field Experience Program (PPL) II at SDN Bojong 1 Tangerang, it was found that students did not pay enough attention to the teacher during learning activities because mathematics was considered difficult and the teacher was not creative enough in delivering the lesson, causing students to become bored and resulting in a lack of understanding of the teaching material in mathematics lessons at school. This can be observed through the results of daily quizzes, mid-term exams, and final exams, which remain low. Additionally, many students still find it difficult to understand mathematics lessons. (Abnisa & Zubaidi, 2022) states that learning is carried out as a process designed by teachers to enable students to become more creative and master the learning material.

Thus, the use of learning media can help improve students' understanding of mathematics in third grade elementary school. Observations in the third grade of UPTD SDN Bojong 1 Tangerang in September 2024 also showed that there were issues related to

students' lack of understanding in mathematics learning in multiplication material. Nurhamidah said that students' lack of understanding could affect their learning outcomes. Therefore, learning media can be used as a solution in efforts to improve students' understanding of mathematics learning (Sellafeni et al., 2023). Learning media for each tool, both hardware and software, as a means of communication to provide clear information (Moto, 2019). The use of learning media in the teaching and learning process can also stimulate new interests and desires, motivate and stimulate learning activities, and even have psychological effects on learners (Badan et al., 2002).

Therefore, research needs to be conducted to identify a number of factors that influence students' understanding of mathematics learning. This study aims to identify a number of factors that influence students' understanding of mathematics learning and to develop effective learning strategies to improve students' understanding of mathematics learning, especially in multiplication. The use of multiplication pocket boards in third-grade elementary school multiplication lessons has a positive effect on students' understanding of mathematics. Learning media is one of the fundamental factors in the learning process. In the teaching and learning process, teachers generally use learning media as a means of delivering material so that students can understand it. The use of learning media in learning activities can improve understanding, stimulate motivation, and bring about psychological changes in students in receiving teaching materials. The word “media” itself comes from the Latin word “medist,” which literally means ‘middle’ or “mediator.” Learning media is a tool for teachers to present information to students about learning so that they can understand it easily (Wulandari et al., 2023).

In this study, learning media in the form of multiplication pocket boards was implemented as a teaching medium to improve students' understanding of mathematics in third grade elementary school. According to Novitasari (dalam Sellafeni et al., 2023) shows that multiplication pocket board learning media can improve student understanding. Furthermore, Purnamasari & Supandi say that multiplication pocket boards are media in the form of boards used to present multiplication material in order to stimulate students' understanding so they can learn while playing. These multiplication pocket boards use ice cream sticks as a counting medium (Wahyuni et al., 2022).

In this paper, the author intends to use a multiplication board as a teaching aid. This aid consists of a board containing pockets with numbers and ice cream sticks to play with. Through this play activity, students can understand and learn the concept of multiplication through fun, interactive, and exciting learning games. This can increase student participation

in teaching and learning activities, as described by (Arifin dalam Sellafeni et al., 2023). This game also supports students in improving their understanding and ability to learn mathematics through diverse learning methods. This study focuses on the application of multiplication pocket boards to improve students' understanding of mathematics in elementary school, research methods, and special multiplication pocket boards. Through the background of the problem and the results of observations, the researchers hope that this study will play a positive role in improving students' understanding of multiplication in mathematics.

RESEARCH METHOD

This study uses the research and development (R&D) method, which has been developed using the ADDIE model, namely Analyze, Design, Development, Implementation, and Evaluation. By using the R&D method, researchers can develop innovative and effective products, processes, or systems to solve problems or meet needs. This study was conducted at SDN Bojong 1 Tangerang, with the subjects being third-grade students. The data obtained from the research subjects were collected using observation techniques and student grades.

RESULT AND DISCUSSION

Learning is an individual activity aimed at acquiring skills, knowledge, and various positive values through the use of diverse learning resources. Learning can involve two parties: students as learners and teachers as facilitators, particularly in the teaching-learning process, which involves the learning process (Rohani, 2020). Learning activities basically present information from a source using media or channels to recipients. The message conveyed is the media contained in the curriculum. Communication is needed to increase effectiveness and competence in achieving learning objectives (Syifaun Nafisah & Yayang Furi Furnamasari, 2023). Learning is an activity carried out to gain knowledge, master certain skills, and shape the attitudes of students. Indicators of learning success can refer to behavioral changes and learning outcomes of students. Learning activities can be carried out optimally when learners are motivated to learn. The success of educational goals is influenced by how learners perceive learning activities. Sardiman also states that motivation can be understood as the driving force that arises within learners, leading them to engage in learning activities and guiding the teaching-learning process until learning objectives are achieved (Magdalena et al., 2021). Learning is “a change that occurs within a person after performing certain activities” (Pupuh Fathurrohman dan M. Sobry Sutikno dalam Yogi

Fernando et al., 2024). Education is not only considered an effort to inform people about things and build skills, but can also be considered in a broad sense as an effort to fulfill the desires, needs, and abilities of each person to live a happy social and personal life (Nurul Audie, 2019).

Teachers help students and their communities identify themselves as individuals, role models, and educators (Sari et al., 2022). The role of teachers in teaching is more important than children's development. He claims that every subject or lesson can be taught to every student at every level of development, as long as it is taught in the most effective way (Indriyani, 2019). Teaching methods and learning media are two very important components in the learning process (Junaidi, 2019). The use of learning media can greatly support the effectiveness of teaching and learning activities as well as the presentation of information and learning material content. (Mega et al., 2025) said that one way to make learning fun is to use interesting learning media. Media is one of the tools used to improve teaching and learning activities. Media has various characteristics, so it is important to select it carefully and appropriately so that it can be used effectively (Wulandari et al., 2023). In essence, learning is also a form of communication, so the media used for learning is called learning media (Badan et al., 2002). The right learning media can help students learn better and make lessons easier to understand (Wesly, 2023). Learning media also greatly supports students in understanding mathematics. (Hasanah dalam Sellafeni et al., 2023) explains that a number of other factors that influence learning difficulties in mathematics in elementary school are the lack of learning facilities, including teaching aids, textbooks, and learning media, and the lack of ability of students to understand various mathematical concepts. On the other hand, the use of multiplication pocket boards is suitable for helping third-grade students aged 8/9 years old understand multiplication (Sellafeni et al., 2023). The use of games in mathematics learning in elementary schools also contributes positively to students' interest and motivation in the subject. Students participate more actively and enthusiastically in mathematics learning when they can learn through fun and engaging games (Wijayanti & Yanto, 2023). The multiplication pocket board is a final product that is suitable for use in the mathematics learning process for multiplication material in the third grade of elementary school, according to the scores given by media experts, subject matter experts, learning experts, students, and media teachers (Risqi & Siregar, 2023).

(Yuwono, 2016) explains that when students encounter math problems, several things may happen to them. They may: (a) understand the problem immediately or have an understanding of the problem but do not want or are not interested in solving it; (b) have an

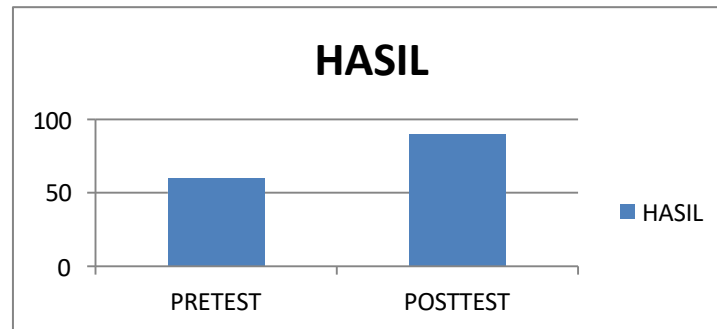
understanding of the problem and have an understanding of the problem but are not interested in solving it; or (c) not have an understanding of the problem and not be interested in solving it. The multiplication pocket board, designed to support teachers and students in teaching and learning activities, is the result of development research. The multiplication pocket board can improve students' mathematics learning outcomes. It is also considered a very effective tool to support student learning. With the use of the simple "multiplication pocket board" media, students' calculation skills have improved because their understanding has increased and they are interested in learning mathematics, especially multiplication (Inovasi et al., 2024). The multiplication pocket board media consists of elements such as pictures and numbers. The multiplication pocket board media is a learning medium in the form of an Educational Game Tool (APE) in the form of a board made of styrofoam and cardboard. This media was developed using the ADDIE model. According to this model (Wahyuni, N. in Syifaun Nafisah & Yayang Furi Furnamasari, 2023) It covers five stages, namely: Analysis stage, Design stage, Development stage, Implementation stage, Evaluation stage.

The results of the following stages are as follows: in the initial stage, namely the analysis stage, interviews were conducted with teachers at UPTD SDN Bojong 1 to analyze why students lacked understanding in mathematics learning. After the interviews were conducted, it was found that teaching and learning activities only used print media, which made learning too monotonous, causing students to quickly become bored and resulting in a lack of understanding of the material. Based on the above issue, an effort that can be made to help students and educators is to create multiplication pocket boards.

The next stage is the design/planning stage, which involves designing the product to be created using the data collected during the analysis stage. Before developing the product, researchers should create a design for the materials to be used. The next stage is development, which involves creating the product based on the results obtained from the previous planning stage. The development of the Multiplication Pocket Board media begins with designing attractive and game-based images to make it easy to understand and comprehend. The results of the feasibility test for the Multiplication Pocket Board media developed are understood from the product trial. The subjects of the trial in this research were third-grade students at UPTD SDN Bojong 1 during the implementation of field experience practice (PPL).

Next is the implementation stage, in which trials are conducted on the product to be developed with the aim of understanding how the product impacts the quality of learning. After that, in the final stage of the research, namely the evaluation stage, a formative review is conducted by asking students to assess the product that has been developed.

The trial should be conducted on third-grade students at UPTD SDN Bojong 1 to determine how effective the multiplication pocket board is.



Grafik 1. Hasil Pretest dan Posttest

From the results shown in the diagram above, the multiplication pocket board media is very suitable for use in teaching and learning activities. The pretest score was 60, and the posttest score was 90. In addition, the statement elicited responses from students regarding the learning process. Of the 32 students, 25 answered “yes” and 7 answered “no,” each indicating a positive response.



Gambar 1. Kegiatan Uji Coba Produk Media Papan Kantong Perkalian



Gambar 2. Kegiatan Uji Coba Produk Media Papan Kantong Perkalian

CONSLUSION

A multiplication pocket board learning media product is the result of this development research. Based on the results of the diagram and student responses, this multiplication pocket board is very suitable for use as a learning tool that supports learning in grade 3 at UPTD SDN Bojong 1.

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