



## THE EFFECT OF USING MULTIPLICATION POCKET MEDIA ON STUDENT LEARNING OUTCOMES IN MATHEMATICS LESSONS

**Armila Putri, Suci Perwia Sari**

Primary School Teacher Education Study Program

Universitas Muhammadiyah Sumatera Utara

Email: [Tsabistahhumairahazzahra@gmail.com](mailto:Tsabistahhumairahazzahra@gmail.com), [suciperwitasari@umsu.ac.id](mailto:suciperwitasari@umsu.ac.id)

| ARTICLE INFO   | ABSTRACT  |
|--|---|
| <p><b>Article History</b></p> <p>Receive: 25-05-2025</p> <p>Revision: 15-09-2025</p> <p>Accept: 30-10-2025</p> | <p>The purpose of this study is to determine the effect of using multiplication pocket media on student learning outcomes. Low student learning outcomes are caused by the passive nature of students in the learning process. Teachers still apply monotonous models and media, which causes boredom among students. As a result, students are less enthusiastic about participating in learning, so their learning outcomes in Mathematics are not yet optimal. Low student attention during the learning process and the use of unvaried media result in a lack of motivation to learn, which affects low learning outcomes. This study was conducted at SD Swasta Muhammadiyah 08 to evaluate the learning outcomes of class IIID students in Mathematics, particularly on multiplication material. The type of research used was a Pre-Experimental Design with a One Group Pretest Posttest design, involving all 23 students of class IIID at SD Swasta Muhammadiyah 08 Medan. The test used in this study was in the form of multiple-choice questions. Data analysis was carried out using normality tests and variance homogeneity tests. The results of the study showed that before using the multiplication pouch media, the students' average score was 39.32%, while after using the media, the average score increased to 96.95%. The conclusion of this study is that the use of multiplication pouch media has a positive effect on students' learning outcomes in Mathematics, particularly in multiplication material in class III at SD Swasta Muhammadiyah 08 Medan for the 2024/2025 academic year</p> |
| <b>Keywords</b>  | Media, Results, Multiplication.   |

### 1. INTRODUCTION

Education is a conscious and planned effort aimed at helping learners actively develop their potential in order to have religious spiritual qualities, self-control, personality, intelligence, noble character, and skills needed for themselves and society (Rahman et al., 2022)

.UU SISDIKNAS No. 2 tahun 1989 stating that education is a conscious effort to prepare students through guidance, teaching, and training activities for their future roles. Education is an action carried out intentionally and in a structured manner to create an atmosphere in the teaching and learning process

that focuses on the activeness of students and aims to develop their potential, spirituality, self-control, independence, intellect, have morals, and possess skills for themselves, the social environment, the nation, and the country.

It is clearly implied that education is an effort to shape intelligent and skilled human beings. The potential within students will be developed through education, thereby creating smart and skilled human resources. Ki Hadjar Dewantara's concept of education is education aimed at liberating the individual, with freedom as its main goal. According to him, freedom means that each individual has the liberty to choose their own path in life, while still respecting the freedom of others. Ki Hadjar Dewantara's view of education as a cultural endeavor aligns with the philosophy of progressive education, which emphasizes that advancement or progress is at the core of progressive thought. Therefore, some fields of knowledge that can drive progress are considered a main part of culture (Tia Basana Hutagalung & Liesna Andriany, 2024). This means that by receiving an education, children will be able to grow into high-quality and admirable individuals.

Through education, we can also learn how to do something and how to do it. Therefore, as human beings, we cannot ignore this fact. Education is very important for the country's future. It is not only for us personally, but it can also impact the Nation and the Unitary State of the Republic of Indonesia.

Curriculum is a set of rules and provisions related to the subjects that can be taught in teaching and learning activities (Shelemo, 2023). Dalam Undang-Undang No.20 tahun 2003 (pasal 1) Regarding the National Education system, the curriculum is defined as "A set of plans and arrangements regarding the content and subject matter as well as the methods used as guidelines for organizing teaching and learning activities." Furthermore, in Article 36 paragraph (3) of Law No. 20 of 2003, it is stated that: the curriculum is prepared according to the level and type of education within the framework of the Unitary State of the Republic of Indonesia, taking into account:

1. Strengthening faith and piety

2. Improving noble character
3. Enhancing students' intelligence and interests
3. Diversity of regional and environmental potentials
4. Demands of regional and national development
5. Demands of the workforce (Amalia Yunia Rahmawati, 2020)

Curriculum can also be interpreted as a plan and guideline for teaching and learning in an educational institution, based on several elaborations that include (a) elaboration of community needs; (b) elaboration of the needs for the development of knowledge and values; and (c) elaboration of student needs (Rahayu et al., 2023). The curriculum is one of the most important aspects of education. The nature of the curriculum is dynamic; it continually adjusts to the needs of the general public, culture, value systems, the intelligence level of students, knowledge and technology, as well as historical developments. The educational curriculum in Indonesia constantly changes and evolves with the times. Indonesia occasionally changes or modifies its curriculum. Until now, there have been changes or revisions to the curriculum. The curriculum follows a set of guidelines intended to guide the learning process under the supervision of students and staff at schools or educational institutions. (Shelemo, 2023).

Activities carried out by teachers According to Aunurrahman (2010), learning is an effort to transform inputs in the form of uneducated students into educated students, students who do not have knowledge about something into students who have knowledge (Tri Prastawati & Mulyono, 2023). Learning is structured and instructional, creating a process of interaction between students and teachers, as well as between students, teachers, and learning resources. According to Richey (2001:31) in (Meyniar Albina & Krisna Bayu Pratama, 2025), The definition of learning objectives is the knowledge, skills, and attitudes that enable learners to carry out specific tasks or job functions according to established standards. Learning objectives serve as the foundation for planning all learning activities, from selecting materials, methods, and strategies, to assessment. Without clear and specific

objectives, the learning process may become unfocused, resulting in rushed performance. Learning is one of the most important activities. This indicates that a person's success in achieving educational goals largely depends on how effectively the learning process takes place.

Many experts have put forward definitions of media. Generally, experts define media from the perspective of communication. If we look at the origin of the word, media is the plural form of the word "medium." This word comes from Latin, meaning 'between.' From a communication perspective, 'medium' means something that can serve as an intermediary in the communication process. 'Medium' can also mean something that can help convey messages and information from the source of the message (communicator) to the recipient of the message (communicant). (Pagarra H & Syawaludin, 2022).

Heinich dkk (1986) proposes the definition of a medium as something that carries information between the source and the receiver of information. From the same point of view, Kemp dan Dayton (1986), stating that the role of media in the communication process is as a conveying (transfer) tool that transmits messages from the sender to the recipient of the message or information. Here are some other definitions of media from various experts:

- Gagne (1970), media: various types of components in the student's environment that can motivate students to learn.
- Briggs (1970), media: any physical tools that can present messages and stimulate students to learn.
- Arief S. Sadiman (1990), media: anything that can be used to convey messages from the sender to the receiver in such a way that it can stimulate the thoughts, feelings, interests, and attention of students, thereby facilitating the learning process.

The concept of educational media must contain two elements, namely software and hardware. In educational media, software refers to the information or message contained within the media itself, while hardware refers to the

physical devices or equipment used as a means to convey information or messages. The definition of educational media itself according to Gagne and Briggs (1974) in (Ani Daniyati et al., 2023) It is stated that learning media are tools used to convey the content of learning materials that can stimulate students in participating in the learning process. Learning media can also be defined as any form of intermediary that can be used by educators to deliver learning materials to students so that students can understand the taught material and learning objectives can be achieved. This is in line with the purpose of learning media, as explained by Sukiman, who states that learning media are anything that can be used to convey learning materials in order to achieve effective learning objectives. The use of instructional media will stimulate students' thoughts, feelings, attention, interest, and motivation. (Tangkas Ageng Nugroho et al., 2023).

For example, a human body model is categorized as a learning medium if the model contains information or messages that can be learned by the learner. If the model does not contain information, it is merely a teaching aid. Therefore, it is necessary to distinguish between learning media, teaching aids, and learning tools. According to Sujana (1990), a teaching aid is a tool used by teachers to help clarify the lesson material delivered to students and to prevent verbalism in students. Meanwhile, Hamalik (1994) explains that a learning tool is any tool that can be used to assist students in carrying out learning activities, making the learning process more efficient and effective. Thus, it is clear that both teaching aids and tools are limited to just the hardware or equipment alone, whereas media must include both hardware and software.

Especially in today's digital information era, the concept of learning media has become more solid and plays a strategic role in the learning process. The support of increasingly sophisticated information and communication technology devices has strengthened the fourth paradigm mentioned above, namely that learning media not only assists an educator in teaching learning materials but can also serve as a learning resource. In this context, learning

media is not only positioned as a supplementary learning resource but can also be a primary learning resource, as for example in the e-learning process.

A multiplication pouch is a learning aid intended to help students understand the concept of multiplication in a concrete and interactive way. (Ulya et al., 2024). According to (Silvia et al., 2023) The math multiplication pouch is a learning media that is contextual in nature. This math multiplication media consists of a container or pouch that serves as a place to put objects in the form of sticks with various interesting pictures. The multiplication pouch usually consists of pouches containing cards that have numbers and symbols that can be used to visualize and try performing multiplication. Students can gain a better understanding of multiplication concepts, have greater motivation to engage in activities, and ultimately, their learning outcomes can improve as a result of using concrete and interactive media. Therefore, further research on the use of multiplication pouches in mathematics learning at elementary schools should be conducted.

Based on the discussion above, this study aims to determine the effect of using multiplication pocket media on students' learning outcomes in Mathematics, specifically in the multiplication material, in Grade III at SD Swasta Muhammadiyah 08 Medan.

## 2. RESEARCH METHOD

This research was designed using a quantitative approach. According to Creswell (2013) in (Waruwu et al., 2025), Quantitative research is a systematic and objective approach to data collection and analysis that involves the use of numerical data to collect and analyze valid and reliable information about a particular phenomenon or problem. This research is quantitative research in the form of a quasi-experiment, with a nonequivalent control group design. According to (Ph.D. Ummul Aiman et al., 2022) Quantitative research is a scientific study that systematically examines parts and phenomena as well as the causality of their relationships. Quantitative research is defined as a systematic investigation of phenomena by collecting data that can be measured using

statistical, mathematical, or computational techniques. In line with this, according to Sugiyono (2011) in (Azhari, 2022), the method Qualitative research is a research method based on post-positivist philosophy used to study objects in their natural conditions (as opposed to experiments) where the researcher is the key instrument, data collection techniques are carried out through triangulation (combination), data analysis is inductive/qualitative in nature, and the results of qualitative research emphasize meaning rather than generalization.

The independent variable in this study is the multiplication pocket media, and the dependent variable is mathematics learning outcomes. The subjects of this study are all third-grade students of Class IIID at Muhammadiyah 08 Private Elementary School Medan, consisting of 23 students. The sampling technique used is a Pre-Experimental Design with a One Group Pretest Posttest design involving all third-grade students of Class IIID at Muhammadiyah 08 Private Elementary School Medan, totaling 23 students. This study uses 1 class. The test used in this study is in the form of multiple-choice questions. Data analysis is conducted using normality tests and homogeneity of variance tests.

According to (Setialana, 2020) The test used in this study was in the form of multiple-choice questions. Data analysis was conducted using normality tests and variance homogeneity tests. The researcher developed a multiple-choice test instrument consisting of 10 questions, which was tested on one sixth-semester PGSD student at Muhammadiyah University of North Sumatra..

## 3. RESULT

In the third-grade Mathematics class, the learning process only used the textbook and the lecture method by the teacher, and a comparison was made after using multiplication bag learning media. Based on the analysis of the posttest learning outcomes, the class showed that the minimum score obtained by students was 40, while the maximum score was 100. The class average score (mean), which is 96.95%, had not yet reached the Minimum Competency Criteria (KKM) set, which was 70. In the analysis of pretest learning outcomes, it was shown that

the score obtained by students was 30, while the maximum score was 100. The class average score (mean), which is 39.32%, did not reach the applied KKM of 70.

Based on the average scores obtained by students before and after using the multiplication pocket learning media, it can be seen that the average scores after using the multiplication pocket teaching materials are higher compared to before using the learning media. This is because the treatment given to students using the multiplication pocket media can be said to be effective and good, as evidenced by the results obtained by students using the multiplication pocket media, where in the posttest they achieved higher learning outcomes than the results obtained before using the multiplication pocket media.

This can happen due to several factors, one of which is the teaching methods and approaches that are still considered inadequate in learning, resulting in unsatisfactory outcomes. The use of multiplication pocket learning media during classroom learning, and the fact that not all students are able to grasp or understand what is being taught, especially if it's only through reading books or explanations alone, also contributes. By using multiplication pocket learning media, students find it easier to understand the material being taught because the explanation is accompanied by media, rather than just using books, which can easily make students bored and unmotivated. This can be seen from the average scores obtained by students when using multiplication pocket learning media.

The Effectiveness of Using Multiplication Pocket Learning Media in Mathematics Learning for Grade IIID Students at Muhammadiyah 08 Private Elementary School Medan.

The learning outcomes measured in this study are learning outcomes in the cognitive domain, including students' understanding and knowledge after learning using the multiplication pocket learning media. The effect of the multiplication pocket learning media on student learning outcomes can be seen from the hypothesis test above. Based on the test results before and after using the multiplication pocket learning media, it turns out that in the posttest,

students' learning outcomes were higher after using the multiplication pocket learning media, as seen from the class average scores ( $96.95 > 39.32$ ).

Success can be reviewed based on the criteria of effectiveness in learning. The criteria for successful learning outcomes using the multiplication pocket learning media in the post-test refer to the KKM set for the subject of Mathematics, which is 70. The data comparing results before and after using the multiplication pocket learning media with the KKM can be seen in the table below.

**Table 1. Comparison of Pretest and Posttest Results of Muhammadiyah 08 Medan Private Elementary School Class**

| Group    | Number Of Students | KKM (70)  |              | Percentage of Completion |
|----------|--------------------|-----------|--------------|--------------------------|
|          |                    | Completed | Not Finished |                          |
| Pretest  | 23 Siswa           | 10 Siswa  | 13 Siswa     | 43%                      |
| Posttest | 23 Siswa           | 20 Siswa  | 3 Siswa      | 87%                      |

Based on the table above, it turns out that the mastery percentage after using multiplication pocket media is 87%, which is higher compared to not using the multiplication pocket learning media, which is 43%. This can happen due to several factors, including teaching methods and approaches that are considered less effective and unsatisfactory, the use of multiplication pocket learning media during the teaching and learning process, and the fact that not all students are able to grasp and understand what is taught, especially just by reading a book without strong explanations. Students using multiplication pocket learning media find it easier to understand the material being taught because the material is explained using the media, rather than just reading a book, which can make students feel bored and uninterested in learning. These results can be seen from the average scores obtained by students in both the pretest and posttest.

Next, to determine whether the use of the multiplication bag learning media is effective or not, it can be seen in the table below. The use

of the multiplication bag learning media is considered effective if it shows a higher value compared to before using the multiplication bag learning media.

**Table 2. Comparison of Learning Outcomes Effectiveness between the use of multiplication pocket learning media before and after.**

| Group    | Mean  | KKM | Description |
|----------|-------|-----|-------------|
| Pretest  | 39,32 | 70  | Tidak       |
| Posttest | 96,95 |     | Efektif     |

Based on the table above, the learning outcomes in the form of average scores from both the pretest and posttest show a difference. The average pretest score was 39.32, while the average posttest score was 96.95. This means that using the multiplication pocket learning media has a higher average score compared to not using the multiplication pocket learning media, which only involves looking at a book. Therefore, it can be concluded that the learning process using the multiplication pocket learning media is effective to implement in Mathematics lessons on the multiplication material.

The extent of the influence of using multiplication pocket learning media can be determined by finding the difference between the average pretest and posttest scores. From these calculations, it can be concluded that the influence of using multiplication pocket learning media on teaching Mathematics multiplication material on the learning outcomes of Class IIID students at SD Swasta Muhammadiyah 08 Medan is 57.63%. The difference between the average scores before and after is expected to be used as a comparison if there is a similar study to examine the influence using other teaching materials. With the average posttest scores being higher than the pretest scores, it indicates that the use of multiplication pocket learning media has a significant effect on the learning outcomes of third-grade students at SD Swasta Muhammadiyah 08 Medan. Based on the calculations, it shows that there is a significant effect of using multiplication pocket learning media on the learning outcomes of third-grade students at SD Swasta Muhammadiyah 08 Medan..

#### 4. DISCUSSION

With the use of multiplication pocket media, students' learning outcomes show differences because students are more motivated and interested in learning, thus understanding multiplication material in a structured way better. This is in accordance with the statement according to Hasan (2021) in (Ramadani et al., 2025), Appropriate media can enhance students' motivation and engagement in the learning process. As a result, students find it easier to understand the material and have a positive learning experience.

The use of creative media allows learning Mathematics to become more varied and enjoyable. This will create an interactive and effective learning atmosphere. When teachers provide explanations using multiplication pocket media, they give a more concrete illustration because there are multiplication pockets and sticks used as tangible forms, making the material delivery more interesting. Based on research that has been conducted, it can be concluded that the use of multiplication pocket media in teaching Mathematics, particularly multiplication material, affects the learning outcomes of students in class IIID at SD Swasta Muhammadiyah 08 Medan.

#### 5. CONCLUSION

Based on the research conducted in class IIID at SD Swasta Muhammadiyah 08 Medan, it can be concluded that the use of multiplication pocket learning media in mathematics lessons has a significant impact on improving students' learning outcomes. The multiplication pocket learning media, as one of the visual learning aids, has proven effective in capturing students' attention, increasing learning motivation, and simplifying the understanding of basic mathematical concepts which many students have considered challenging and boring. In previous learning processes that relied solely on printed books and lecture methods, many students were less active and did not fully understand the material. However, after the implementation of activities based on concrete learning media, there was an increase in interaction between students and the material, as well as between students and teachers. The

interactive and colorful multiplication pocket learning media, which displays elements that can be played with through simple activities, encourages students to actively engage in the learning process.

The research results show an increase in the average score from the pretest of 39.32 to 96.95 in the posttest. This improvement is not only in terms of numbers but also in terms of learning completeness, where in the pretest there were 13 students who had not achieved mastery, while in the posttest the number of students who achieved mastery increased to 20 students reaching the Minimum Completeness Criteria (KKM) set at 70. The average difference of % points indicates that the use of lapbook teaching materials has a tangible positive impact on students' understanding of the taught material, especially in the cognitive domain.

Based on the successful implementation of multiplication pocket learning media in this study, it can be concluded that multiplication pockets are an effective learning resource for improving the mathematics learning outcomes of lower-grade students. This media is very suitable for mathematics learning or learning that requires a visual and practical approach, especially for elementary school students who are still in the stage of concrete operational development. Therefore, it is recommended that elementary school teachers utilize and develop multiplication pocket media in daily learning activities to create a more active, enjoyable, and meaningful learning environment. These findings can also serve as a basis for further research to test the effectiveness of lapbooks in teaching other subjects or at different educational levels.

#### ACKNOWLEDGEMENTS

The author would like to express their deepest gratitude to all parties who have provided support, guidance, assistance, and motivation to the author in completing this task. Especially to:

1. The lecturer of the Microteaching course who has provided guidance, supervision, and invaluable input in completing and preparing this assignment.

2. My family, especially my parents and my loved ones, who have given endless moral support and motivation, enabling me to complete this assignment successfully.
3. My classmates who have collaborated in discussions and provided insights that enriched the writing of this assignment.
4. The institution or university, which has provided facilities that support the completion of this assignment. .

The author also wants to thank themselves for the dedication, effort, and enthusiasm given to complete this task despite facing many challenges. Hopefully, this work can provide a useful contribution to knowledge, especially in the field discussed.

#### REFERENCES

- Amalia Yunia Rahmawati. (2020). *Supervisor Pendidikan*. July, 1–23.
- Ani Daniyati, Ismy Bulqis Saputri, Ricken Wijaya, Siti Aqila Septiyani, & Usep Setiawan. (2023). Konsep Dasar Media Pembelajaran. *Journal of Student Research*, 1(1), 282–294. <https://doi.org/10.55606/jsr.v1i1.993>
- Azhari, Y. (2022). Pendekatan Penelitian Creswill Bab 3 Metode Penelitian. *Repository.Upi.Edu*, 5, 2013–2015. [http://repository.upi.edu/61268/4/S\\_JKR\\_1604261\\_Chapter3.pdf](http://repository.upi.edu/61268/4/S_JKR_1604261_Chapter3.pdf)
- Meyniar Albina, & Krisna Bayu Pratama. (2025). Peran Tujuan Pembelajaran dalam Perencanaan Pembelajaran : Dasar untuk Pembelajaran yang Efektif. *Harmoni Pendidikan : Jurnal Ilmu Pendidikan*, 2(2), 55–61. <https://doi.org/10.62383/hardik.v2i2.1233>
- Ph.D. Ummul Aiman, S. P. D. K. A. S. H. M. A. Ciq. M. J. M. P., Suryadin Hasda, M. P. Z. F., M.Kes. Masita, M. P. I. N. T. S. K., & M.Pd. Meilida Eka Sari, M. P. M. K. N. A. (2022). Metodologi Penelitian Kuantitatif. In *Yayasan Penerbit Muhammad Zaini*.
- Rahayu, M. S., Hasan, I., Asmendri, A., & Sari, M. (2023). Relavansi Kurikulum Dan Pembelajaran Dalam Pendidikan. *Dharmas Education Journal (DE\_Journal)*, 4(1), 108–118. <https://doi.org/10.56667/dejournal.v4i1.92>

- 5
- Rahman, A., Munandar, S. A., Fitriani, A., Karlina, Y., & Yumriani. (2022). Pengertian Pendidikan, Ilmu Pendidikan dan Unsur-Unsur Pendidikan. *Al Urwatul Wutsqa: Kajian Pendidikan Islam*, 2(1), 1–8.
- Ramadani, S., Ismail, N., & Idris, D. R. (2025). *Penggunaan Media Pembelajaran Berbasis Kantong Perkalian Dalam Meningkatkan Hasil Belajar Pada Siswa Kelas Iv Uptd Sdn 187 Baru*. 2025(3), 1182–1186.
- Setialana, P. (2014). No Title. *Pontificia Universidad Catolica Del Peru*, 8(33), 44.
- SHELEMO, A. A. (2023). No Title. *Nucl. Phys.*, 13(1), 104–116.
- Silvia, A. L., Mufliva, R., Nurjannah, A., & Cahyaningsih, A. T. (2023). Meningkatkan Pemahaman Konsep Perkalian Matematika Pada Siswa Kelas III Sekolah Dasar Dengan Menggunakan LKPD Berbantuan Media Kantong Perkalian Matematika. *DWIJA CENDEKIA: Jurnal Riset Pedagogik*, 7(1), 352.  
<https://doi.org/10.20961/jdc.v7i1.71822>
- Tangkas Ageng Nugroho, Achmad Kaisi Amarco, & Muhammad Yasin. (2023). Perkembangan Industri 5.0 Terhadap Perekonomian Indonesia. *Manajemen Kreatif Jurnal*, 1(3), 95–106.  
<https://doi.org/10.55606/makreju.v1i3.1645>
- Tri Prastawati, T., & Mulyono, R. (2023). Peran Manajemen Pembelajaran Dalam Meningkatkan Prestasi Belajar Siswa Melalui Penggunaan Alat Peraga Sederhana. *Didaktik : Jurnal Ilmiah PGSD STKIP Subang*, 9(1), 378–392.  
<https://doi.org/10.36989/didaktik.v9i1.709>
- Ulya, F. F., Magfiroh, S., & Zuliana, E. (2024). Pengaruh Media Kantong Perkalian Melalui Pendekatan Pendidikan Matematika Realistik Indonesia (Pmri) Materi Perkalian Kelas Ii Sd Negeri Tlogoharum 01. *Theorema: The Journal Education of Mathematics*, 5(2), 29–37.
- Waruwu, M., Pu`at, S. N., Utami, P. R., Yanti, E., & Rusydiana, M. (2025). Metode Penelitian Kuantitatif: Konsep, Jenis, Tahapan dan Kelebihan. *Jurnal Ilmiah Profesi Pendidikan*, 10(1), 917–932.

<https://doi.org/10.29303/jipp.v10i1.3057>