

# The Implementation of Problem-Based Learning on Multiplication and Division Lessons in Improving Elementary School Students' Learning Motivation

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**Abstrak:** Penelitian ini bertujuan untuk meningkatkan motivasi belajar siswa sekolah dasar dalam pembelajaran perkalian dan pembagian dengan menerapkan pembelajaran berbasis masalah. Penelitian ini merupakan penelitian kualitatif. Subjek penelitian adalah siswa sekolah dasar. Hasil penelitian menunjukkan bahwa siswa mengalami peningkatan motivasi dalam pembelajaran perkalian dan pembagian setelah menerapkan pembelajaran berbasis masalah karena mereka merasa senang selama proses pembelajaran. Selain itu, observasi, wawancara, dan studi dokumentasi menunjukkan bahwa dengan pembelajaran berbasis masalah, banyak siswa lebih memahami konsep perkalian & pembagian serta menerapkannya dalam kehidupan sehari-hari. Selain itu, siswa berpikir kritis dalam memecahkan masalah ketika proses pembelajaran dilakukan secara diskusi atau kelompok. Penelitian ini membuktikan bahwa guru merupakan kunci keberhasilan dalam proses pembelajaran dan peningkatan motivasi siswa. Oleh karena itu, guru harus mampu memilih metode pembelajaran yang tepat bagi siswa untuk mendorong semangat belajar.

**Kata Kunci:** Pembelajaran Berbasis Masalah, Perkalian dan Pembagian, Motivasi Belajar

**Abstract:** This study aims at increasing elementary school students' learning motivation in multiplication and division lessons by implementing problem-based learning. This study was qualitative research. Furthermore, the research subjects were elementary school students. Results indicated that students experienced an increased motivation in multiplication and division lessons after implementing problem-based learning because they felt happy during the learning process. In addition, observations, interviews, and documentation studies showed that, with problem-based learning, many students better understood the concepts of multiplication & division and applied them in their daily life. Moreover, students thought critically in solving problems when the learning process was carried out in discussion or groups. This study proves that teachers are the key to success in a learning process and the increased student motivation. Therefore, teachers must be able to choose the right learning method for students to encourage their enthusiasm for learning.

**keywords:** Problem Based Learning, Multiplication and Division, Motivation to learn.

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## **PENDAHULUAN**

Mathematics is often considered a difficult subject by most elementary school students. Multiplication and division, which are the foundation of many other mathematical concepts, often cause students to feel stressed and anxious (Dian Septi Anggraeni Author, Linda Ika Mayasari, & Eddy Setyanto, 2023). of interest and motivation in learning these concepts can impact student understanding and learning outcomes (Umam & Azhar, 2021). Therefore, innovative and engaging approaches are needed to address this challenge and increase student motivation.

Mathematics is frequently perceived as one of the most challenging subjects by elementary school students. Among the various topics taught at this level, multiplication and division are often identified as the most difficult concepts to master. These two operations are fundamental building blocks for a wide range of mathematical skills, including fractions, ratios, algebraic thinking, and problem-solving. When students struggle with multiplication and division at an early age, these difficulties often persist and create learning gaps that affect their overall mathematical development. Struggles can trigger not only academic challenges but also emotional responses, including stress, frustration, and anxiety. These emotional barriers can further hinder students' confidence and willingness to engage with learning activities.

The lack of interest and motivation in learning multiplication and division is another significant factor that influences students' understanding and academic outcomes. Motivation plays an essential role in determining the effectiveness of the learning process. When students feel bored, pressured, or disconnected from mathematical content, they tend to disengage and rely on memorization rather than comprehension. This often results in superficial understanding and poor retention. Conversely, when students are genuinely interested and motivated, they are more likely to participate actively, ask questions, practice independently, and develop deeper conceptual knowledge.

Given these challenges, it becomes crucial for teachers and schools to adopt innovative, engaging, and student-centered instructional approaches. Traditional teaching methods that rely heavily on rote memorization, repetitive worksheets, or teacher-dominated instruction may not sufficiently address the diverse learning needs of today's students. Instead, a shift toward more interactive, meaningful, and enjoyable learning experiences is necessary.

One promising approach involves incorporating games, visual models, storytelling, and real-life contexts into mathematics instruction. For example, using concrete objects, manipulatives, and digital tools can help students visualize multiplication and division processes more clearly. Games and interactive activities can reduce anxiety by transforming challenging tasks into enjoyable experiences. Story-based problems can connect mathematical concepts to students' everyday lives, making learning more relevant and meaningful.

Technology-enhanced learning tools—such as educational apps, interactive simulations, and adaptive learning platforms—also offer valuable opportunities to personalize instruction. These tools can adjust difficulty levels based on student performance, provide immediate feedback, and create a supportive learning environment that encourages exploration rather than fear of failure. Such strategies not only enhance understanding but also build students' confidence in approaching mathematical tasks.

In addition, collaborative learning activities can help students support one another through shared problem-solving and discussion. When students feel connected to their peers and are encouraged to express their thoughts, they develop a more positive attitude toward learning. Teachers also play a critical role in fostering a growth mindset, emphasizing that mistakes are part of the learning process and that mathematical ability can improve with practice.

In conclusion, addressing students' difficulties with multiplication and division requires more than just additional practice; it calls for thoughtful, creative, and student-centered instructional strategies. By integrating engaging learning experiences, supportive technologies, and positive classroom environments, educators can reduce anxiety, increase motivation, and ultimately improve learning outcomes for elementary school students.

The application of problem-based learning (PBL) to multiplication and division in elementary schools has the potential to provide a more engaging and meaningful learning experience. By presenting problems relevant to everyday life, students can see the direct application of the mathematical concepts they are learning (Darwati & Purana, 2020). This is expected to improve students' understanding of the material and stimulate their interest and motivation to continue learning.

This study aims to explore the application of problem-based learning (PBL) to multiplication and division in elementary school mathematics. Furthermore, this study also aims to evaluate the extent to which the PBL approach can increase students' learning motivation. Therefore, the results of this study are expected to make a positive contribution to efforts to improve the quality of mathematics learning at the elementary school level, particularly in enhancing student learning motivation (Ali, 2019).

The application of Problem-Based Learning (PBL) to the teaching of multiplication and division in elementary schools offers significant potential to create a more engaging, meaningful, and student-centered learning experience (Condliffe et al., 2017). Traditional mathematics instruction often relies on direct teaching, repeated drills, and memorization, which may not fully capture students' interest or help them understand the relevance of mathematical concepts in daily life. In contrast, PBL emphasizes learning through real-world problems, active exploration, and collaborative inquiry. By presenting students with challenges that are directly connected to everyday situations, they are encouraged to see multiplication and division not merely as abstract procedures but as useful tools for solving practical problems. Situating mathematical learning within contexts that are familiar and relevant allows students to internalize concepts more effectively and fosters a sense of purpose in the learning process.

Through PBL, students are encouraged to take an active role in constructing their own understanding. Instead of passively receiving information, they engage in discussions, analyze problems, propose strategies, and test solutions (Cho & Brown, 2013). This process stimulates critical thinking, creativity, and deeper conceptual understanding. When applied to multiplication and division, PBL can help students recognize how these operations are used in various situations such as sharing objects, comparing quantities, determining costs, or organizing events. Such authentic applications make learning more concrete and relatable, reducing students' anxiety and increasing their confidence in handling mathematical tasks.

Motivation is another key aspect influenced by the implementation of PBL. When students are given meaningful problems to solve, they often become more curious and enthusiastic about learning. The opportunity to collaborate with peers adds a social dimension that can

further enhance engagement. Students may feel more supported when working together, and group discussions allow them to articulate their reasoning and learn from the perspectives of others. These interactions contribute to building a positive learning environment in which students feel comfortable experimenting, making mistakes, and trying again—an essential part of developing mathematical resilience.

This study aims to explore how PBL can be effectively applied to the teaching of multiplication and division in elementary mathematics. Specifically, it seeks to examine the instructional process, the types of problems that can support conceptual understanding, and the ways in which students respond to PBL activities. By observing classroom practices and analyzing student outcomes, the study intends to provide insights into how PBL can enhance both cognitive and affective aspects of learning.

Furthermore, the study also aims to evaluate the extent to which the PBL approach can increase students' learning motivation. Motivation plays a crucial role in determining students' willingness to engage, persist, and succeed in learning. Instructional approaches that emphasize student involvement and real-world relevance are more likely to foster intrinsic motivation. Therefore, understanding how PBL influences students' interest, enthusiasm, and attitudes toward mathematics is essential for improving instructional practices.

Ultimately, the findings of this study are expected to contribute positively to efforts aimed at improving the quality of mathematics education at the elementary level. By highlighting the benefits and challenges of using PBL for multiplication and division, the study can serve as a valuable reference for educators, curriculum developers, and policymakers who seek to enhance students' motivation and learning outcomes. Through thoughtful implementation of PBL, mathematics learning can become more enjoyable, meaningful, and effective for young learners.

This study aims to explore the application of problem-based learning (PBL) to multiplication and division in elementary school mathematics. Furthermore, it also aims to evaluate the extent to which the PBL approach can improve students' learning motivation (Visscher & White, 2019). Therefore, the results of this study are expected to positively contribute to improving the quality of mathematics learning in elementary schools, particularly in enhancing student motivation.

Subject matter that is close to the daily life of each student is expected to be meaningful and absorbed by all students. The various characteristics of students who have a uniqueness in each learning process make it a challenge for teachers to provide meaningful learning. In addition, the subjects that must be taught also vary. One of them is mathematics.

To date, mathematics is still regarded as a torment for some students because they think it is one of the "very scary subjects". It is strengthened by the methods applied by teachers which are still procedural (conventional) so that the concept of the lesson is not conveyed fully to students (Fakhri Auliya, 2018). This condition makes students less active and bored in the learning process. As a result, mathematics becomes a frightening and difficult subject. This must be an evaluation for teachers to open new minds for students so that mathematics may become a "fun and easy" lesson.

Currently, many different methods can be applied to make the learning process fun and meaningful, positioning the teachers as the main actor. Teachers can incorporate creativity and innovation in every learning process. One of the methods that can be used is problem-based learning. The implementation of this method in the learning process must be

appropriate, good, and correct so that the process can provide optimal results and produce encouragement for students to receive lessons.

To this day, mathematics continues to be perceived as a source of difficulty and even fear for many students. Some learners consider mathematics to be one of the “very scary subjects,” a perception that significantly affects their attitudes, confidence, and level of engagement. According to (Adhelacahya, 2023) this negative perception is further reinforced by the teaching methods commonly used in classrooms, which tend to be procedural and conventional in nature. When instruction focuses primarily on formulas, step-by-step procedures, and rote memorization, students often fail to grasp the underlying concepts. As a result, learning becomes mechanical rather than meaningful. Such practices limit students’ opportunities to explore, ask questions, or develop a deeper conceptual understanding. Consequently, they may become passive, disinterested, and easily bored during the learning process, ultimately viewing mathematics as a difficult and intimidating subject.

This situation poses an important challenge for teachers and highlights the need for a critical evaluation of current instructional practices. Teachers are encouraged to rethink their approaches and adopt strategies that can open students’ minds to the possibility that mathematics can be a “fun and easy” subject when presented effectively. A shift in mindset is required—not only from students but also from teachers—toward viewing mathematics as a dynamic, engaging, and relevant field of study. Teachers play a crucial role in shaping students’ experiences, and their instructional choices have a direct impact on students’ attitudes and learning outcomes.

In recent years, various innovative teaching methods have emerged to support more enjoyable, interactive, and meaningful learning experiences. These approaches recognize that teachers are not only transmitters of knowledge but also facilitators, designers of learning environments, and motivators. Creativity and innovation can be incorporated into the learning process through the use of real-life examples, games, manipulatives, digital media, group activities, and contextualized problem-solving tasks. When teachers actively seek to make learning more relatable and engaging, students are more likely to participate enthusiastically and develop a positive attitude toward mathematics.

Among the many methods available, problem-based learning (PBL) has gained considerable attention for its potential to improve both understanding and motivation. PBL positions students at the center of the learning experience by presenting them with real-world problems that require critical thinking, collaboration, and application of mathematical concepts (Cho & Brown, 2013). Rather than simply receiving information, students are encouraged to investigate, analyze, and develop solutions. This approach not only fosters deeper conceptual understanding but also cultivates essential skills such as reasoning, communication, and creativity.

For PBL to be effective, however, its implementation must be carefully planned and executed. Teachers need to select appropriate problems that align with learning objectives, facilitate discussions that guide students’ thinking, and create an environment that supports exploration and inquiry. When applied properly, PBL can transform the learning atmosphere by making mathematics more dynamic, meaningful, and enjoyable. It shifts the focus from memorizing procedures to understanding concepts and applying them in authentic contexts. Ultimately, by adopting innovative approaches such as problem-based learning, teachers can help students overcome their fear of mathematics. With the right strategies, mathematics can indeed become a subject that students find interesting, accessible, and enjoyable.

The implementation of problem-based learning by providing contextual problems around the lives of students in metacognition can have a positive impact on the learning process by continuing to practice consistently (Elita, Habibi, Putra, & Ulandari, 2019). Apart from being seen from the side of the method, the application of problem-based learning assisted by teaching aids or learning media can foster student learning motivation, learning activities, and problem-solving skills (Santoso, Putri, & Medriati, 2020).

Learning is a routine activity that is very important for everyone. In real life, the learning process becomes an important thing and lasts forever (long-life learner) even though every human being has their respective way in the process (Tirtarahardja & La Sulo, 2012). Learning motivation is an encouragement that comes from outside or within each individual to bring about a behavior change. In learning, each individual has goals to be achieved, which must be supported by the willingness to learn, the essence of the need for learning, plans for the future, fun activities, and an efficient learning environment (Putri Ningrat, Tegeh, & Sumantri, 2018). Therefore, with learning motivation, every learner can carry out activities diligently and responsibly (Hero & Sni, 2018).

Problem-based learning is a learning method applied to students with the concept of a complex and open problem, aiming at developing critical thinking skills, increasing problem-solving skills, and serving as a communication tool in lifelong learning (Ali, 2019). This method can be linked to various aspects of students' daily lives so that the implementation of this problem-based learning can be very relevant, meaningful, and contextual. Through this method, the teachers demand students for being active in finding problems independently or in groups and being able to explain their findings contextually and systematically (Rusman, 2016).

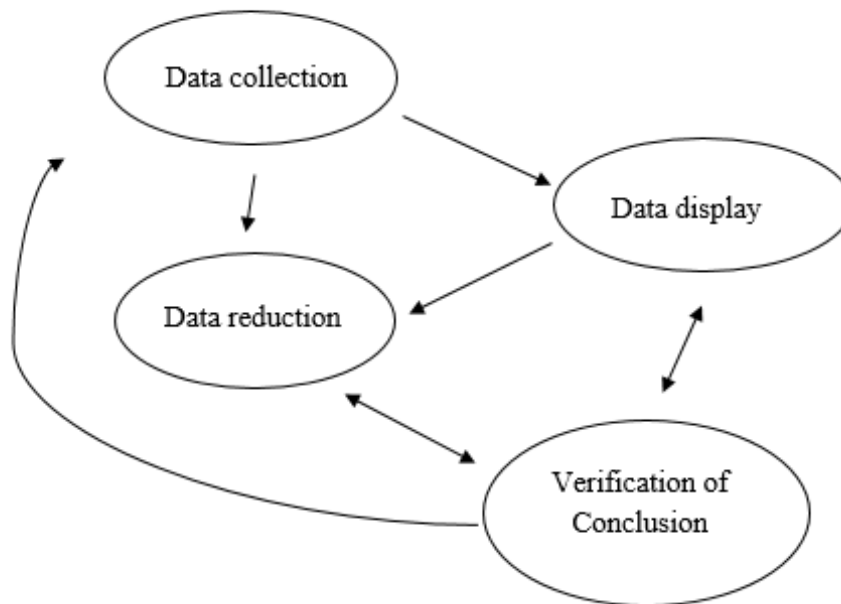
Mathematics is a subject that can build students' thinking patterns and provide clear, precise, and definite arrangements and decisions (Prabowo, 2019). In an educational institution, mathematics is one of the main subjects. Mathematics as a subject is a systematic arrangement in which there is an interaction between teachers and students. In it, a teaching and learning process occurs to form, build, and develop students' thinking patterns (Amir & Risnawati, 2016). In the mathematics learning process, mathematics has several characteristics, namely having patterns and relationships, observing abstract objects, having a deductive mindset, forming a high level of creativity, providing problem-solving activities, and serving as a tool for communication (Fitrah, 2016).

## **METODE**

In this study, the initial steps to be taken by the researchers were learning the use of qualitative research methods with the topic under study, choosing research locations, administering permits to the school (research location), conducting initial observations, determining informants, and preparing instruments for interviews and observations. The next step was the implementation of the research planning for collecting the data by going directly to the research location. The data collection was carried out to obtain factual and valid information according to actual conditions. After that, data processing was carried out by analyzing the results of observations to find an answer. Moreover, conclusions were then validated and the final results of the analysis were narrated in text form.

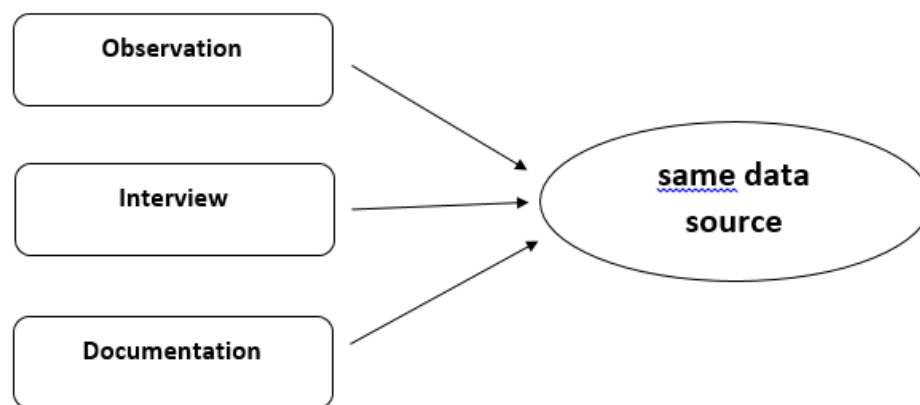
The type of this study was qualitative research. In this study, researchers conducted interviews and observations to collect the searched data. The type of qualitative research used in this study was case study qualitative research. The case study was chosen because this method can solve problems in detail and prioritize the genuineness of its process (Yusanto, 2019).

The employed data collection procedure in this study was the triangulation technique. Triangulation is known as accumulating data by combining the components of various data collection techniques, such as observation, interviews, and documentation as well as existing data sources to be concluded (Abdurahman, 2018). The observation was carried out by observing the learning process in the classroom and the preparation of the school program. It was then followed by interviews with the informants concerned. At the same time, researchers also documented related activities. The collected data were then analyzed using Miles & Huberman's data analysis, consisting of three stages: data reduction, data display, and concluding or verification (Ezmir, 2016; Sulistyaningsih & Rakhmawati, 2017).



**Figure 1.** *The Technique of Data Analysis from Miles & Huberman, 1992*

Concerning the validity of the data, the researchers reviewed data collected from interviews and then correlated them with the data generated from observations and documentation. The results presented the correlation between one data and another. After that, we could ensure which data were correct, different, or false because the use of more than one data collection technique aimed at complementing each other to gain comprehensive data.



**Figure 2.** The Triangulation Technique

### Analisis Data

From the results of observations, it can be seen that many students do not like the mathematics subject due to multiplication and division lessons. They find mathematics difficult because they cannot understand the basic concepts in mathematics, namely multiplication & division. Therefore, the researchers used the problem-based learning method to increase students' motivation in learning mathematics, especially concerning multiplication and division.

In addition, the results of interviews conducted with teachers in elementary schools showed that some students enjoyed learning multiplication and division using the problem-based learning method. In the implementation of the problem-based learning method, students were asked to solve problems and think critically during the learning process. Problem-based learning emphasizes the learning process that is centered on students, while the teacher only serves as a facilitator for students to learn in group discussions (Aini *et al.*, 2019). Participants play an active role in learning, making them have to understand the lesson being taught.

Based on the observations carried out in elementary school classrooms, it was evident that many students expressed negative attitudes toward mathematics, particularly when learning multiplication and division. These two operations form the foundation of many other mathematical concepts, yet they are often perceived as difficult and confusing by young learners. Many students struggle because they have not fully grasped the basic ideas underlying multiplication and division. Without a strong conceptual understanding, they tend to rely heavily on memorization, which leads to frustration when they encounter unfamiliar problems or larger numbers. This lack of understanding contributes significantly to students' belief that mathematics is a challenging subject, ultimately reducing their interest, confidence, and motivation to learn.

Recognizing this problem, the researchers implemented the problem-based learning (PBL) method as an alternative instructional approach to increase students' motivation in learning mathematics. PBL is known for emphasizing meaningful problem solving, active learning, and student-centered instruction (Darwati & Purana, 2020). Unlike traditional teaching methods, which often prioritize procedures and drills, PBL engages students in real-world scenarios that require them to apply mathematical concepts to find solutions. By using this approach, researchers aimed to help students develop a deeper understanding of multiplication and division while simultaneously increasing their enthusiasm and involvement in the learning process.



Interviews conducted with elementary school teachers further reinforced the findings from classroom observations. Teachers reported that a number of students showed greater enjoyment when multiplication and division lessons were delivered using the problem-based learning method. They observed that students were more curious, more willing to participate in discussions, and more motivated to complete the tasks assigned to them. According to the teachers, one of the reasons students enjoyed PBL was because it allowed them to explore problems actively rather than passively receiving information from the teacher.

During the implementation of PBL, students were required to work through various problems and think critically about possible solutions. This process encouraged them to analyze situations, identify what mathematical operations were needed, and collaborate with their peers to reach a solution. For many students, this approach made the learning experience more meaningful and enjoyable. They were no longer simply memorizing multiplication tables or repetitive procedures; instead, they were engaged in tasks that connected mathematics to real-life contexts.

Problem-based learning places students at the center of the instructional process. In this approach, the teacher's role shifts from being the primary source of knowledge to becoming a facilitator who guides and supports students as they work through problems. The teacher provides direction, asks guiding questions, ensures that discussions remain productive, and helps students reflect on their learning. However, the responsibility for learning lies primarily with the students. They must engage actively, communicate with their peers, share ideas, evaluate different strategies, and justify their solutions. As highlighted (Wijayati, 2017) the PBL model encourages students to take ownership of their learning, which leads to increased involvement and a deeper understanding of the material.

Another important aspect of PBL is the collaborative learning environment it fosters. Students typically work in groups to solve problems, which allows them to learn from one another and build interpersonal skills. Group discussions encourage them to express their ideas, listen to others, and negotiate different viewpoints. These interactions help students develop confidence in their reasoning abilities and provide opportunities to clarify misunderstandings. For students who previously felt anxious or confused about multiplication and division, working with peers can reduce pressure and make the learning experience more enjoyable.

The active involvement required in PBL also helps students internalize mathematical concepts more effectively. When they participate in solving authentic problems—such as distributing items equally, calculating costs, or determining quantities—they gain practical experience with multiplication and division. This hands-on involvement strengthens conceptual understanding and reinforces the relevance of mathematics in daily life. As a result, students begin to see mathematics not as a series of abstract rules but as a useful tool for solving everyday problems.

Overall, the findings suggest that the problem-based learning method has significant potential to improve students' motivation and understanding of multiplication and division in elementary mathematics. Through meaningful problems, active participation, and student-centered instruction, PBL creates a learning environment that is both engaging and effective. Teachers and researchers alike observed that students became more enthusiastic, more confident, and more capable of understanding the mathematical concepts being taught. By adopting PBL, educators can help transform students' attitudes toward mathematics, turning a subject once considered difficult and intimidating into one

that is interesting, accessible, and enjoyable. This shift not only enhances learning outcomes but also contributes to the development of positive lifelong attitudes toward mathematics.

Problem-based learning allows students to learn to identify problems and issues regarding multiplication and division in the real world so that the knowledge gained from the lessons can be implemented in their daily lives (Darwati & Purana, 2020). Problem-based learning is considered to be able to overcome problems regarding multiplication and division on students' learning motivation. It aims at increasing the awareness of students to be able to enjoy the mathematics lesson and change their mindset about mathematics (Xin, 2019). In other words, its purpose is to make mathematics not a scary subject but fun.

The implementation of the problem-based learning (PBL) model for multiplication and division in elementary schools has shown significant results in increasing student motivation. During the implementation period, students appeared more enthusiastic and active in each learning session. They not only engaged in class discussions but also actively collaborated in small groups to solve problems presented by the teacher.

The learning process began with the presentation of contextual problems relevant to students' daily lives, such as division and multiplication in situations involving food distribution, calculating the price of goods, or distributing money. This approach allows students to more easily relate mathematical concepts to their direct experiences, thus increasing their interest and motivation to solve the problems.

Observations showed that most students experienced an improvement in their understanding of multiplication and division concepts. This was evident in their ability to solve more complex math problems after implementing the PBL model. Furthermore, many students who previously struggled with multiplication and division began to demonstrate better understanding and were able to clearly explain the steps involved in solving the problems.

## **HASIL**

Based on observations and interviews, the difficulty of students is due to not knowing the basic concepts of multiplication and division. Many students experience errors in multiplying numbers that are more than 10 because they do not understand the stages or methods to get the correct answer. In addition, students do not know basic multiplication from 3 to 9. In general, students who can understand and complete multiplication can certainly divide. Multiplication and division are related to each other or have a relationship (Deringöl, 2019; Polotskaia & Savard, 2021).

The errors of elementary school students in understanding the concept of multiplication and division are that they find it difficult to understand lessons, lack mastery, are not accustomed to or trained in multiplication and division, and lack accuracy in performing multiplication and division operations (Saja'ah, 2018).

Learning motivation serves as a driver of interest for students in the learning process. In addition, high motivation can improve or produce good learning outcomes for the students (Andriani & Rasto, 2019). Therefore, encouragement and support that motivate students are highly needed both internally and externally. By having so, the learning process may become light to be carried out by students because of having no coercion. Learning motivation that arises from within will make them easier to understand the multiplication

and division lessons given by the teacher. As a result, the knowledge they get becomes useful (Bishara, 2018). Moreover, students become focused and have a clear direction in achieving learning goals while playing an active role in discussion activities or the learning process (John, Nelson, Klenczar, & Robnett, 2020). For this reason, teachers must be able to increase students' motivation and awareness of the importance of learning mathematics, especially multiplication and division lessons which are very much needed in real-life situations. Problem-based learning can be a solution to improving students' understanding of multiplication and division because students are asked to think critically and be able to solve problems.

The problem-based learning (PBL) model has been proven effective in increasing student learning motivation. According to learning motivation theory, students tend to be more motivated if they can see the relevance of the material to their lives. PBL provides opportunities for students to face real-life challenges involving the application of mathematical concepts in more concrete contexts, which in turn increases their interest and engagement in learning.

## **DISKUSI**

The implementation of PBL also has a positive impact on students' critical thinking skills. Students not only learn to memorize the steps of multiplication and division, but also learn to analyze problems, develop problem-solving strategies, and collaborate in groups. This aligns with research showing that PBL can improve higher-order thinking skills such as analysis, evaluation, and synthesis (Hmelo-Silver, 2004).

However, several challenges were encountered during the implementation of PBL. One major challenge was teachers' readiness to manage problem-based learning, particularly in providing clear instructions and facilitating group discussions effectively. Some teachers expressed difficulty managing time so that each group could complete the problems on time. Furthermore, although most students were enthusiastic, some students who previously lacked confidence in mathematics showed a tendency to feel overwhelmed by this method (Hanafi, Marzuki, Khikmah, & Nugroho, 2024). This shows that the success of PBL also depends heavily on the teacher's approach in supporting students with varying levels of readiness.

Student learning motivation increased significantly after the implementation of PBL. Before the implementation of problem-based learning, many students perceived mathematics as a difficult and boring subject. However, after the implementation of PBL, students began to see mathematics as interesting and useful. PBL provides opportunities for students to see real-world applications of the material being studied, which helps them understand why they need to learn about multiplication and division.

Furthermore, student learning motivation was also influenced by their increased confidence in solving math problems. Students who previously felt anxious or afraid of math problems now felt more confident because they had learned how to solve problems in a more practical and relevant way. This aligns with motivation theory, which states that successful experiences can boost students' self-confidence, which in turn can increase their motivation to learn further. (Deci & Ryan, 2000).

## **KESIMPULAN**

The learning process which implements the problem-based learning method can increase students' learning motivation regarding multiplication and division. One of the factors causing an increase in students' learning motivation and understanding is a sense of

pleasure which serves as a driving force for students to be enthusiastic in the learning process. By having so, students can easily understand the concept of multiplication and division. One of the inhibiting factors for elementary school students is the learning model used by the teacher which is still traditional, thereby creating a tense learning atmosphere that makes students afraid, especially in the mathematics subject.

Problem-based learning is a contextual learning method that is centered on students and is related to students' daily lives. It encourages students to think critically and study learning materials independently or in groups through discussion.

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## **PROFILE**

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