

## DEVELOPMENT OF FRACTIONAL BOARD MEDIA FOR CONCEPTUAL UNDERSTANDING OF GRADE II ELEMENTARY SCHOOL STUDENTS

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### Abstract

*This research aims to develop the learning media of the Fraction Board and test its effectiveness in increasing the understanding of the concept of fractions among grade II students at SDN Susukan 09 Pagi. Fractional Board is a concrete media developed through research with R&D methods using a 4D development model. This media serves as a learning tool to improve students' understanding of concepts, especially in fractional materials. Understanding the concept is very important, especially in fractions, because students often see fractions only as symbols to be manipulated, not as whole numbers. Overall, the results of the study show that the Fractional Board is considered very feasible with a validation rate of 96.67% from media experts, 95.83% from material experts, 88.00% from teacher trials, and 91.56% from student trials. The average score of the pre-test students was 66.66, while the post-test score reached 88.00. Thus, this Fractional Board learning media is considered feasible to be used in the learning process in grade II of elementary school to improve students' understanding of mathematical concepts.*

**Keywords:** Fractional Board Media, Concept comprehension, mathematics

### Abstrak

Penelitian ini bertujuan untuk mengembangkan media pembelajaran Papan Pecahan serta menguji efektivitasnya dalam meningkatkan pemahaman konsep pecahan di kalangan siswa kelas II di SDN Susukan 09 Pagi. Papan Pecahan adalah media konkret yang dikembangkan melalui penelitian dengan metode R&D menggunakan model pengembangan 4D. Media ini berfungsi sebagai alat pembelajaran untuk meningkatkan pemahaman konsep siswa, khususnya dalam materi pecahan. Pemahaman konsep sangat penting, terutama dalam pecahan, karena siswa sering kali melihat pecahan hanya sebagai simbol yang harus dimanipulasi, bukan sebagai bilangan yang utuh. Secara keseluruhan, hasil penelitian menunjukkan bahwa Papan Pecahan dinilai sangat layak dengan tingkat validasi 96,67% dari ahli media, 95,83% dari ahli materi, 88,00% dari uji coba guru, dan 91,56% dari uji coba siswa. Nilai rata-rata pre-test siswa adalah 66,66, sementara nilai post-test mencapai 88,00. Dengan demikian, media pembelajaran Papan Pecahan ini dianggap layak untuk digunakan dalam proses pembelajaran di kelas II Sekolah Dasar guna meningkatkan pemahaman konsep matematika siswa.

**Kata kunci:** Media Papan Pecahan, pemahaman Konsep, matematika

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### Introduction

Mathematics learning is an integral part of education in schools. Mathematics is always included in every curriculum at all levels of education (Putri et al., 2023). It is important to start learning mathematics from elementary school age because it helps students develop thinking skills that are useful for solving various problems in daily life (Rohman & Syaifudin, 2021). The main goal is to improve students' understanding of mathematical concepts so that they are more excited, comfortable, and confident in facing mathematics learning. Therefore, mathematics

learning plays an important role in increasing the potential of quality human resources, including the ability to understand concepts (Widayati, 2022).

In elementary school, there are five skill standards that are important for students to master, one of which is understanding concepts. Understanding mathematical concepts includes the ability to understand, explain the relationships between concepts, and apply these concepts effectively in problem solving. Indicators of concept understanding include the ability to reformulate concepts, group objects based on relevant attributes, provide examples and non-examples of concepts, describe concepts in various forms of mathematical representation, develop necessary or adequate criteria for a concept, and use, apply, and select appropriate procedures in problem solving (Radiusman, 2020). The introduction of proper understanding of concepts from an early age in elementary school is important because it is an important basis for understanding more complex concepts at higher levels of education. In addition to understanding concepts, mathematics learning also requires interesting learning media (Siregar, 2021).

Learning media are various auxiliary tools, both physical and non-physical, that are used as intermediaries between teachers and students to facilitate the understanding of mathematical concepts. In understanding mathematical concepts, students need to be involved in a series of structured practical activities (Permatasari et al., 2021). Therefore, the use of learning media is very important in the educational process and plays a big role as a tool to facilitate the course of learning. The function of learning media is to facilitate teachers during the learning process and as a means to provide knowledge to students (Junaidi, 2019). Learning will feel more meaningful and not boring if you use learning media. Well-designed learning media can improve the quality of education by facilitating student learning and supporting the role of teachers in teaching activities (Ani Daniyati et al., 2023).

Some of the previous studies that are relevant to this study include: (1) Mega et al. (2019) with the journal title "Development of Fractional Fruit Learning Media to Improve Understanding of the Concept of Simple Fractions in Grade II Students of MI Al Irsyad Al Islamiyyah Kediri". The results of the trial of this product show that the learning media is able to improve students' understanding of concepts, with significant t-test results, namely t count 3.91 and t table 2.04. This shows that this learning media is able to increase students' understanding of concepts. The similarities and updates with the previous research are the similarities in explaining fractional matter and using the R&D research method. (2) Restu et al. (2022) with the journal title "Development of Fractional Board Media for Addition and Subtraction Materials with the Same Denominator in Grade IV Students of SDN Sambi 2". The visual media of the fractional board is stated to be very practical. This is evidenced based on the analysis of questionnaires given to teachers and students in a limited trial, where the visual media of the fractional board met the criteria of a 90% score percentage. The similarities and updates with previous research are the similarities in describing fractional material and using R&D research methods, as well as the type of media used. Meanwhile, the update was that the previous research object was grade IV elementary school students, and used the ADDIE model, while I used the 4D model. (3) Setiawan et al. (2020) with the journal title "Development of Fractional Domino Cards as a Mathematics Learning Media in Grade IV Elementary School". The results of this study show that the average student response score with a percentage of 90.2% is included in the very good category. The average comprehension test score was 88.3% which was also included in the very good category, so it can be concluded that the fractional domino card learning media is worth using. The similarities and updates with previous research are the similarities in describing fractional matter and using R&D research methods.

In teaching the concept of fractions in mathematics lessons, teachers need concrete media in the form of fraction boards. Based on my observations, there are still many teachers who do not use learning media when teaching and do not develop learning media, and many students do not understand the concept. One way to help students is to create interesting learning media, such as fractional board media. This media is in the shape of a circle that can be filled with various fractions according to the material taught. The fractional board media that I developed in this study starts by cutting a circle according to the number of pieces required. To illustrate the concept of fractions, two contrasting colors are used, one for the numerator and one for the denominator. The tools and materials used include saws, meters, scissors, markers, saws, pliers, drills, plywood, and blue, red, and yellow wood paint. By using this fractional board media, students will be more involved in learning fractions and can better understand the concept of simple fractions.

Based on the results of observations in class II-C SDN Susukan 06 Morning, the obstacles that occurred included difficulty understanding the concept of fractions, not being able to distinguish between numerators and denominators in fractions, not being able to operate fractions correctly, and difficulty presenting a real picture of the material being taught so that it was not well formed in students' memory, which led to low learning outcomes and weak understanding of mathematical concepts. Therefore, the researcher offers a solution by utilizing the media of fractional boards to improve students' understanding of the concept of fractions and encourage students' active involvement in fraction learning.

## Research Methods

The strategy connected is R&D (Inquire about and Advancement) with a 4D demonstrate (Characterize, Plan, Advancement, Spread). The 4D show was created by Sivasailam Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel (1974). Agreeing to (Riani Johan et al., 2023) the stages of the 4D show, to be specific: (1) Define, This arrange decides what is required by a item, gets data by making perceptions, analyzes the beginning condition some time recently beginning item advancement and the ultimate condition after assessing the item, gets it the characteristics of understudies who will be the target within the item trial created, plans assignments that are in agreement with the learning needs of understudies, understanding of the concept of item improvement, and the reason of item advancement. (2) Design, The design stage involves determining the design, selecting the media, choosing the format, and making the initial design. Researchers use the Canva application to design fractional board media. (3) Development, The development stage is the manufacture and testing of products. The development test stage is carried out after the product is completed and ready to be tested for validity by experts. The product was tested by three validators, two of whom were media experts and one was a material expert. Before being tested on students, the product must be validated, especially by lecturers who are media experts. Members of the media will evaluate the eligibility aspects of the breakout board media. Furthermore, validate the material in the form of *post-test* and *pre-test* questions to evaluate students' understanding of the concept of fractional material. After the product was tested on students in grades II-C, the researcher gave a response questionnaire regarding the attractiveness of the fractional board media that had been developed. (4) Disseminate, At this stage, the product can be disseminated and introduced to the wider community. Factors that must be considered include consumer analysis, methods,

implementation themes and schedules, and distribution media selection. However, in this study, the product was not disseminated because the product was only tested in one school.

In the expert validation test in this study, the assessment carried out by the validator is compared to the ideal score standard that has been set in the evaluation instrument. The analysis was carried out using a percentage descriptive technique with a certain formula. The formula for the calculation of the questionnaire can be described below.

$$P = \frac{f}{N} \times 100$$

**Information:**

$f$  = The frequency that is being sought as a percentage.

$N$  = Minimum score

$P$  = Validation percentage

According to (Tanjung et al., 2022), the basis used to analyze the results of learning media validation and material validation is adjusted to the following criteria.

**Table 1**  
**Media and Material Validity Criteria**

| Presented  | Validity Level | Information                          |
|------------|----------------|--------------------------------------|
| 76% - 100% | Very Valid     | Excellent to use                     |
| 51% - 75%  | Valid          | Can be used after<br>minor revisions |
| 26% - 50%  | Invalid        | Cannot be used                       |
| 0% - 25%   | Highly Invalid | Cannot be used                       |

**Results and Discussion**

This research is in the form of the development of learning media, especially in Mathematics lessons in grade II of elementary school, namely in the form of fractional board media. The fraction board is a tool made to help teachers convey fractional learning material in mathematics subjects, especially to help students understand their concepts. Concept understanding is the ability to master a material and then be able to explain it again. Understanding concepts is very necessary for students who have experienced the learning process because with this understanding students can solve a problem related to their concepts. Conceptual understanding is the ability to capture meanings such as being able to express a material presented in a more understandable form, being able to provide interpretation, and being able to apply it.

So that media that can help students to overcome these problems by using fractional board media, fractional board media will be made as attractive as possible in order to help students in the learning process. On the fraction board there is a circle where the circle can be filled with various fractions as needed based on the material to be taught. Using fractional board learning media to explain to students directly allows teachers to avoid students thinking abstractly because there is already concrete learning media in front of teachers and students during modeling sessions, which helps students learn more effectively.

The fractional board media that I developed in this study starts with a circle that is cut into pieces according to the number of pieces needed. After that, to demonstrate the existence of fractions by using two contrasting colors. One color is used to represent the numerator, while another color is used to represent the denominator. The materials and tools used are saws,

meters, scissors, markers, rulers, pliers, drills, plywood wood, blue, orange, pink, and yellow paint, With this fractional board media, students will be more involved in learning fractions and can understand the concept of simple fractions as well as possible.

The definition stages in this study include the analysis of students, teachers and materials to achieve the specified goals and needs. This analysis is needed to determine the teaching materials or media needed during the learning process. The process of developing fractional board media goes through several stages, such as validation by experts, teachers and student respondents to conduct research. After that, it can only be known whether the media that has been created is successful to be used in learning. This research uses a 4D model, to develop a fractional board. The process must go through four stages, namely, definition, design, development, and deployment.

The first stage is Definition, this stage makes observations first. When observing SDN Susukan 06 Morning, there is still a lack of learning media available, most teachers provide material with the lecture method during the learning session, especially in mathematics lessons, so that students' understanding of concepts is still very lacking. With the creation of the fraction board, it is hoped that it can support students in understanding the concept of fractions and comparison of fractions with the same denominator. Teachers and students can use this fractional board media themselves as a learning tool.

The second stage of Design, In this planning stage, the researcher designs learning media to reduce the problems that have been identified. This media is used by class II in simple fraction material and fractional comparison with the same denominator. The size of the circular fractional board is 30 x 30 cm and the size of the square fractional board is 20 x 20 cm. The media of the fractional board is in the shape of a circle and a square in which there are several fractional blocks. The fractional block is painted using wood paint with two colors used, red and blue, useful for distinguishing numerator and denominator fractional blocks. The fractional block can be disassembled using adhesive glue so that it is easier for students to remove and install the fractional block and replace the fraction numerator according to the learning material.



**Figure 1**  
**Fractional Board Media Before Decorating**

The third stage of development, in the development stage, the researcher transforms the media design from the Canva application to physical media. Media made based on basic competencies, namely 3.7 Explaining fractions  $\frac{2}{4}, \frac{3}{6}, \frac{5}{8}, \frac{7}{10}$  using concrete media, Presenting fractions 4.7  $\frac{2}{4}, \frac{3}{6}, \frac{5}{8}, \frac{7}{10}$  which corresponds to the part of the whole concrete medium, 5.7 Presents

a comparison of simple fractions by denominating the same using concrete media. The media that has been developed will be tested by experts and tested by students and teachers.



**Figure 2**  
**Media Fractional Board Comparison**

The fourth stage is Distribution, Fractional board media can be distributed and introduced to other elementary schools. However, it did not disseminate, because the fractional board media was only tested in one school.

The results can be concluded using fractional board media, namely through several stages starting from expert validation, teacher response, and student response. At this stage, it is carried out to see the assessment of the feasibility level of the media that has been developed.

The validation carried out aims to evaluate the validity of learning media from various aspects, such as its appearance, use, and benefits. The media is validated by two media experts who have special qualifications, namely lecturers from Uhamka who are experts in the field of learning media. Here are the validation results from media experts.

**Table 2**  
**Media Expert Validation Results**

| Assessment Aspects | Ahli Media 1 | Ahli Media 2 | Maximum Score | Percentage | Category   |
|--------------------|--------------|--------------|---------------|------------|------------|
| Display            | 20           | 20           | 20            | 100%       | Very Valid |
| Use                | 22           | 22           | 24            | 92%        | Very Valid |
| Benefits           | 16           | 16           | 16            | 100%       | Very Valid |
| Average            | 96,67%       | 96,67%       |               | 96,67%     | Very Valid |

*(Source: Research data)*

Based on table 2, the two media experts gave very positive assessments on the three main aspects of the evaluation, namely appearance, utilization, and value, with an approval score of 96.67%. The average approval score of 96.67% indicates that the developed learning media has a very high level of validity. This states that the media is considered very feasible and effective to be used in the learning process from the perspective of media experts.

This high assessment covers various important aspects of the learning medium, including the quality of the visual appearance, ease of use, and the educational value contained in it. This shows that the media is not only visually attractive, but also functional and has great potential to increase learning effectiveness. However, media experts also gave suggestions for improvement, namely providing cement boards as a media platform so that they do not fall

easily. This suggestion shows attention to the practical and safe aspects of media use in real learning situations.

It can be concluded that the results of this evaluation confirm the high quality of the learning media developed. With a very high level of approval from media experts, this media can be considered a valid learning tool and is ready to be implemented in the context of education. However, it is necessary to pay attention to suggestions for improvement to improve the physical stability of the media, which will further increase the effectiveness and safety of its use in the learning process.

Another organization is to survey the validity of pre-test and post-test questions in measuring students' understanding of concepts. Agree on the material with the master, to be more specific a Uhamka teacher who has mastery in the field of arithmetic. The after-pick is the approval comes from the fabric specialist.

**Table 3**  
**Material Expert Validation Results**

| Validator   | Material | Language | Penyajian | Maximum Score | Percentage | Category     |
|-------------|----------|----------|-----------|---------------|------------|--------------|
| Ahli Materi | 16       | 18       | 12        | 48            | 95,83%     | Sangat Valid |

*(Source: Research data)*

Based on table 3, the overall average score given by material experts reached 95.83%. This figure indicates that the learning materials evaluated are of excellent quality and are very much in line with the standards expected in the context of education. The score of 95.83% which is included in the "very valid" category shows that this learning material has met important criteria in the development of educational materials. This can include aspects such as the accuracy of the content, its suitability to the curriculum, the clarity of its presentation, and its relevance to the student's level of understanding. This high validity score gives confidence that the learning material is feasible and effective to be used in the teaching and learning process.

Nonetheless, the material experts also provide constructive suggestions and inputs for further improvement. They emphasized the importance of paying attention to the writing aspect so that it is clearer and does not cause double meaning for students. This advice is invaluable because clarity in the delivery of material is the main key in ensuring a good understanding by students. Attention to this aspect of writing shows that although the material as a whole is considered to be very valid, there is still room for improvement, especially in terms of presentation and formulation of language. Clarity in writing not only helps students understand the material better, but it also reduces the risk of misunderstandings or improper interpretations.

It can be concluded from the evaluation of material experts that the learning materials developed are of very high quality and very valid for use in the context of education. The validity score of 95.83% gives strong confidence in the effectiveness and feasibility of the material. However, it is important to keep an eye on and follow up on suggestions for improvement, especially in the aspect of clarity of writing. By making improvements based on this input, learning materials can become more effective in facilitating student understanding and achieving desired learning goals. This careful and responsive approach to expert feedback will produce learning materials that are not only valid in content, but also optimal in their presentation to students.



**Table 4**  
**Teacher Trial Table**

| <b>Teacher User</b> | <b>Material</b> | <b>Display and usage</b> | <b>Curiosities</b> | <b>Maximum Score</b> | <b>Percentage</b> |
|---------------------|-----------------|--------------------------|--------------------|----------------------|-------------------|
| II-B                | 7               | 19                       | 17                 | 50                   | 86%               |
| II-C                | 8               | 20                       | 17                 | 50                   | 90%               |
| Avarage             |                 |                          |                    |                      | 88%               |

*(Source: Research data)*

Based on table 4, the evaluation was carried out by two grade II teachers with very positive results. Teachers of grades II-B gave an assessment with a percentage of 86%, while teachers of grades II-C gave a higher assessment with a percentage of 90%. The average percentage of these two assessments reached 88% and was included in the category of "very decent". This indicates that the learning media is considered very effective and suitable for use in the context of learning in grade II. This high assessment reflects the quality of the media in various aspects, such as its suitability with learning materials, ease of use, and its potential to improve student understanding.

In addition to the assessment from the teacher, the trial also involved students in grades II-C to get a direct perspective from the main users of the learning media. This trial was held on May 22, 2024, involving 25 students. The involvement of students in this evaluation process is very important to ensure that the learning media is not only well assessed by educators, but also effective and interesting for students. The trial on students aims to evaluate and improve the optimality and understanding of learning media, in this case shardboard media. Students' opinions and responses are invaluable in assessing aspects such as clarity of presentation, visual appeal, and effectiveness in aiding comprehension of the material.

So it can be concluded that the results of the user trial show that the learning media developed has a very high level of feasibility, both from the perspective of teachers and students. The average percentage of 88% categorized as "very feasible" gives a strong belief that this media is effective and ready to be implemented in the learning process in grade II. The involvement of students in the evaluation process adds to the validity of the assessment and ensures that the media not only meets educational standards, but also meets the needs and preferences of students. With these very positive results, the learning medium can be expected to make a significant contribution in improving the quality and effectiveness of learning in grade II, while still considering feedback for further improvement.

**Table 5**  
**Results of Student Responses**

| <b>Assessment Aspects</b>             |            | <b>Curiosities</b> | <b>Maximum Score</b> | <b>Presented (%)</b> |
|---------------------------------------|------------|--------------------|----------------------|----------------------|
| <b>Media Appeal and Effectiveness</b> | <b>and</b> |                    |                      |                      |
| 449                                   |            | 430                | 960                  | 91,56%               |



(Source : Research data)

Based on table 5, the average score given by students reached 91.56%, which is included in the "very interesting" category. This percentage indicates that fractional board media not only meets learning standards, but also succeeds in attracting students' interest and enthusiasm. Positive responses from students include several key aspects of this learning medium. First, students assessed that fractional board media was very visually appealing. This shows that the design and presentation of the media successfully captures the attention of students, which is an important step in motivating them to learn. Second, students found the medium to be easy to use, which indicates that its interactive design suits their abilities and needs. The colors used in the media also received appreciation from students, which showed that the aesthetic aspect played an important role in pique their interest. More importantly, students report that this medium is easy to understand in explaining the concept of fractions and comparing fractions with the same denominator. This is a very positive indication that the medium has successfully achieved its main goal, which is to facilitate the understanding of complex mathematical concepts.

It can be concluded that the results of this experiment provide strong evidence that fractional board media is very effective in learning mathematics, especially in the topic of fractions. The percentage of 91.56% categorized as "very interesting" shows that this medium is not only successful in conveying concepts, but also in creating a fun and engaging learning experience for students. The success of this medium lies in the combination of visual appeal, ease of use, and effectiveness in explaining abstract mathematical concepts. By combining these aspects, fractional board media has succeeded in creating a learning environment that supports conceptual understanding while maintaining student interest and engagement.

These results show that the development of learning media that pays attention to visual aspects, interactivity, and clarity of concepts can significantly increase the effectiveness of mathematics learning. This kind of media not only helps students in understanding difficult concepts, but it can also change their perception of mathematics to be more positive and fun. Thus, the use of this fractional board media can be recommended to be applied more widely in mathematics learning, especially for fractional topics at the elementary school level.

According to (Baharuddin, 2020) A concept comprehension test on students was carried out to determine the effectiveness of fractional board media for fraction learning and comparison of fractions with the same denominator. The concept comprehension test is in the form of multiple-choice questions (*pre-test* and *post-test*) consisting of 15 questions. The following are the learning results of students' understanding of the concept of fractional matter.

**Table 6**  
***Pre-test and Post-test results of students***

| No. | Validator                   | Scores<br>obtained | Avarage | Presented |
|-----|-----------------------------|--------------------|---------|-----------|
| 1.  | Hasil <i>pre-test</i>       | 247                | 66,66   | 64%       |
| 2.  | Post-test<br><i>results</i> | 330                | 88,00   | 88%       |

(Source: Research data)

Based on data from table 6, this study evaluates the effectiveness of fractional board media in mathematics learning in grade II elementary school. The data showed a significant improvement in student learning outcomes after the use of this media. Before the intervention, the average score of students on the pre-test results was 66.66 with a classical completeness rate of 64%. After the application of the media, the average score on the post-test results increased to 88.00 with a classical completeness rate of 88%. The increase in the average score of 20.22 points and the increase in the level of classical completeness by 24% showed the effectiveness of the media in helping students understand the concept of fractions. This media succeeded in concretizing the abstract concept of fractions, in accordance with the theory of cognitive development of elementary school age children.

The results of this study state that learning media is very helpful for students to understand the concept, this is relevant to Sukirman's opinion in Nurfadhillah (2021), learning media is everything that is used to convey messages from the sender to the recipient so that it can stimulate students' thoughts, feelings, attention, interests, and willpower in a way that allows learning activities to take place effectively according to the expected learning objectives. The development of learning media seeks to take advantage of the advantages of these media and reduce obstacles that may occur in the learning process (Daryanto, 2019). This is in accordance with the general purpose of learning media development, which is to innovate in learning. Therefore, learning media is very important to support innovation in learning activities. Sukirman explained that learning media is a tool or means used to convey information from teachers to students. This media aims to stimulate various psychological aspects of students, such as thoughts, feelings, and interests, so that they can learn more effectively and in accordance with the desired goals. Daryanto added that the development of learning media must focus on utilizing the advantages of these media and overcoming various obstacles that may arise during the learning process. The development of this media aims to create innovations in teaching methods.

So that learning media plays an important role in the educational process because it is able to increase learning effectiveness by stimulating various psychological aspects of students. The development of learning media must be optimized to take advantage of its advantages and overcome existing obstacles, so that it can support innovation in learning activities. In addition, this study provides strong evidence that the use of fractional board media is very effective in improving students' understanding and learning outcomes on fractional materials. Fractional board media is a tool designed to assist teachers in teaching fractional material in mathematics subjects. This board has circles that can be filled with various fractions according to the material taught. Using a fractional board as a learning medium allows teachers to explain concepts directly, so students don't have to think abstractly because there is concrete media available during the learning session, which ultimately helps students learn more effectively.

The results of this study are supported by the research of Mega et al. (2019) with the title "Development of fractional fruit learning media to improve the understanding of the concept of simple fractions for grade II students of MI Al Irsyad Al Islamiyyah Kediri". This research develops learning media in the form of fractional fruits to improve the understanding of grade II students about the concept of simple fractions. This media has proven to be interesting and valid according to student assessments, and is effective in improving students' understanding of concepts based on the results of trials that show significant values. The similarity with previous research is the focus of R&D research materials and methods, while the difference lies in the type of media, research objects, and research models used. Research by Restu et al. (2022) with the title "Development of Fractional Board Media for Addition and Subtraction of Fractions

with Denominators for Grade IV Students of SDN Sambi 2". This study develops a fractional board media for fractional addition and subtraction materials with the same denominator for grade IV elementary school students. This media is considered very valid and practical based on the results of validation and questionnaire analysis. The similarity with previous research is the focus of R&D research materials and methods and the type of media, while the difference lies in the research object and the research model used.

So that the results of the research of Mega et al. (2019) and Restu et al. (2022) both show that the learning media developed is able to increase students' understanding of fractional material. Both use R&D research methods, but differ in the type of media, research objects, and research models used. Mega et al. used a 4D model for grade II students with fractional fruit media, while Restu et al. used a 4D model for grade IV students with fractional board media. The results of both studies show that valid and interesting learning media can effectively improve students' understanding of concepts.

It can be concluded and associated that the final results of the research conducted by the researcher entitled "Development of fractional board media on the understanding of the concept of grade II elementary school students" there is a significant increase in the average score and the level of classical completeness shows that this media has succeeded in bridging the gap between the abstract concept of fractions and the concrete understanding of students. This media not only improves learning outcomes, but also creates a more engaging and engaging learning experience for students. By allowing students to observe and interact directly with visual representations of fractions, this medium helps to concretize concepts that may have previously been difficult to understand.

Therefore, the use of fractional board media is highly recommended to be widely applied in mathematics learning at the elementary school level, especially for fractional material in grade II of elementary school. This approach not only improves students' understanding, but it also has the potential to increase their interest and motivation in learning mathematics. Thus, this media can be a valuable tool in improving the quality of mathematics learning in elementary schools.

## Conclusion

Berdasarkan penelitian yang dilakukan, dapat disimpulkan bahwa media papan pecahan yang dikembangkan dalam penelitian ini terbukti efektif, menarik, dan layak digunakan untuk meningkatkan pemahaman siswa terhadap konsep pecahan. Validasi ahli menunjukkan persentase kelayakan sebesar 96,67% dari ahli media dan 95,83% dari ahli materi. Uji coba oleh guru dan siswa juga menunjukkan hasil yang sangat positif dengan respon 98% dari guru dan 91,56% dari siswa. Hasil pre-test dan post-test menunjukkan peningkatan pemahaman konsep siswa dari rata-rata 66,66 menjadi 88,00.

Saran Peneliti :

- 1) Untuk guru : Gunakan dan kembangkan media pembelajaran yang menarik dalam setiap kegiatan belajar mengajar.
- 2) Untuk siswa : Manfaatkan media yang disediakan oleh sekolah secara optimal.
- 3) Untuk peneliti selanjutnya : Kembangkan media pembelajaran dengan integrasi teknologi untuk meningkatkan daya tarik dan efektivitas.

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