

## **APPLICATION OF INTERACTIVE POWER POINT LEARNING MEDIA ON MATHEMATICAL FRACTIONS IN CLASS IV ELEMENTARY SCHOOL 32 LUBUKLINGGAU**

**Vina Enjeli<sup>1</sup> Agustriyogo<sup>2</sup>**

**PGRI Silampari University<sup>12</sup>**

[vinavivo98@gmail.com](mailto:vinavivo98@gmail.com)<sup>1</sup> [Agustriyogo@gmail.com](mailto:Agustriyogo@gmail.com)<sup>2</sup>

Accepted : June,22 2025

---

---

**Abstract :** This study investigates the effectiveness of interactive PowerPoint as a learning medium to improve mathematics learning outcomes on fractional material among fourth-grade students at SD Negeri 32 Lubuklinggau. The research was motivated by low student achievement in understanding fractions, which are often perceived as abstract and complex. Traditional teaching methods have contributed to reduced student interest and participation, prompting the need for a more engaging and innovative approach. A quantitative method with a pre-experimental one-group pre-test and post-test design was employed. The participants were 10 fourth-grade students. Data were collected using multiple-choice tests administered before and after the intervention, as well as observation sheets to assess student engagement. Gain score analysis was used to measure improvement in learning outcomes. The results showed a substantial increase in student performance, with the average pre-test score rising from 37.5 to 87.5 on the post-test. The gain score of 0.82 indicates a high level of improvement. Observations also revealed greater interest and active participation during lessons using interactive PowerPoint. These findings imply that interactive digital media can effectively enhance students' conceptual understanding and motivation. Further research is recommended to explore long-term retention and the integration of other technology-based learning strategies.

**Keywords:** Interactive PowerPoint, Learning Outcomes, Fractions, Mathematics, Learning Media, Elementary School

---

---

## **INTRODUCTION**

Mathematics is a very fundamental subject in elementary education because it teaches students to think logically, analytically, and systematically. Mastery of basic mathematical concepts from an early age is an important foundation in supporting the success of students at the next level of education. One of the topics

in mathematics that is very important but often becomes a scourge for students is **Fractional Material**. The concept of fractions is considered quite abstract and difficult to understand by most elementary school students, especially because it deals with proportions, divisions, and representations of numbers that are not round.

Based on the results of initial observations at SD Negeri 32 Lubuklinggau, it is known that grade IV students have difficulties in understanding fractional material. When given questions related to fraction simplification, comparison, or fraction addition and subtraction operations, most students are unable to answer correctly. Some students even show signs of lack of confidence in answering questions and do not dare to ask questions because they feel that they do not understand the material well. This shows that learning that has taken place before has not fully succeeded in building students' conceptual understanding of fractions.

Furthermore, the learning methods used by teachers are generally still conventional, such as lectures, practice questions on the board, or assigning individual assignments. Methods like this tend to be less able to arouse students' interest in learning, especially in materials that require visual and concrete understanding such as fractions. Therefore, a more innovative learning approach is needed and is able to bridge abstract material with visual and interactive delivery.

One of the solutions that can be implemented is the use of **Technology-Based Learning Media** Especially **Interactive PowerPoint**. PowerPoint is not only a teacher's presentation tool, but can be designed as an interesting learning medium by inserting images, animations, audio, and interactive quizzes that can stimulate student activity. With this visual and multimedia approach, students are expected to be able to understand fractional concepts in a more concrete and fun way.

In addition to influencing the understanding of concepts, the use of interactive media is also believed to be able to increase students' motivation to learn, encourage active participation, and develop learning independence. This research not only wants to find out the success of the media from the aspect of learning outcomes, but also wants to see how student involvement changes during the learning process.

Based on this background, the research questions were formulated explicitly as follows:

**"Are the student learning outcomes in the mathematics learning of fractional material in grade IV of SD Negeri 32 Lubuklinggau significantly complete after applying interactive PowerPoint media?"**

This study aims to answer these questions and provide empirical evidence regarding the effectiveness of interactive PowerPoint media in mathematics learning in elementary schools. It is hoped that the results of this research can be a reference for teachers, principals, and curriculum developers to utilize technology more optimally in supporting the teaching and learning process.

## RESEARCH METHODOLOGY

### Research Type and Design

This research is a quantitative research using the **pre-eksperimental** and design **one group pretest-posttest design**. This design was chosen because it is suitable for determining changes in student learning outcomes before and after being given treatment, namely the use of interactive PowerPoint media in mathematics learning. In this design, no control groups are used. Researchers only used one experimental group that was measured twice, namely before treatment (pre-test) and after treatment (post-test). The results of the two measurements were then compared to find out if there was a significant difference.

### Research Subject and Location

This research was carried out at SD Negeri 32 Lubuklinggau in the odd semester of the 2024/2025 school year. The subjects of the study were all grade IV students totaling 10 people. The sampling techniques used are **total sampling**, where the entire population is sampled because the numbers are relatively small and homogeneous. Total subject taking also makes it easier for researchers to make direct observations of all students.

### Research Instruments and Data Collection Techniques

The main instruments used in this study are **Mathematics Learning Outcome Test**, which is in the form of multiple-choice questions totaling 20 questions. These questions are prepared based on basic competency indicators in fractional material in accordance with the applicable curriculum. In addition to the test, the researcher also used **Student Activity Observation Sheet** to record the level of student participation during the learning process.

The test is given twice:

1. **Pre-test**, to find out the initial ability of students before being given treatment.
2. **Post-test**, to measure the achievement of student learning outcomes after learning using interactive PowerPoint media.

The instrument has been content validated by classroom teachers and mathematics learning experts to ensure that the questions given are in accordance with the learning indicators and cognitive level of grade IV students.

### Data Analysis Techniques

Data analysis was carried out using descriptive and quantitative statistical techniques. Pre-test and post-test scores were analyzed to obtain average scores, score increases, and **gain scores**. The gain score is calculated using a formula from Hake:

$$\text{Gain Score} = (\text{Post-test} - \text{Pre-test}) / (100 - \text{Pre-test})$$

The interpretation of the gain score refers to the following categories of effectiveness:

- a. **High** if the value  $\geq 0.71$
- b. **Medium** if the value is  $0.31 - 0.70$
- c. **Low** if the value  $\leq 0.30$

This analysis was carried out to find out the extent of the effectiveness of interactive PowerPoint media in improving student learning outcomes. In addition, observation data was analyzed in a qualitative descriptive manner to determine the development of learning behavior and student involvement in learning.

## RESEARCH RESULTS

This study produced quantitative and descriptive data that showed that the use of interactive PowerPoint media has a significant influence on improving student learning outcomes. Data was obtained from pre-test and post-test learning results of fractional mathematics materials, as well as the results of observation of student activities in class.

### 1. Pre-Test and Post-Test Test Results

At the beginning of learning, students are given a pre-test that shows an average score of **37,5**. The lowest value is **25**, and the highest score **50**, with most students not yet reaching the KKM (Minimum Completeness Criteria) set by the school, which is 70. After learning using interactive PowerPoint during several meetings, a post-test was carried out. The average post-test score increased drastically to **87,5**, with the highest score **100** and lowest value **75**. All students achieved grades above the KKM.

### 2. Test Result Recapitulation Table

Yes	Student Name	Pre-Test Scores	Post-Test Scores	Gain Score	Category: Gain
1	Zhio	25	75	0,67	Keep
2	Ilham	50	100	1,00	Tall
3	Mubarok	25	75	0,67	Keep
4	Alvin	25	100	1,00	Tall

5	Fadli	50	75	0,50	Keep
6	Panca	50	100	1,00	Tall
7	Climbs	50	100	1,00	Tall
8	Choiriyah	25	75	0,67	Keep
9	Maura	50	100	1,00	Tall
10	Nabillah	25	75	0,67	Keep

**Average Gain Score:** 0.82 (high category)

### 3. Analysis and Interpretation

From the table above, it can be seen that **6 out of 10 students** Be in the category **gain tinggi**, while the rest are in the medium category. None of the students were in the low category, which indicates that all students experienced improved learning outcomes after the implementation of interactive PowerPoint media.

This increase is not only indicated by scores, but is also reflected in the **level of student participation** during learning. Students who were previously passive began to actively ask questions, answer, and discuss when the material was presented through visual and animated displays. The observation sheet shows that 90% of students show high enthusiasm for learning.

### 4. Student Engagement and Attitude Change

Some of the indicators of student behavior observed include:

- a. Increasing number of students actively answering teacher questions
- b. Students show a high curiosity about the material
- c. More students are able to work on the questions without the help of teachers
- d. Increased confidence when working on exercises

Students stated that they prefer learning with a PowerPoint view because it is easy to understand and not boring. This shows that the use of media has an impact not only on cognitive aspects, but also affective and psychomotor.

## DISCUSSION

Based on the results of the research that has been presented, there is a significant improvement in the mathematics learning outcomes of grade IV students of SD Negeri 32 Lubuklinggau after the application of interactive PowerPoint media. The increase in the average score from the pre-test by 37.5 to 87.5 in the post-test shows that this learning medium is not only effective, but also efficient in helping students understand fractional material.

Theoretically, the results of this study support the view **Cognitivist and Constructivist Learning Theories** which emphasizes the importance of visual experiences, multimedia stimuli, and active interaction of students in building knowledge. Interactive PowerPoint media, which combines text, images, animations, and audio, helps students to connect fractional abstract concepts into concrete visual forms, thereby increasing their absorption and understanding of the material.

From the aspect **Cognitive**, students will have an easier time understanding the concepts of simplification, addition, subtraction, and fractional comparison. Visualization provided through interactive media encourages the formation of deeper understanding. Students no longer simply memorize procedures, but begin to understand the "why" a step is taken.

From the side **Affective**, students show increased motivation to learn. The observation results showed that students were more enthusiastic about participating in learning, more confident in answering questions, and actively asking questions or discussing. This is important because intrinsic motivation is one of the determining factors for learning success.

While from **Psychomotor aspects**, students become more skilled in solving problems and more confident in using learning media. The ability of students to interact with the media (through interactive features, animations, and quizzes) also trains digital skills that are relevant to current educational technology developments.

These findings are in line with previous research by Nafiah et al. (2022) and Warkintin & Mulyadi (2019) which stated that interactive PowerPoint media can provide a more enjoyable learning experience and significantly improve student learning outcomes. Thus, interactive PowerPoint is not only a tool for teachers to deliver material, but also a learning strategy that is able to transform the learning atmosphere into a more lively, active, and meaningful one.

## CONCLUSION

Based on the results of the research and discussion, it can be concluded that **interactive PowerPoint learning media can significantly improve students' math learning outcomes** in fractional material in grade IV of SD Negeri 32 Lubuklinggau. This is evidenced by the increase in students' average score from 37.5 during the pre-test to 87.5 in the post-test, with an average gain score of 0.82 which is included in the high category.

Interactive PowerPoint media makes a positive contribution not only to the improvement **Cognitive Aspects**, but also to the **Affective** (motivation, interest in learning, and student confidence) and **Psychomotoric** (ability to solve problems and use digital media). Fractional material that was previously considered difficult by students can be understood more easily and enjoyably through this medium.

The use of this medium also facilitates **Student-centered learning**, where students are not only recipients of information, but also actively involved in the learning process. This is in line with the demands of 21st century education that prioritizes active, collaborative, creative, and technology-based learning.

Thus, interactive PowerPoint is highly recommended as an alternative medium in learning mathematics in elementary schools, especially for abstract materials such as fractions. Teachers are expected to integrate this media in daily learning activities as one of the strategies to improve the quality of education.

## REFERENCE

- Atiaturrahmaniah, A., Kudsiah, M., & Ulfa, E. M. (2021). Analysis of Factors Causing Difficulties in Learning Mathematics Fraction Material for Grade IV Students of SDN Sukaraja. *Journal of DIDIKA: Scientific Forum of Basic Education*, 7(2), 268-278.
- Coal, H. H. 2020. Effective Learning Media. Fatawa Publishing, Semarang.
- Dewi, R. S. (2018). Development of interactive learning media to increase student engagement. *Journal of Education and Technology*, 123-130.
- Dimiyati, and M. 2015. Learning and Learning. Rineka Cipta, Jakarta.
- One, et al. 2020. Improve the ability to understand the concept of simple fractions. *Journal of Education and Da'wah*, 2 (2) : 310-315.
- Ege, F. (2020). The Use of PowerPoint-Based Interactive Learning Media to Increase Student Interest. *Research Journal of Madrasah Ibtidaiyah (JURMIA)*, 169-175.
- Erlina. (2009). Development of Interactive Learning Media Using Power Point. *Journal of Education and Technology*, 2-10.
- Hamzah, Ali and Muhlissarini. 2014. Mathematics Learning Planning and Strategies. PT. Rajagrafindo Persada, Jakarta.
- Hanafi, M. I. 2014. Concept of Learning and Learning. Lentera Pendidikan , Jakarta.
- Heruman. 2014. Mathematics Learning Model in Elementary Schools. PT Remaja Rosdakarya, Bandung.
- Hobri, S. A. (2022). Mathematics for Elementary/MI Class IV. Jakarta: The Center for Books of the Satandar Agency, Curriculum, and Education Assessment of the Ministry of Education, Culture, Research, and Technology.
- Irham, M., & Novan, A.W. 2017. EDUCATIONAL PSYCHOLOGY: Theory and Application in the Learning Process. Ar-Ruzz Media, Yogyakarta.

- Maasrukhin, A. R., & Ratnasari, K. 2019. The inquiry learning process of MI students to improve mathematical skills. *Auladuna Journal*, 1 (1): 101-103.
- Nafiah, M., Retno, R. S., & Dewi, C. (2022). Application of Interactive PPT Learning Media to Improve Student Learning Outcomes in Elementary School Grade IV Fractional Materials. *Proceedings of the Basic Scientific Conference*, 3, 935-941.
- Noviana, K., Gunowibowo, P., & Asnawati, R. (2018). No TitEffectiveness of Contextual Teaching and Learning Reviewed from the Mathematical Reasoning Ability of Students. *Journal of Mathematics Education Unila*, Volume 6, Number 3, April 2018, ISSN Page: 2338-1183.
- Nursalim. 2018. *Learning & Learning Management*. CV. Hikam Media Utama, Yogyakarta.
- Rahayu, M. F. (2022). Experimental Research in Educational Research. *Journal of Innovation*, 1-15.
- Risabethe, A. (2017). Alternative Problem Solving with PowerPoint-Based Interactive Learning Media. *Journal of Education*, 168-175.
- Rokhmah, Faizatur. 2018. The Effect of the Realisitic Mathematics Education (Rme) Approach on the Mathematics Learning Outcomes of Grade V Students of SD Negeri 6 Metro Utara. (Thesis). University of Lampung, Bandar Lampung.
- Russian. 2015. *Integrated Thematic Learning*. PT Grafinda Persada, West Java.
- Sugiyono. (2013). *Quantitative, Qualitative, and R&D Research Methods*.
- Susanto, A. 2013. *Theory of Learning and Learning in Elementary Schools*. Pranamedia Group, Jakarta.
- Suzana, Yemmy & Imam Jayanto. 2021. *Learning & learning theory. Literacy of the Archipelago*, Malang.
- Warkintin, W., & Mulyadi, Y. B. (2019). Development of interactive-based teaching materials powered by Power Point to improve student learning outcomes. *Scholaria: Journal of Education and Culture*, 9(1), 82–92.