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THE APPLICATION OF PROBLEM-BASED LEARNING (PBL) WITH WORDWALL MEDIA TO IMPROVE STUDENT LEARNING OUTCOMES ON FRACTION MATERIAL IN CLASS 5 SDN 27 BANDA ACEH

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ABSTRACT *This research aims to improve students' learning outcomes on fraction materials through the application of the Problem Based Learning (PBL) model with Wordwall media in class VI SD Negeri 27 Banda Aceh. Based on initial observations, it was found that the low learning outcomes of students on fraction materials were the main problem in learning, which was caused by the lack of active involvement of students in the learning process and teaching methods that were still dominated by lectures and conventional problem exercises. To overcome this problem, this classroom action research (CAR) was conducted in two cycles involving 28 students as research subjects. The PBL model was chosen because it is oriented towards solving real problems that can stimulate critical thinking and improve concept understanding in more depth, while Wordwall media is used to add interactivity and fun to the learning process. Data were collected through observation, documentation, and learning outcome tests, which were then analyzed using quantitative descriptive techniques. The results showed that the application of PBL model based on Wordwall media can significantly improve students' activities and learning outcomes. In cycle I, students' learning activities showed an increase with a percentage of 78.26% which was classified as a good category, while in cycle II it increased to 91.3% with a very good category. In addition, students' learning outcomes also experienced a significant increase, where the classical completeness which initially only reached 60.87% in cycle I, increased to 86.95% in cycle II. This increase shows that the combination of PBL model and Wordwall media can create a more interesting, interactive, and effective learning atmosphere in improving students' understanding of the concept of fractions. Thus, it can be concluded that the application of the Problem Based Learning (PBL) model based on Wordwall media is effective in improving students' learning outcomes on fraction material in class VI SD Negeri 27 Banda Aceh.*

Keywords ***Problem Based Learning, Wordwall, Learning Outcomes***

1. Introduction

Education is the main foundation in building quality human resources. Good quality education will produce the next generation who have strong skills and understanding to face future challenges. In an effort to improve the quality of education, various innovations are needed in the learning process, including the selection of appropriate learning models and media so that students can learn effectively and enjoyably. Education, in a broad sense, can be understood as part of life itself, where individuals continue to learn and develop throughout life through the various experiences they gain from their surroundings. This process is not limited to the classroom, but includes all situations and places that positively influence a person's growth and development, intellectually, emotionally, socially and morally. Education in this sense reflects the concept of long life education, where every interaction and experience an individual has can be a valuable source of learning. Meanwhile, in a narrow sense, education is often associated with formal institutions such as schools and universities, where the learning system is more structured with curriculum, teaching methods, and evaluation designed to help students or learners achieve certain competencies. In this context, education acts as a means to transfer knowledge, skills and values needed for individuals to contribute optimally in

society. (Pristiwanti, Desi, et al. 2022)

The learning process in the classroom is a complex interaction between teachers and students, where teachers have an important role in creating a conducive and interesting learning atmosphere. For this reason, teachers need to choose a learning model that is in accordance with the characteristics of the students and the material being taught so that learning becomes more meaningful. One of the subjects that has an important role in developing students' logical, analytical, and systematic thinking patterns is mathematics. However, in practice, many students experience difficulties in understanding mathematical concepts, especially in fraction material.

Based on initial observations at SD Negeri 27 Banda Aceh, it was found that fraction material is one of the topics that is quite difficult for grade V students to understand. This difficulty is reflected in the low student learning outcomes in learning fractions. Factors that contribute to low student learning outcomes in this material include: (1) the use of less innovative learning methods, so that students tend to be passive and less motivated; (2) the lack of use of interesting and interactive learning media, which causes students to have difficulty in understanding the concept of fractions concretely; and (3) the lack of teacher understanding in applying appropriate learning models for fraction materials. To overcome these problems, a more innovative and student-centered learning approach is needed. One of the learning models that can be applied is Problem Based Learning (PBL). The PBL model provides a more meaningful learning experience for students because they are faced with real problems that are relevant to everyday life. Through this model, students learn actively to find solutions to the problems given, so that their understanding of the material concepts becomes more in-depth and applicable.

In addition to the application of the PBL model, the use of interactive learning media can also help improve students' understanding of fraction material. According to Wijaya and Rusyan (1994), media acts as a learning stimulant that increases student motivation and prevents boredom. The use of interesting and interactive media helps present material more clearly, create a pleasant learning atmosphere, and encourage students to be more active in achieving learning objectives. One of the media that can be used is Wordwall, a digital platform that provides various types of educational games that can make learning more interesting and fun. The use of Wordwall in fraction learning can help students understand concepts better through interactive activities that stimulate critical thinking and problem solving. Word Wall is an interactive learning media in the form of a collection of words displayed on the wall, whiteboard, or bulletin board in the classroom to help students learn more openly and confidently. It makes learning more fun and less boring for both students and teachers. By emphasizing active and competitive participation among students, Word Wall helps improve their understanding and skills in the learning process. (Purnamasari, Sulfi, et al. 2022) In this study, the use of Word Wall will focus on the online game media Word Wall, which provides a variety of interactive educational games. Through this online game, students can learn in a way that is more interesting, dynamic, and in accordance with technological developments, so it is expected to increase their motivation and learning outcomes. Based on this background, this study aims to apply the Problem Based Learning (PBL) model based on Wordwall media to improve student learning outcomes on fraction material in class V SD Negeri 27 Banda Aceh. It is hoped that this research can contribute to improving the effectiveness of mathematics learning, especially in understanding the concept of fractions, as well as being an innovative alternative for teachers in creating a more interesting and meaningful learning experience for students.

2. Research Methods

This research is a Classroom Action Research (CAR), which is research conducted in a classroom environment to improve the quality of learning practices. CAR focuses on the teaching and learning process with the aim of overcoming problems that arise in the classroom and improving the learning strategies applied. Classroom Action Research (CAR) is an approach that aims to improve the quality of education through changes in the learning process. By making improvements systematically, CAR allows teachers to evaluate, design and implement more effective strategies to improve student learning outcomes (Susilowati, Dwi. 2018). This opinion is also supported by the opinion of Suwarsih who said that Classroom Action Research (CAR) aims to improve the quality of the academic community and the

learning environment by making sustainable changes. Through the process of reflection and evaluation, CAR helps create more effective learning strategies, so as to improve the learning situation and improve student learning outcomes (Suwarsih.M.2007). And According to Tampubolon (2014), Classroom Action Research (CAR) is a major requirement for educators in improving the quality of their performance, which has a positive impact on solving learning problems, improving the quality of learning processes and outcomes, developing professionalism, and implementing research-based improvement strategies. CAR is now receiving great attention in the field of education, even the government provides financial support for educators who successfully plan and implement it well every year. The action research approach involves collaboration between researchers and participants in real situations to identify problems, design solutions, and evaluate the results obtained. In this study, the Kurt Lewin model of classroom action research design was used, which was the first action research model and became the basis for other action research models. This model consists of four main components, namely (1)planning, (2)action, (3)observation, and (4)reflection, which are interconnected in a cycle. The cycle in CAR is carried out repeatedly until the expected improvement target is achieved, so that learning can run more effectively and in accordance with student needs. This class action research was conducted in two cycles. The research design based on the Kurt Lewin model is as follows.

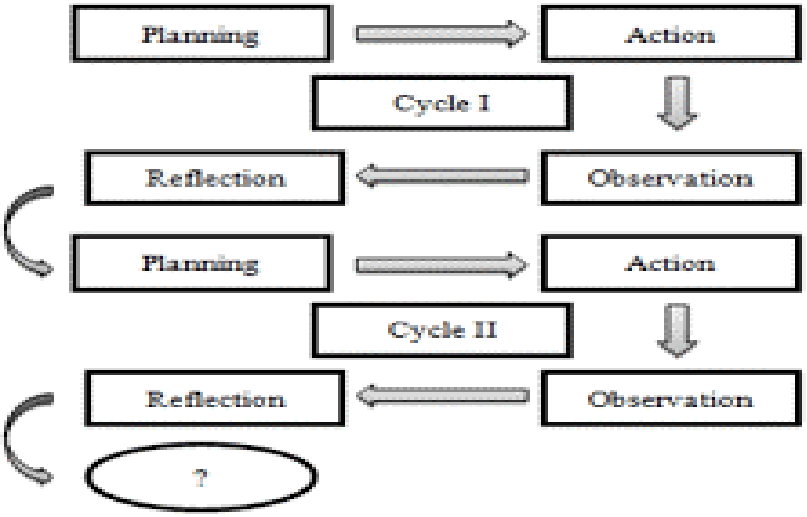

Figure 1. model of classroom action research from Kurt Lewin

Based on Figure 1 above, the activities of each cycle can be described in more detail cycle is as follows (Machali, I. 2022):

1. planing. In the action planning stage, the researcher compiles the stages that will be carried out by considering the aspects of what, why, when, where, by whom, and how the action is carried out. This planning is carried out together with collaborators who play a role in providing input and discussion related to learning solutions, so as to create a common understanding of the problems faced. In this study, the researchers observed the 6th grade students of SDN 27 Banda Aceh and found that they had difficulty in understanding fraction material. To overcome this, researchers designed learning with the Problem Based Learning (PBL) model assisted by Wordwall game media, as well as preparing student worksheets and evaluation tools such as observation sheets and test questions. In addition, the researcher also appointed observers to ensure that the learning process went according to the plan that had been prepared.action, At this stage, researchers carry out the first cycle of learning according to the lesson plan and give tests to measure students' reading skills. If there is no improvement, the next cycle will be continued. During the process, the researcher was assisted by an observer to observe teacher and student activities.
2. Acting. At the Acting stage, researchers carry out actions based on plans that have

been prepared according to the syntax of Problem Based Learning. The activity begins with presenting the problem, discussing learning objectives, and describing the material. Students are then grouped in small teams, given worksheets, and guided in the discussion process. During the discussion, the teacher directs students, provides feedback, and ensures that the information obtained is relevant to the problem being studied. Afterwards, each group presents the solutions they have discussed, followed by clarification and review to ensure a deeper understanding of the material.

3. observation, In the Observation stage, observation activities are carried out simultaneously with the implementation of actions to monitor the effectiveness of learning using the Problem Based Learning model. An observer was in charge of recording teacher and student activities during the learning process based on the observation sheet that had been prepared previously. The observer also used the attendance sheet to record student attendance and observe their involvement in learning. The results of this observation will be used as a benchmark for the success of the actions that have been taken and become the basis for improvement in the next cycle.
4. reflection, At the Reflecting stage, an in-depth analysis of the results of the implementation of the action is carried out to evaluate the effectiveness of the Problem Based Learning model that has been applied. Observers and teaching teachers work together in reviewing learner activity data, looking at the obstacles that arise, and assessing the level of learning success based on predetermined indicators. Data from the first cycle is compared with the second cycle to see the development of student activeness and learning outcomes. If the reflection shows that students' activeness and understanding have not reached the expected target, then strategy improvements will be made in the next cycle. However, if the evaluation results show a significant increase and reach the success indicators, then the class action research can be stopped because the improvement objectives have been achieved.

The desired indicator in this class action research is an increase in student learning outcomes on fraction material through the application of a problem-based learning model with Wordwall game media. Student success is measured based on the achievement of the Minimum Completeness Criteria (MCC) set, which is more than 70. A student is categorized as successful if he/she scores above the MCC, and this study is considered successful if at least 75% of the total students reach these criteria. Thus, the use of Problem Based Learning model and interactive media is expected to significantly improve students' understanding of fraction material.

3. Result

The results of this study indicate that the application of the Problem Based Learning (PBL) model with Wordwall media contributes positively to improving student learning outcomes. In cycle I, several obstacles were found, such as less than optimal time management and low participation of students in group discussions. Some students still had difficulty understanding the concept of fractions and were less active in solving the problems given. Observations also showed that some students were still passive when working in groups, so that problem solving did not run optimally. However, after improvements were made in cycle II, these obstacles were successfully overcome with various strategies, such as better time management, providing more intensive guidance to groups experiencing difficulties, and using a variety of questions to encourage active participation of students. The learning results in cycle II showed a significant increase in both activeness and students' understanding of fraction material. This success shows that the use of Wordwall media in the

PBL model can make the learning process more interesting and interactive, so that students more easily understand the concept of fraction multiplication. In addition, this problem-based approach also helps students develop critical and collaborative thinking skills, which are important competencies in 21st century learning. as for the results of Student Activity cycle 1 and cycle 2 are as follows:

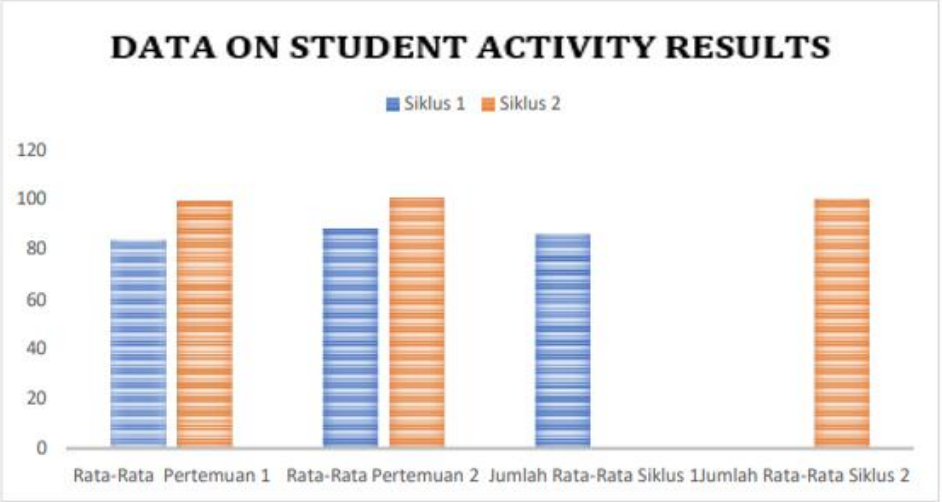

figure 2. Activity Results of Learners cycle 1 and cycle 2

Based on the diagram of students' learning outcomes, it can be seen that there was an increase in scores from cycle I to cycle II. In cycle I, the average score obtained by students at the first meeting was 53, while at the second meeting it increased slightly to 56. Although there was an increase in scores, these results were still relatively low and did not meet the success indicators set in this study. The scores obtained show that students still have difficulty in understanding the material provided, especially in applying the concepts learned in problem solving.

As a follow-up to the results of cycle I, improvements in learning strategies were made in cycle II, which included better time management, increased interaction between teachers and students, and a more varied approach in delivering material by utilizing Wordwall media more optimally. In cycle II, there was a significant increase in student learning outcomes. The average score obtained at the first meeting of cycle II increased to 63, and at the second meeting again increased to 64. When compared to cycle I, this increase shows that the application of the Problem Based Learning (PBL) model with Wordwall media is increasingly effective in helping students understand the material and increasing their participation in learning. as for the Learning Outcomes of Students in cycles 1 and 2 are as follows:

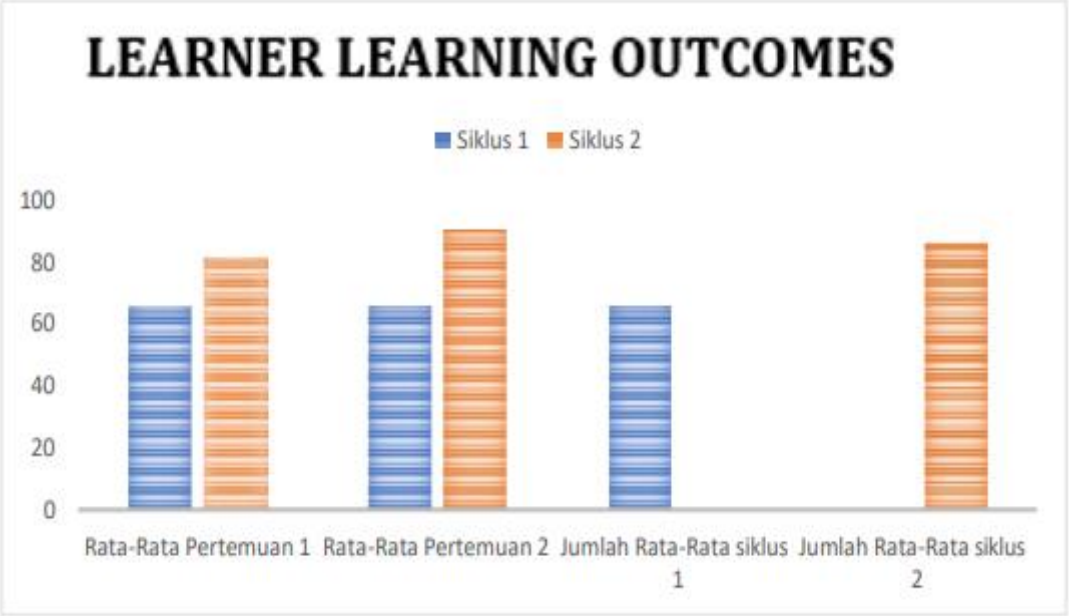

figure 3. Learning Outcomes Of Students Cycle 1 And Cycle 2

Based on the data displayed in the diagram, it can be seen that there was a significant increase in students' learning outcomes from cycle I to cycle II. In cycle I, the average score of students at the first meeting was 65, then experienced a slight increase at the second meeting to 65.36. Although there was an increase, this result was still relatively low and had not reached the excellent category. The scores obtained show that there are still some obstacles in the learning process, such as students' lack of understanding of the material, lack of participation in discussions, and the use of learning media that is not optimal in supporting the understanding of the concepts taught.

Seeing the results in cycle I which were not optimal, evaluation and improvement of learning strategies were carried out in cycle II. These improvements include more effective time management, providing more intensive guidance to students, and utilizing Wordwall media more optimally so that students are more actively involved in learning. The results of these improvements are clearly visible in the increase in the average score of students in cycle II. At the first meeting of cycle II, the average score increased significantly to 81.07, and at the second meeting again experienced a higher surge to reach 90.18. With an average score that reaches the excellent category, it can be concluded that the learning strategy applied in cycle II is very good.

4. Discussion

This research aims to improve student learning outcomes regarding fraction material in class VI SDN 27 Banda Aceh through the application of a problem-based learning (PBL) model using the Wordwall game as media. By using the Classroom Action Research (CAR) method, this study was carried out in four main stages, namely planning, implementation, observation, and reflection. The research subjects consisted of 28 students who were actively involved in each stage of learning. Before implementation, a planning stage was carried out, namely coordination with homeroom teachers and field assistant teachers to prepare a Learning Implementation Plan (RPP) that integrates the use of Wordwall as an interesting and interactive learning tool. Each stage in this study was designed systematically so that learning runs effectively and achieves the main objective, namely improving students' ability to understand fractions. To support the smooth running of the study, the researcher prepared various instruments such as student activity observation sheets, teacher activity

observation sheets, and student learning outcome assessment tools. In addition, the determination of the implementation time was also adjusted to the students' study schedule so that the research process did not interfere with regular learning activities.

figure 4. learning activities

In the implementation stage, learning begins with preliminary activities, where the teacher creates a conducive atmosphere, provides learning motivation, and connects the fraction material with students' experiences. Furthermore, in the core activities, students are invited to solve problems related to fractions through activities in the Wordwall game, both individually and in groups. The teacher acts as a facilitator who provides direction and guidance so that all students can understand the concept of fractions better. The lesson ends with a reflection session, where students are given the opportunity to express their learning experience, while the teacher provides feedback and prepares the next learning steps.

The third stage, namely the observation stage, is carried out to record student activeness and the effectiveness of the learning methods applied. In the first cycle, there were still some obstacles, such as students who needed more time to adjust to the PBL model and the use of Wordwall media. Therefore, the teacher provided additional guidance so that students could understand the learning flow better. and the last stage is reflection. After reflecting on the obstacles that arose in the first cycle, improvements were made to the strategy in the second cycle. These improvements included more efficient time management, a more interactive approach, and increased support for students in completing Wordwall-based tasks. Evaluation results showed that in the second cycle, students became more active, their understanding of fractions increased, and learning outcomes improved significantly. Thus, this research proves that the application of PBL model with Wordwall game media can be an alternative innovative learning method to improve students' understanding of fractions. so that from this reflection the researcher took the following actions: : (1) Provide Intensive Assistance for Students Who Are Still Having Difficulties (2) Use Contexts Relevant to Daily Life (3) Increase Student Concentration and Motivation with Interactive Activities (4) Optimize the Problem Based Learning (PBL) Model Gradually (5) Provide Continuous Evaluation and Reflection.

5. Conclusion

Based on the results of research and discussion that has been carried out in Classroom Action Research (CAR) regarding improving learning outcomes in Mathematics subjects by using the Problem Based Learning (PBL) model based on Wordwall media in class VI students of SD Negeri 27 Banda Aceh, it can be concluded that the application of this model has succeeded in increasing student activity and learning outcomes. The use of Problem Based Learning (PBL) based on Wordwall media in learning Mathematics in class VI has been well implemented, as evidenced by the results of observations in cycle I which showed that students' activities reached 87% (good category), and increased significantly in cycle II with a value of 99.2% (very good category). In addition, students' learning outcomes also increased after the application of this model. In cycle I, the percentage of student learning completeness reached 65.18% (fair category), while in cycle II it increased to 85.63% (good category). This increase shows that the use of the Problem Based Learning (PBL) model based on Wordwall media is effective in increasing students' understanding and involvement in learning Mathematics.

The researcher provides several suggestions for future improvements. (1) For Teachers: It is expected to continue to innovate in creating creative and interesting learning so that students' learning experience becomes more meaningful. This innovation can be done by developing interactive media and applying learning methods that suit students' needs. In addition, teachers also need to increase student interaction and involvement in the learning process and regularly evaluate and adjust learning strategies based on the results obtained. (2) For Studen: Students are expected to be more active in participating in learning activities, both in class and independently. Increasing participation in discussions, asking questions, and sharing opinions will help deepen understanding of the material. In addition, students need to get used to looking for additional information from various sources to broaden their horizons. Developing self-confidence and independence in completing tasks and solving problems is also important to support learning success. (3) For Future Researchers: For future researchers, it is advisable to prepare the research concept carefully so that it is more focused and systematic. In addition, it is important to anticipate various obstacles that may occur during the research so that the process can run smoothly. Expanding the scope of research by considering other factors that can affect learning outcomes is also recommended, so that research can provide greater benefits to the world of education. Reflecting and evaluating the research methods used is also necessary for the improvement and development of future research.

6. Reference

Agustin, V. M., et al. (2023). Sejarah dan Perkembangan Penelitian Tindakan di Indonesia. *Jurnal Kreativitas Mahasiswa*, *1*(3), 313-322.

Machali, I. (2022). Bagaimana melakukan penelitian tindakan kelas bagi guru. *Ijar*, *1*(2), 2022-12.

Maghfiroh, K. (2018). Penggunaan media Word Wall untuk meningkatkan hasil belajar matematika pada siswa Kelas IV MI Roudlotul Huda. *Jurnal Profesi Keguruan*, *4*(1), 64-70.

Masrinah, E. N., Dkk. (2019, October). Problem based learning (PBL) untuk meningkatkan keterampilan berpikir kritis. In *Prosiding Seminar Nasional Pendidikan* (Vol. 1, pp. 924-932).

Pristiwanti, D., Dkk(2022). Pengertian pendidikan. *Jurnal Pendidikan Dan Konseling (JPDK)*, *4*(6), 7911-7915.

Purnamasari, S., Dkk. (2022). Bermain bersama pengetahuan peserta didik melalui media pembelajaran berbasis game online word wall. *Jurnal Pengabdian Masyarakat*, *3*(1), 70-77.

Saraswati, S. (2021). Tahapan Ptk. *Penelitian Tindakan Kelas*, *49*.
Susilowati, D. (2018). Penelitian Tindakan Kelas (PTK) solusi alternatif problematika pembelajaran. *Jurnal ilmiah edunomika*, *2*(01).
Suwarsih Madya, Teori dan Praktik Penelition Tindukan (Bandung: Alfabeta, Anne Burns, Doing Action Research in English Language Tenching 2007),
Tampubolon, S. (2014). Penelitian Tindakan Kelas Sebagai Pengembangan Profes! Pendidik dan Keilmuan. Erlangga.
Wijaya, Cece & Rusyan, A. T. (1994) Kemampuan Dasar Mengajar Guru Dalam Proses Belajar-Mengajar, Bandung: PT. Remaja Rosdakarya