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Improving Natural Science Learning Outcomes on Energy and Its Changes Through Paired Practice Methods at MIS NU Ratna Daya

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Abstract: The reality in Class III MIS NU Ratan Daya shows that, based on the daily test results, 4 out of 11 students achieved mastery, while 7 students did not. This indicates that the number of students who did not achieve mastery is greater than those who did. Based on the results of the pre-action test and initial observations, the researcher, who is also the class teacher, decided to implement a varied method that would engage students and make learning more exciting. In this case, the researcher used the paired practice method. This research employs the action research model, conducted in Class III MIS NU Ratan Daya. The researcher, who is also the teacher at this school, chose this school as the location for the study. The subjects of the study are the 11 students in Class III MIS NU Ratan Daya. The research was carried out during the beginning of the new school year 2022/2023, specifically from January to March 2023. Data collection techniques in this study include tests, observations, and documentation. The results of the pre-cycle test showed that the students' learning outcomes, in a classical sense, were 36.3%, categorized as "very low." In cycle I, the percentage increased to 63.6%, categorized as "high," and in cycle II, the percentage reached 100%, categorized as "very high." In cycle I, the class activity average was 2.85, which falls under the "good" criteria, and in cycle II, it increased to 3.21, still categorized as "good." The percentage of student activity in cycle I was 75%, categorized as "good," and in cycle II, the percentage increased to 85%, categorized as "very good." In addition to student activity, the study also evaluated learning outcomes. The results of the cycle II evaluation showed that the classical learning mastery reached 100%, with the final average score of students being 85.88. This was an improvement from the pre-cycle, where classical learning mastery was 36.3%, with an average score of 65.62, and from cycle I, where classical mastery was 63.6%, with an average score of 75. Based on these findings, it can be concluded that the paired practice method can be applied to the topic of energy and its changes and can significantly improve learning outcomes in Class III, Semester 2, MIS NU Ratan Daya for the 2022/2023 academic year.

Keywords: Learning outcomes, science material on energy and its changes, paired practice method.

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INTRODUCTION

Nowadays, education is more oriented towards final grades obtained through a series of exams and assignments. In fact, in this era, the millennial generation really needs good character education so that they are not eroded by the rapid flow of globalization.

Students today are required to be more active in the learning process. The K 13 curriculum provides students with free space to seek as much information as possible, without being limited by the knowledge possessed by a teacher. The reality that occurs in class III MIS NU Ratan Daya, based on daily test scores, especially in science learning, there are several students who have met the KKM score and most of them have not met the KKM score. This is the background for the author to improve the learning methods that have been applied, because so far the author is also a class III teacher.

So far, researchers have not used varied methods in learning so that it is suspected that students experience boredom in class. This is indicated by the results of initial observations by teachers who are also researchers, namely seeing some students chatting by themselves during learning, some students lying down in class, some students do not dare to express their opinions, some students also cannot answer when asked by the teacher. The data above is the initial data when the researcher conducted a pre-action, namely the action before the researcher applied the method that will be used in this classroom action research, so the number of students who completed was only 4 students out of a total of 11 students, while those who had not completed were 7 students out of a total of 11 students, so students who had not completed were greater than students who had completed.

this will be a big problem because all students should get the same understanding or at least they are able to get maximum learning outcomes. From the results of the pre-action test and initial observations, the researcher who is also a grade III teacher decided to use a variety of methods that make students not bored and make students enthusiastic about learning, in this case the researcher used the paired practice method. the practice rehearsal pairs learning method is a learning strategy that invites students to pair up in the learning process where students are asked to practice skills or learning procedures with their study partners and this strategy is more supportive of use on psychomotoric material.

METHODS

This study uses an action research model. Something that is specifically observed continuously, seen its pros and cons, then controlled changes are made until maximum efforts in the form of the most appropriate action. This is in accordance with what was done by the researcher. In short, the main purpose of action research. Action research emphasizes activities (actions) by testing an idea into practice or real situations on a micro scale, which are expected to be able to improve and enhance the quality of the teaching and learning process. This study was conducted with the intention of revealing an effort to improve the learning process by applying the learning method of using the paired practice method in the science subject of energy and its changes in class III MIS NU Ratan Daya, so the use of the classroom action research approach or method is considered relevant in this study.

Some of the uniqueness of Classroom Action Research, including the following: 1) PTK is a research activity that not only seeks to solve problems, but also seeks scientific support. PTK is an important part of efforts to develop teacher professionalism (the growth of professional attitudes in teachers) because PTK is able to teach teachers to think critically and systematically, is able to accustom teachers to write and take notes; 2) The issues in question are not the result of theoretical studies or previous research results, but come from real and actual problems that occur in classroom learning; 3) CAR starts from simple, real and clear problems regarding things that happen in the classroom; 4) There is collaboration (cooperation) between practitioners (teachers, principals, students, etc.) and researchers in understanding agreements on problems, decision-making that ultimately results in common actions; 5) CAR is carried out only if there is a group decision and commitment to development, to improve teacher professionalism and to gain knowledge as a solution to problems.

The benefits of classroom action research for student learning, in addition to teachers carrying out classroom action research, teachers can be models / examples for students in being critical of learning outcomes. In addition to its benefits, PTK has limitations, namely its validity is still often questioned and it is impossible to generalize because the sample is only the class of those who act as teachers and researchers. Thus, it can be concluded that the use of the classroom action research method is intended to change and improve the quality of learning through actions designed and implemented by teachers, both in terms of curriculum, media methods, strategies and tools.

This research was conducted in class III MIS NU Ratan Daya. The researcher conducted the research here considering that the researcher is a teacher at this school. The subjects of this study were class III MIS NU Ratan Daya, totaling 11 students. The place or location of the research was class III at MIS NU Ratan Daya. This research was conducted at the beginning of the new 2022/2023 academic year, namely January - March 2023. The determination of the research time refers to the school academic calendar, because PTK requires several cycles that require an effective teaching and learning process in the classroom. The data collection techniques in this study are as follows: 1) A test is a number of questions that are conveyed to a person or a number of people to reveal the state or level of development of one or several psychological aspects within themselves. The test is used to obtain data on student learning achievement; 2) Observation is a conscious effort to collect data that is carried out systematically with standardized procedures, while according to Kerlinger, observing is a general term that means all forms of data reception carried out by recording events, calculating, measuring and recording them. Observation, namely direct observation of the learning process in the classroom. Observation is used to collect data on student participation in the teaching and learning process with the paired practice method; 3) According to Hopkins Interviews are a way to find out certain situations in the classroom from another perspective. Interviews are questions asked verbally to people who are considered to be able to provide information or explanations of things that are considered necessary and relevant to PTK problems. Interviews are used to obtain data on the level of success of the paired practice method; 4) Discussions between teachers, colleagues, and collaborators to reflect on the results of the PTK cycle. This data analysis is carried out to determine the success or failure of the actions taken in this study. The technique used for data analysis in this study is a descriptive technique in qualitative and quantitative. Quantitative data in the form of numbers, including student learning outcomes and in analyzing data to obtain learning outcomes, student activity data and teacher activity data are used. Data on learning outcomes. Data on learning outcomes are taken from students' cognitive abilities in solving problems and analyzed in the form of average learning completeness. Class success is seen from the number of students who are able to complete or achieve at least 80% and at least 70% of the number of students in the class. Qualitative data expressed in words or symbols, including student learning activity data and teacher activities.

Qualitative data in the form of words is filled in temporarily because it will be very useful to accompany and complete the picture obtained from quantitative data analysis. Data collected through the implementation of PTK will be analyzed by taking the following steps: 1) checking the data that has been entered, namely re-checking the results of the data obtained from the beginning of the research and checking the results of the information obtained from the research school; 2) The data collection stage requires a fairly long time process. Data collection from the beginning to the end of the research. The follow-up stage is to formulate improvement steps for the next learning cycle. And requires an activity plan that will be carried out for the next. Drawing conclusions. Collecting the results of the data that has been obtained. That with the stages of this research in order to find out the learning outcomes of students' abilities in following science lessons on energy material and its changes so far has been quite low. With this learning model, it might increase the activity of learning science on energy material and its changes; 3) Verification, verification activities are carried out on improving student

learning outcomes by interpreting and making conclusions about the results. While verification of data and actions is carried out to improve learning and make conclusions, actions taken to improve student learning outcomes.

RESULTS

This pre-action is carried out to determine the level of student understanding before starting cycles I and II. Students are given a test in the form of a written test. The data from the pre-action test results are as follows. After observing the science learning process of energy and its changes for class III in the pre-cycle stage, the researcher then discussed with the teacher asking for the next stage, namely cycle I, to improve student learning outcomes. The planning carried out by the researcher is to prepare and design lesson plans for two meetings in cycle I, the aim is that the learning process can be carried out efficiently and effectively. Analyze the questions where the difficulty lies, the medium and easy questions, prepare student and teacher observation sheets to observe the teaching and learning process on energy and its changes using game card media with the paired practice method. Based on the results of the pre-test above, at this stage what the researcher does is plan the following actions: 1) Create lesson plans, which will be implemented in cycle I in an effort to help improve student learning outcomes on energy and its changes; 2) Prepare learning facilities that support the implementation of the learning process, namely student textbooks; 3) Create a student learning outcome test format, to see student learning outcomes on energy and its changes; 4) Conduct interviews for students who are qualified in learning.

Provision of action I by implementing learning where the researcher acts as a teacher in the classroom. Learning is carried out using the paired practice method. The material taught is energy and its changes. The researcher carries out learning activity actions based on the Learning Implementation Plan (RPP). The implementation of this action is carried out in 2 meetings with a time allocation of 2 x 35 minutes. From the results of observations of student motivation at the stage of cycle 1, the energy material and its changes with the paired practice method have a percentage value of 75% with the category "good". This shows that the strategy applied can motivate students in PBM. Student activity will also affect student learning outcomes, therefore the researcher conducted a test (post test) at the end of learning with the following learning outcomes: Based on the classical learning outcome test, it has a percentage of 63.6% with the category "high". Although with this category there are still students who have not completed. This will be continued by holding cycle II. From the results of the analysis above, it can be concluded that learning in cycle I still needs improvement, because there are still some students who have not achieved learning completion and classical learning completion has not been achieved, which means that there are still some students who have low learning outcomes.

After the learning process in cycle I, the researcher and teacher discussed the results of observations in the presentation of cycle I which were then used for improvements in cycle II, the results are as follows: From the results of the final test in cycle I, it turns out that the classical learning completion of students reached (63.6%) with an average value of (72.06) by looking at the results of the students' completion, improvements need to be made in cycle II. The learning carried out in action II was carried out in 2 meetings with a time allocation of 2 x 35 minutes. Learning activities are the development of the implementation of the RPP that has been prepared. The following are details of the learning activities carried out.

Meeting II, as action II which is carried out with various improvements in the learning process using the paired practice method. The activities carried out are: The percentage of student activity in cycle II has a percentage result of 85% with the category of "very good". This shows that the paired practice method can increase student motivation. Therefore, the learning outcomes of energy and its changes can also be

improved. As the learning outcomes below: The results of reflection in cycle II were obtained as follows: 1) The teacher was able to improve student learning outcomes and provide apperception to students so that students did not experience difficulties in following teaching and learning; 2) Students were able to explain in detail about energy and its changes; 3) Students actively asked questions when they did not understand the learning; 4) Cycle II was considered sufficient because the learning outcomes on energy and its changes had increased; 5) In accordance with the results of reflection in cycle II, it turned out that using the paired practice method was appropriate for energy and its changes.

The research aimed at improving students' Natural Science learning outcomes on the topic of energy and its changes through the use of paired practice methods at MIS NU Ratan Daya in the academic year 2022/2023. The study involved 11 students in class III, and the data were collected from January to March 2023. The results were analyzed based on students' test scores, classroom activity levels, and overall engagement during the lessons. Initially, the results from the pre-cycle tests showed that the majority of students were not able to meet the Minimum Mastery Criteria (KKM) set for the subject. Only 4 out of the 11 students achieved the required KKM, leaving 7 students below the expected standard. This imbalance highlighted the need for a more engaging and interactive teaching approach to address the issues faced by the students in mastering the content of the topic.

In response to these challenges, the teacher, who also served as the researcher, implemented the paired practice method. This method was chosen for its potential to increase student engagement, foster collaboration, and reduce feelings of monotony that often affect students' motivation. Paired practice allows students to work together, share knowledge, and learn from each other in a supportive environment. It was hoped that this approach would improve not only the academic performance but also the classroom dynamics. The results from the pre-cycle phase were concerning, as the average class achievement rate was only 36.3%, categorizing it as “very low.” This outcome clearly illustrated the need for an intervention, which led to the introduction of paired practice in the subsequent cycles. In the first cycle, the achievement rate increased to 63.6%, moving it into the “high” category. This improvement suggested that paired practice was beginning to make a positive impact on students' learning outcomes.

During the first cycle, students also showed a moderate level of classroom activity, with the average activity score reaching 2.85, categorized as “good.” The teacher observed that while students were engaged, there was still room for improvement, particularly in the areas of active participation and enthusiasm for the subject matter. However, the initial results provided a solid foundation for further enhancement in the following cycle. In the second cycle, the results saw a dramatic improvement. The achievement rate reached 100%, indicating that all students had successfully met the KKM for the subject. This remarkable progress demonstrated the effectiveness of the paired practice method in helping students grasp the concept of energy and its changes. The students’ understanding of the material had significantly improved, as evidenced by the higher test scores and the overall success of the class.

Classroom activity also showed a marked improvement in the second cycle, with the average activity score rising to 3.21, which still fell under the “good” category but showed a noticeable increase compared to the first cycle. This suggested that the students were becoming more comfortable and confident in their learning, which directly contributed to their improved performance. Furthermore, student participation in the lessons increased significantly. In the second cycle, the percentage of active student participation reached 85%, which was categorized as “very good.” This high level of participation was an encouraging sign that the paired practice method had not only improved academic achievement but also fostered a more interactive and collaborative learning environment. Students were now more engaged and eager to take part in discussions and activities related to the topic.

The overall evaluation of the second cycle revealed that the average final score for students had reached 85.88, a notable increase from the 65.62 average in the pre-cycle phase. This improvement further supported the idea that the paired practice method had been successful in enhancing students' understanding of the energy topic and its changes. The consistent increase in scores from cycle to cycle highlighted the positive effects of the intervention. From the data, it can be concluded that the paired practice method effectively addressed the challenges faced by the students in mastering the topic of energy and its changes. By engaging students in collaborative learning, the method helped to create a supportive learning environment where students were able to learn from each other and reinforce their understanding of the material. This approach not only improved academic performance but also contributed to greater student motivation and enthusiasm for the subject. In conclusion, the implementation of the paired practice method in the teaching of energy and its changes at MIS NU Ratan Daya proved to be an effective strategy in improving students' learning outcomes. The research demonstrated that this method was able to enhance students' academic achievement, increase classroom activity, and foster a more positive and engaging learning environment. The success of this approach suggests that similar methods can be used to improve learning outcomes in other subjects and contexts as well.

In addition to the significant improvements in student achievement, another notable result of the paired practice method was its positive effect on student attitudes towards learning. Initially, many students expressed a lack of enthusiasm for the subject of Natural Science, particularly when it came to abstract concepts such as energy and its changes. However, as the paired practice method was implemented, students began to show more interest in the topic. They were more willing to engage in discussions, ask questions, and work with their peers to solve problems. This shift in attitude reflected the increased sense of collaboration and support that the paired practice method fostered in the classroom. The paired practice method also helped develop important social and communication skills among the students. By working in pairs, students were encouraged to share their thoughts, explain concepts to each other, and engage in peer teaching. This not only strengthened their understanding of the material but also allowed them to build stronger relationships with their classmates. Collaborative learning is known to promote a sense of community within the classroom, and this was evident in the improved cooperation and mutual respect observed among students.

Another important outcome of the paired practice method was the development of critical thinking and problem-solving skills. The nature of the tasks and activities assigned during the lessons encouraged students to think critically about the topic of energy and its changes. Instead of passively receiving information, students were actively involved in discovering solutions, experimenting with ideas, and testing their understanding. This approach empowered students to take ownership of their learning and contributed to their overall academic growth. One of the key factors that contributed to the success of the paired practice method was the teacher's ability to adapt and provide ongoing support throughout the cycles. In the first cycle, the teacher identified areas where students struggled and made necessary adjustments to the lessons. For example, the teacher provided additional explanations, clarified concepts, and introduced more hands-on activities to help students better understand the material. This flexibility and responsiveness were crucial in ensuring that students' learning needs were met.

Moreover, the teacher also implemented regular formative assessments during each cycle to monitor students' progress. These assessments helped the teacher identify which students required additional support and which areas of the topic needed further clarification. By continuously evaluating students' understanding and providing feedback, the teacher was able to maintain a dynamic and responsive teaching approach, which further contributed to the overall success of the paired practice method. Finally, the results of this study highlight the potential for using paired practice as a model for other educational contexts. The success of this method in improving both academic outcomes

and student engagement suggests that it can be a valuable tool for addressing learning challenges in various subjects. Other educators could potentially adopt similar strategies, adapting them to the specific needs of their students and curricula. In this way, the paired practice method could serve as a model for enhancing teaching and learning across different schools and educational settings.

DISCUSSION

Based on the results of the study conducted in January-March, it shows that the paired practice method can be applied to the material of energy and its changes. In this paired practice method, the learning activities of students that are assessed are in 5 categories, including: 1) Students are enthusiastic and ready in teaching and learning activities; 2) Student participation in prerequisite questions asked by the teacher; 3) Students pay attention to the teacher's explanation; 4) Students are active in groups; 5) Students are active in doing assignments given by the teacher well. As stated in the tables above, it is stated that using the paired practice method in the learning process can improve learning outcomes. In cycle I, class activity had an average of 2.85 with the criteria of "good", and in cycle II it had an average of 3.21 also with the criteria of "good". While the percentage of student activity in cycle I classically was 75% with the category of "good" and in cycle II the percentage became 85% and the category was "very good". In addition to the percentage of student activity, what will also be concluded is the learning outcomes of students. In the pre-cycle, the classical student learning outcomes were 36.3% with the category "very low", in cycle I it had a percentage of 63.6% in the high category, while in cycle II the classical percentage was 100% in the category "very high".

The following is a graph of the increase in student learning outcomes from the pre-cycle, to cycle I to cycle II. In addition to an increase in student activity as seen in the table above, the study also saw an increase in student learning outcomes. The evaluation results in cycle II increased compared to the evaluation in cycle I. The results of the cycle II evaluation showed that classical learning completion reached (100%) with an average final student score reaching (85.88) which previously in the pre-cycle it was known that classical learning completion reached (36.3%) with an average final student test score reaching (65.62) and in cycle I classical learning completion reached (63.6%) with an average final student test score (75).

From the analysis above, both in cycle I which was then reflected on with the implementation of cycle II. Research on science learning on energy material and its changes using the paired practice method can be applied to energy material and its changes which is indicated by the increase in student learning outcomes. Student activity also increased from students who were less brave to ask questions to teachers or classmates to being brave to ask, less brave to answer questions from teachers to being brave to answer. The paired practice method can be applied to energy material and its changes because it can solve problems so that activity and cooperation increase and can develop student motivation in studying the material. From this information, it can be concluded that the paired practice method can be applied to energy material and its changes and can improve learning outcomes in class III Semester 2 MIS NU Ratan Daya in the 2022/2023 Academic Year.

The results of this study indicate a marked improvement in students' learning outcomes after the implementation of paired practice methods in teaching Natural Science, specifically on the topic of energy and its changes. The initial findings highlighted a significant gap in achievement, with many students failing to meet the Minimum Mastery Criteria (KKM) in their pre-cycle tests. However, following the introduction of paired practice, both academic achievement and classroom participation improved drastically, leading to a 100% success rate in the second cycle. This section explores the various factors contributing to this improvement, the implications of using the paired practice method, and how the findings align with existing educational theories and practices. First,

it is essential to understand the context of the classroom before the intervention. The initial data revealed that only 4 out of 11 students had achieved the KKM. This reflected a lack of engagement and possible difficulties in grasping the complex concepts related to energy. These results are consistent with the common challenges faced by students in understanding abstract scientific concepts, where traditional lecture-based methods often fall short in making the content accessible. The need for an alternative approach was clear, and paired practice provided a solution by fostering collaboration and active learning.

One of the primary reasons paired practice was effective in this study is its focus on peer-to-peer interaction. According to social constructivist theories, such as Vygotsky's Zone of Proximal Development, learning is most effective when students work together to solve problems and build understanding with guidance from their peers. In this case, the paired practice method allowed students to learn from one another, explain concepts, and correct misunderstandings in real-time. This collaborative learning environment created opportunities for students to support each other, leading to a deeper understanding of the topic.Additionally, the paired practice method served as a way to reduce cognitive load. In a traditional classroom setting, students may find it difficult to process and retain complex scientific information on their own. However, by working in pairs, students could break down the information, share insights, and explain difficult concepts in simpler terms. This interaction not only enhanced their comprehension but also helped them retain the information more effectively. When students explain concepts to others, they reinforce their own understanding, as evidenced by the improvement in test scores after each cycle.

In the first cycle, the class showed a marked improvement in achievement, rising from a very low 36.3% in the pre-cycle to 63.6%. This early success indicated that the paired practice method had already begun to impact the students positively. The increase in classroom activity, with the average score rising to 2.85 (rated as "good"), also demonstrated that students were becoming more engaged with the lesson. These results align with previous research that has shown how collaborative learning strategies like paired practice can increase student engagement and motivation. Students who actively participate in their learning tend to retain more information and develop a deeper understanding of the subject matter. The effectiveness of paired practice can also be attributed to the social dynamics within the classroom. When students work in pairs, they are more likely to feel a sense of accountability, knowing that their partner is relying on them to contribute to the learning process. This sense of shared responsibility increases student motivation and encourages them to take an active role in the learning process. Furthermore, the paired practice method promotes positive social interaction, which helps to build a sense of community in the classroom. The collaborative atmosphere allowed students to feel more comfortable asking questions and seeking clarification, thus contributing to a positive learning environment.

By the second cycle, the results were even more promising. The class achieved 100% mastery, with every student reaching the KKM for the topic of energy and its changes. This is a significant improvement from the 36.3% mastery in the pre-cycle and 63.6% in the first cycle. The success of the second cycle suggests that the paired practice method not only improved academic performance but also helped students develop a more thorough understanding of the subject. The 100% mastery rate indicates that students were not only learning the content but were able to apply it effectively. In addition to academic achievement, student participation levels also showed improvement. The percentage of active participation in the classroom rose from 75% in the first cycle to 85% in the second cycle. This increase reflects a growing sense of engagement and enthusiasm for the subject matter. Students were more willing to ask questions, offer opinions, and engage in discussions. The increased participation was also a direct result of the paired practice method, as it allowed students to feel more comfortable and confident in sharing their ideas within the safe environment of their pairs.

One of the notable outcomes of this research was the development of essential skills such as communication, teamwork, and problem-solving. In the paired practice method,

students had to work together to solve problems related to energy and its changes. They were required to explain concepts to their partners, listen attentively, and offer constructive feedback. These interactions helped students improve their communication skills, which are vital for success not only in academic settings but also in future careers. Furthermore, the ability to collaborate effectively with others is a key skill in today's interconnected world. The teacher's role in the success of the paired practice method cannot be overlooked. In this study, the teacher not only facilitated the learning process but also continuously monitored students' progress and provided feedback. The teacher adjusted the lessons based on the students' needs, ensuring that any misunderstandings were addressed promptly. This flexibility in teaching is crucial for effective learning, as it allows the teacher to cater to the diverse needs of the students. The teacher's active involvement in the process contributed significantly to the positive outcomes of the study.

Another critical aspect of this study is the impact of formative assessments. Throughout the cycles, the teacher used ongoing assessments to gauge student understanding and adjust instruction accordingly. These assessments provided valuable feedback on student progress and allowed the teacher to identify areas that needed further attention. Formative assessments, when used effectively, can enhance student learning by guiding instruction and ensuring that students are on track to meet learning objectives. The improvement in student achievement was also reflected in the final evaluation, where the average score increased from 65.62 in the pre-cycle to 75 in the first cycle and 85.88 in the second cycle. This steady improvement in test scores further validates the effectiveness of the paired practice method in enhancing student learning outcomes. The increase in scores is a clear indicator that students were mastering the content more effectively as they engaged in collaborative learning activities.

This study supports the findings of previous research on the positive effects of cooperative learning strategies. Numerous studies have shown that students who engage in collaborative learning tend to achieve better academic outcomes, have higher levels of motivation, and develop stronger interpersonal skills. The paired practice method is a specific form of cooperative learning that focuses on structured peer interaction and can be particularly effective in subjects like science, where conceptual understanding is key. The results also have important implications for teaching practice. Teachers seeking to improve student outcomes in science can consider incorporating paired practice into their teaching strategies. By giving students opportunities to collaborate and learn from each other, teachers can create a more dynamic and engaging learning environment. Furthermore, the method's focus on active participation and peer interaction helps address the challenges that students often face in mastering complex scientific concepts.

Despite the positive results, it is important to acknowledge some of the limitations of this study. For instance, the sample size was small, consisting of only 11 students. This may limit the generalizability of the findings to larger populations. Additionally, the study was conducted in one specific classroom context, which may not reflect the diverse conditions found in other schools or educational settings. Future research could expand the sample size and explore the effectiveness of paired practice in different contexts. In conclusion, the implementation of paired practice in teaching energy and its changes at MIS NU Ratan Daya significantly improved student learning outcomes, engagement, and participation. The success of the method demonstrates the value of collaborative learning in enhancing students' academic achievement and fostering essential skills such as communication and problem-solving. The positive results from this study provide a strong case for adopting paired practice in other classrooms and subjects, contributing to a more interactive, engaging, and effective learning experience.

In addition to the direct academic benefits observed in this study, the paired practice method also had a notable impact on student confidence. Prior to the intervention, many students appeared hesitant to participate in class discussions or ask questions, likely due to their lack of understanding of the material. However, after engaging in paired practice, students seemed more confident in their ability to tackle

difficult concepts. The collaborative nature of the learning environment allowed them to receive immediate feedback from their peers, which in turn helped them feel more assured in their knowledge. This confidence boost was reflected not only in their academic performance but also in their willingness to engage more actively in subsequent lessons. Moreover, the paired practice method proved to be a useful strategy in promoting critical reflection. As students worked together to solve problems related to energy and its changes, they were encouraged to think critically about their own understanding and assumptions. This reflective process, where students questioned their own ideas and challenged each other's viewpoints, helped deepen their understanding of the subject matter. It also encouraged a growth mindset, where students saw learning as a process of development rather than a static measure of their abilities. The ability to engage in such reflective thinking is an important skill that will benefit students in future academic pursuits.

The interaction between students in paired practice also helped to address diverse learning styles within the classroom. Some students thrive in visual or hands-on learning environments, while others may prefer auditory or verbal processing of information. The paired practice method accommodated these differences by allowing students to interact with each other in various ways—explaining concepts, using diagrams, performing experiments, or verbally discussing theories. This multi-faceted approach ensured that all students had the opportunity to engage with the material in a way that suited their learning preferences, leading to more effective learning outcomes. Additionally, the success of paired practice in this study highlights the importance of structured collaboration. While cooperative learning can have significant benefits, it is crucial that the tasks and activities are well-organized and guided. In this study, the teacher provided clear instructions and facilitated the pairings to ensure that students were working effectively together. Without this structure, the benefits of collaboration might not have been as pronounced. Future implementation of paired practice should consider providing clear guidelines and support to ensure that students are maximally engaged and that the tasks are aligned with learning objectives.

The results of this study also offer insight into the importance of teacher professional development. The success of the paired practice method was largely dependent on the teacher's ability to adapt to the needs of the students, manage the classroom effectively, and provide timely feedback. Teachers who are well-trained in using cooperative learning strategies are better equipped to foster positive learning environments and ensure that students benefit from collaborative activities. This suggests that professional development programs for teachers should emphasize effective classroom management, the integration of collaborative learning strategies, and techniques for providing constructive feedback to students. Finally, while the paired practice method was effective in improving students' outcomes in this study, it is important to continue exploring other innovative strategies to further enhance the learning experience.

Educational research continually evolves, and new teaching methods may offer additional benefits. For instance, technology-enhanced collaborative learning, where students work in pairs or small groups using digital tools, could offer new opportunities for engagement and knowledge-building. Thus, the paired practice method, though highly effective, should be viewed as part of a broader toolkit of pedagogical strategies aimed at improving student learning in science and beyond. In conclusion, the results of this research emphasize the significant positive impact of paired practice on student learning outcomes in the context of teaching energy and its changes. The method not only improved students' academic achievement but also fostered greater engagement, collaboration, and confidence among learners. By promoting active learning, critical reflection, and social interaction, paired practice proved to be a powerful tool for enhancing the educational experience of students at MIS NU Ratan Daya. This study highlights the importance of adopting innovative and collaborative teaching methods in

fostering deeper learning, and its findings can serve as a model for educators seeking to improve learning outcomes in similar settings.

CONCLUSION

The reality that occurs in class III MIS NU Ratan Daya, based on daily test scores, especially in science learning, there are several students who have met the KKM score and most of them have not met the KKM score. so the number of students who have completed is only 4 students out of a total of 11 students, while those who have not completed are 7 students out of a total of 11 students, so students who have not completed are greater than students who have completed. From the results of the pre-action test and initial observations, the researcher who is also a class III teacher decided to use a variety of methods that make students not bored and make students enthusiastic in learning, in this case the researcher used the paired practice method. This study uses an action research model. This research was conducted in class III MIS NU Ratan Daya. The researcher conducted the research here with the consideration that the researcher is a teacher at this school. The subjects of this study were class III MIS NU Ratan Daya consisting of 11 students. This study was conducted at the beginning of the new academic year 2022/2023, namely January - March 2023. Data collection techniques in this study were test techniques, observation and documentation.

The results of the pre-cycle study obtained classical student learning outcomes of 36.3% with the category "very low", in cycle I it had a percentage of 63.6% in the high category, while in cycle II the classical percentage was 100% in the category "very high". In cycle I, class activity had an average of 2.85 with the criteria "good", and in cycle II it had an average of 3.21 also with the criteria "good". While the percentage of student activity in cycle I classically was 75% with the category "good" and in cycle II the percentage became 85% and the category was "very good". In addition to the percentage of student activity, what will also be concluded is the learning outcomes of students. The results of the cycle II evaluation showed that the classical learning completion reached (100%) with the average final score of students reaching (85.88) which previously in the pre-cycle was known that the classical learning completion reached (36.3%) with the average final test score of students reaching (65.62) and in cycle I the classical learning completion reached (63.6%) with the average final test score of students (75). The paired practice method can be applied to the material on energy and its changes because it can solve problems so that activity and cooperation increase and can develop student motivation in studying the material. From this information, it can be concluded that the paired practice method can be applied to the material on energy and its changes and can improve learning outcomes in class III Semester 2 MIS NU Ratan Daya in the 2022/2023 Academic Year.

REFERENCES

Arikunto, S. (2002). *Prosedur Penelitian*. Bandung: Rineka Cipta.

Dasopang, M. D., Lubis, A. H., & Dasopang, H. R. (2022). How do Millennial Parents Internalize Islamic Values in Their Early Childhood in the Digital Era? *AL-ISHLAH: Jurnal Pendidikan*, 14(1), 697–708.

Dasopang, M. D., Nasution, I. F. A., & Lubis, A. H. (2023). The Role of Religious and Cultural Education as A Resolution of Radicalism Conflict in Sibolga Community. *HTS Theological Studies*, 79(1), 1–7.

Erawadi, E., Hamka, H., & Juliana, F. (2017). The Analysis of Student's Stressed Syllables Mastery at Sixth Semester of TBI in IAIN Padangsidimpuan. *English Education: English Journal for Teaching and Learning*, 5(1), 44–57.

Fatimah, A., & Maryani, K. (2018). Visual Literasi Media Pembelajaran Buku Cerita Anak. *Jurnal Inovasi Teknologi Pendidikan*, 5(1), 61–69. https://doi.org/10.21831/jitp.v5i1.16212

Gogahu, D. G. S., & Prasetyo, T. (2020). Pengembangan Media Pembelajaran Berbasis E-Bookstory untuk Meningkatkan Literasi Membaca Siswa Sekolah Dasar. *Jurnal Basicedu*, 4(4), 1004–1015.

Hamka, H. (2023). The Role of Principals on Teacher Performance Improvement in a Suburban School. *QALAMUNA: Jurnal Pendidikan, Sosial, Dan Agama*, 15(1), 371–380.

Hamka, H., Suen, M.-W., Anganthi, N. R. N., Haq, A. H. B., & Prasetyo, B. (2023). The Effectiveness of Gratitude Intervention in Reducing Negative Emotions in Sexual Abuse Victims. *Psikohumaniora: Jurnal Penelitian Psikologi*, 8(2), 227–240.

Harahap, S. M., & Hamka, H. (2023). Investigating the Roles of Philosophy, Culture, Language and Islam in Angkola's Local Wisdom of 'Dalihan Na Tolu.' *HTS Teologiese Studies/Theological Studies*, 79(1), 8164.

Hendrawati, S., Rosidin, U., & Astiani, S. (2020). Perilaku hidup bersih dan sehat (PHBS) siswa/siswi di sekolah menengah pertama negeri (SMPN). *Jurnal Perawat Indonesia*, 4(1), 295–307. https://doi.org/https://doi.org/10.32584/jpi.v4i1.454

Lubis, A. H. (2019). Upaya Peningkatan Hasil Belajar Siswa Sekolah Dasar melalui Model Cooperative Learning Tipe Numered Heads Together. *FORUM PAEDAGOGIK*, 11(2), 127–143.

Lubis, A. H. (2023). The Interactive Multimedia Based on Theo-Centric Approach as Learning Media during the Covid-19 Pandemic. *JPI (Jurnal Pendidikan Indonesia)*, 12(2), 210–222.

Lubis, A. H., & Dasopang, M. D. (2020). Pengembangan Buku Cerita Bergambar Berbasis Augmented Reality untuk Mengakomodasi Generasi Z. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 5(6), 780–791.

Lubis, A. H., Dasopang, M. D., Ramadhini, F., & Dalimunthe, E. M. (2022). Augmented Reality Pictorial Storybook: How does It Influence on Elementary School Mathematics Anxiety? *Premiere Educandum: Jurnal Pendidikan Dasar Dan Pembelajaran*, 12(1), 41–53.

Lubis, A. H., & Wangid, M. N. (2019). Augmented Reality-assisted Pictorial Storybook: Media to Enhance Discipline Character of Primary School Students. *Mimbar Sekolah Dasar*, 6(1), 11–20. https://doi.org/10.17509/mimbar-sd.v6i1.16415

Lubis, A. H., Yusup, F., Dasopang, M. D., & Januariyansah, S. (2021). Effectivity of Interactive Multimedia with Theocentric Approach to the Analytical Thinking Skills of Elementary School Students in Science Learning. *Premiere Educandum: Jurnal Pendidikan Dasar Dan Pembelajaran*, 11(2), 215–226.

Manshur, U., & Ramdlani, M. (2019). Media audio visual dalam pembelajaran PAI. Al-Murabbi:Jurnal Pendidikan Agama Islam, 5(1), 1–8.

Mardhiyah, R. H., Aldriani, S. N. F., Chitta, F., & Zulfikar, M. R. (2021). Pentingnya Keterampilan Belajar di Abad 21 sebagai Tuntutan dalam Pengembangan Sumber Daya Manusia. *Lectura: Jurnal Pendidikan*, 12(1), 29–40.

Ningsih, Y. S., Mulia, M., & Lubis, A. H. (2023). Development of Picture Storybooks with TheoAnthropoEco Centric Approach for Elementary School Students. *AL-ISHLAH: Jurnal Pendidikan*, 15(2), 1888–1903.

Pebtiyanti, I., Ahmad, A., Dzaky, M., Fauziah, S. N., Rendi, & Puspitasari, P. (2023). Peran kurikulum merdeka dalam meningkatkan harmonisasi antara masyarakat dan sekolah.

Jurnal Pacu Pendidikan Dasar, 3(1), 269–277. https://doi.org/https://doi.org/10.22021/pacu.v3i1.411

Rahmah, S., & Lubis, A. H. (2024). Problem Posing as a Learning Model to Improve Primary School Students' Mathematics Learning Outcomes in Gayo Lues. *Journal of Indonesian Primary School*, 1(4), 93–104.

Rahman, A., Munandar, S. A., Fitriani, A., Karlina, Y., & Yumriani. (2022). Pengertian Pendidikan, Ilmu Pendidikan dan Unsur-Unsur Pendidikan. *Al Urwatul Wutsqa: Kajian Pendidikan Islam*, 2(1), 1–8.

Ranisa, R., Erawadi, E., & Hamka, H. (2018). Students' Mastery in Identifying Adverbs at Grade VIII SMPN 2 Batang Toru Tapanuli Selatan. *ENGLISH EDUCATION JOURNAL: English Journal for Teaching and Learning*, 6(2), 241–252.

Ricardo, R., & Meilani, R. I. (2017). Impak Minat dan Motivasi Belajar terhadap Hasil Belajar Siswa. *Jurnal Pendidikan Manajemen Perkantoran (JPManper)*, 2(2), 188–201.

Santi, Undang, & Kasja. (2023). Peran Guru PAI dalam Membentuk Karakter Peserta Didik di Sekolah. *Jurnal Pendidikan Tambusai*, 7(2), 16078–16084. https://doi.org/https://doi.org/10.31004/jptam.v7i2.8918

Sugiyono. (2018). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung: Alfabeta.