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Enhancing Science Learning in Grade III: a Classroom Action Research on the Impact of Demonstrative Teaching Methods in Exploring Properties of Matter

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Abstract

This research intends to analyze the impact of introducing the display method in natural science (science) learning for grade III students in an elementary school. The demonstrative technique is used as a strategy to strengthen students' grasp of the subject matter, notably the qualities of objects. The research was conducted through a classroom action research approach with two cycles. The research results reveal a considerable boost in student learning outcomes along with the deployment of the demonstration approach. From the pre-cycle which attained 38% classical learning completeness, this level grew to 90.5% in cycle II. These data give proof that the demonstration technique has a positive impact on students' achievement of learning mastery. In addition, the favorable response from teachers and students to the presentation technique shows that it is not only helpful in reaching academic goals, but also produces a joyful and fascinating learning experience. Student involvement in direct observation, filling in observation tables, and group discussions suggests student interest for this method.

Keywords: Demonstration Method, Science Education, Improvement Of Learning Outcomes

Abstrak

Penelitian ini bermaksud untuk menganalisis dampak pengenalan metode display dalam pembelajaran ilmu pengetahuan alam (IPA) pada siswa kelas III sekolah dasar. Teknik demonstratif digunakan sebagai strategi untuk memperkuat pemahaman siswa terhadap materi pelajaran, khususnya kualitas benda. Penelitian ini dilakukan melalui pendekatan penelitian tindakan kelas dengan dua siklus. Hasil penelitian menunjukkan adanya peningkatan yang cukup besar pada hasil belajar siswa seiring dengan diterapkannya pendekatan demonstrasi. Dari prasiklus yang mencapai ketuntasan belajar klasikal sebesar 38%, meningkat menjadi 90,5% pada siklus II. Data tersebut memberikan bukti bahwa teknik demonstrasi memberikan dampak positif terhadap prestasi ketuntasan belajar siswa. Selain itu, sambutan baik guru dan siswa terhadap teknik penyajian menunjukkan bahwa teknik presentasi tidak hanya membantu dalam mencapai tujuan akademik, tetapi juga menghasilkan pengalaman belajar yang menyenangkan dan menarik. Keterlibatan siswa dalam observasi langsung, pengisian tabel observasi, dan diskusi kelompok menunjukkan minat siswa terhadap metode ini.

Kata Kunci: Metode Demonstrasi, Pendidikan IPA, Peningkatan Hasil Belajar

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INTRODUCTION

Improving the quality of education in Indonesia continues without halting. The government, through the Ministry of National Education, continues to create different breakthroughs, including school management, growing educational personnel resources, producing teaching materials, and new paradigms in teaching methods. However, the lecture technique in science topics that has been utilized by teachers has proven to be less effective, because it is unidirectional and does not actively involve students in developing critical thinking abilities, democratic attitudes, communication, questioning and social-emotional skills (Wang, 2019).

The lack of variation in learning activities sometimes causes students to feel bored and drowsy, which in turn can impair students' interest in paying attention to the material delivered by the teacher (Prayuda et al., 2022). Therefore, improvements are needed in the teaching and learning process in order to increase academic values and student involvement. One possibility is to replace the lecture style with a demonstration method, which is projected to improve learning outcomes and student activity. The demonstration method is a demonstration of the process of an event or object occurring up to the manifestation of the behavior being demonstrated. In its utilization, there are three steps, namely planning, implementation and follow-up. Through demonstrations, students can witness the process directly, draw inferences according to expectations, and build critical thinking skills (Hairon, 2017; Moch et al., 2016).

Learning is a process of changing behavior that occurs in a person. These modifications can include knowledge, understanding, reaction power, receptivity, and other individual features. Learning outcomes, which are the consequence of a person's effort and production, can be attained through the categories of cognitive, emotional and psychomotor domains (Prayuda, Juliana, et al., 2023). Natural Science (IPA) is described as a collection of naturally arranged knowledge. The growth of science does not only involve facts, but also scientific procedures and scientific attitudes. The science learning process must favor inductive reasoning at the beginning of learning and deductive reasoning to increase students' comprehension. Science operates to improve thinking abilities through study, exploration and experimentation, as well as as a tool for problem solving and communication (Gerde, 2018).

Based on the background and issue formulation, the purpose of this research is to determine the application of the demonstration technique in increasing student learning outcomes in science courses, specifically material on the attributes of objects, in class III students. It is intended that the findings in this research can contribute to increasing student learning outcomes, interest and motivation, as well as developing teacher innovation and the quality of education in schools. In the context of science learning, employing the demonstration technique is vital to offer students with direct experience in comprehending the qualities of things. The preparation, implementation and follow-up processes in the demonstration approach ensure that the process is carried out systematically. Teachers need to identify the aim of the demonstration, determine the problem to be presented, and arrange equipment and resources well. In addition, evaluation of the demonstration process is very crucial to verify the effectiveness of learning (Schmidt et al., 2018).

The employment of the demonstration approach is not simply a show, but also gives opportunity for pupils to acquire the ability to observe and conclude. Through this method, kids can be more actively involved in learning, increase memory, and understand science subjects better. This also promotes a more enjoyable learning atmosphere and minimizes student boredom levels. Meanwhile, the concept of learning as a change in behavior impacted by experience and instruction provides a philosophical underpinning for the application of the demonstrative approach. The

transformation process involves different characteristics of the individual, including knowledge, comprehension, and reaction power. Therefore, the demonstrative approach not only aids students' cognitive growth, but also plays a role in the development of emotive and psychomotor components (Landrum & Kauffman, 2015).

Through this research, it is believed that the results might make a positive contribution to students, teachers and schools. Increasing student learning outcomes, enthusiasm and motivation is considered to have a positive consequence from applying the demonstration technique. For teachers, this is an opportunity to foster creativity in learning approaches and practices. Meanwhile, for schools, this research can be a basis for increasing the quality of education by paying attention to the effectiveness of the learning methods utilized.

METHOD

This research focuses on measuring student learning achievement, and the research design employed provides a methodical framework through the spiral model. By employing descriptive analysis approaches, this research intends to present a clear image of student learning successes and detail student responses and behaviors during the learning process. Table 2.1 illustrates the data gathering methods employed, illustrating a holistic approach to learning evaluation. Descriptive analysis is done to understand the quality of student learning achievement as a whole. Therefore, the data acquired does not only include academic outcomes, but also student answers and involvement in the learning process (Fernandez, 2017).

In measuring student learning results classically, the formula utilized in Table 2.2 gives unambiguous criteria for completion. Student learning result categories are measured by evaluating individual scores and traditional completion criteria. The provision that students are considered to have completed their studies if they achieve a score ≥ 65 out of a maximum score of 100 reflects the applicable standards, while the provision that a class is considered complete if at least 75% of students achieve a score ≥ 65 provides a classical perspective that indicates the overall level of achievement of the class.

An emphasis on classical learning outcomes provides a more comprehensive view of learning efficacy, taking into consideration individual accomplishment as well as total class level. Thus, this research not only examines the quantity of individual student performance, but also looks at the impact of learning on the group as a whole, offering a more holistic picture of the success of the teaching methods utilized. In the context of classroom action research design with a spiral model, the planning stage provides an initial framework for constructing learning techniques. The actions taken are then followed by observation and reflection, allowing teachers to continuously evaluate the success of learning tactics and make the modifications needed to improve student learning results (Sofyan et al., 2018).

The descriptive analysis technique utilized in this research allows the freedom to describe

student learning phenomena in depth. The data acquired does not only cover academic accomplishment, but also features of student responses and activities during the learning process (Prayuda, Pangaribuan, et al., 2023). This provides significant information regarding the extent to which students are engaged in learning, their level of grasp of the material, and their response to the teaching methods used. The use of student learning outcome categories, as provided in Table 2.2, provides a clear basis for assessing individual and classical learning competence. The completion standard established, namely attaining a score ≥ 65 out of a maximum score of 100, demonstrates the aim to achieve a good knowledge of topics. Meanwhile, the prerequisites for classical completeness, namely a minimum of 75% of students reaching a value ≥ 65, provide an overall view of the class' achievement in achieving learning objectives.

Thus, this research not only produces data concerning student academic accomplishment, but also provides in-depth insight into student responses and the effectiveness of the teaching methods utilized. Holistic classical evaluation like this is the cornerstone for designing better and more sustainable learning approaches. The combination of classroom action research design with the spiral model from Kemmis and Taggart produces a dynamic setting, allowing teachers to iteratively design, implement, and evaluate learning practices. The reflection stage is an essential moment to connect teaching approaches with student answers and needs, so that appropriate changes can be introduced to boost learning effectiveness.

The descriptive analytic technique utilized in this research provides an in-depth understanding of student learning accomplishment and responses to learning activities. This information is particularly important for devising suitable interventions to make the learning process more responsive to students' needs and learning styles. Descriptive analysis also provides a more holistic picture of student accomplishment, incorporating cognitive, emotional and psychomotor characteristics. In the context of measuring student learning outcomes, Table 2.2 gives defined categories with completion standards that may be measured both individually and traditionally. Individual completeness standards reflect efforts to guarantee that each student gains adequate understanding, whereas classical completeness provides an overall picture of class success.

The relevance of paying attention to classical learning outcomes is not only to consider students as individuals who learn separately, but also as members of groups who impact one other. Therefore, the results of this research not only provide information about the extent to which students have understood the content, but also about the effectiveness of teaching methods for the group as a whole. Thus, this research not only gives a knowledge of student academic accomplishment, but also provides a platform for ongoing improvement in teaching practices, providing a learning environment that is more effective, dynamic, and responsive to student needs. Evaluation of classical learning results, student responses, and the teaching methods utilized are crucial aspects for establishing better learning ways in the future.

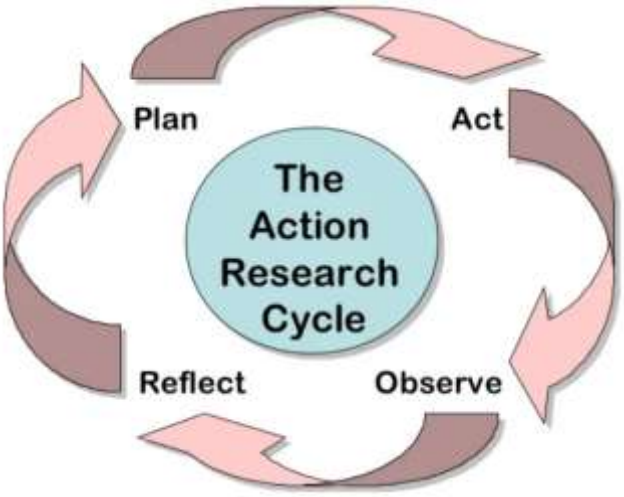

Figure 1. Steps in doing Classroom Action Research

RESULT AND DISCUSION

The results of data analysis demonstrate a considerable boost in student learning achievement in science learning utilizing the demonstration technique. In the analysis table of the completeness of student learning outcomes (Table 3.1), it can be shown that before the action (pre-cycle), only 8 students or 38% had finished classical learning. However, in cycle I, the number of students who completed their studies grew to 17 students or 81%, and in cycle II, it reached 19 students or 90.5%. The final review of each cycle, as illustrated in Table 3.2 and Table 3.3, provides a more thorough picture. In cycle I, as many as 81% of students attained classical learning completion, whereas 19% of students did not reach completeness. Even though these results have met the school's basic completeness standards (\(\geq 65\% \)), adjustments are still needed. In cycle II, a considerable rise was noticed with 90.5% of students achieving classical learning completion.

The results of interviews with teachers and students also aid to evaluate the success of the demonstration approach. Teachers report that the teaching and learning process utilizing this method is considered extremely good, entertaining, and facilitates the accomplishment of targeted learning mastery. Students also gave favorable reactions, indicating their satisfaction with learning science using the demonstration approach, feeling actively involved in observations and discussions, and judging this method as an entertaining way and making it simpler to absorb the topic.

The findings from this research cover various aspects, such as students' active involvement in learning, the effectiveness of the demonstration method in increasing understanding, a significant level of learning completeness in cycle II, and positive responses from teachers and students towards this method. In conclusion, the adoption of the demonstrative method in scientific learning on the subject of the qualities of objects in class III primary school has brought about pretty considerable beneficial changes. In-depth investigation of the research data revealed numerous remarkable conclusions. First, the large rise from pre-cycle to cycle II reveals that the demonstration technique has a beneficial impact on student learning results. Initially, only 38% of pupils finished traditional

learning, but with the implementation of the demonstrative approach, this statistic jumped substantially to 90.5%. This indicates the efficiency of the demonstrative method in boosting students' grasp of science topics.

Second, the evaluation findings in cycle I showed that the majority of students (81%) had achieved classical learning completeness, whereas 19% of students had not accomplished it. Although it satisfies the school's criteria, these findings demonstrate there is space for growth. However, in cycle II, a very favorable rise was noticed, when 90.5% of pupils achieved classical learning completion. This shows that the enhancements implemented in cycle I had a real impact.

Third, the results of interviews with teachers and students provide a qualitative perspective that supports the quantitative findings. Teachers remark that the demonstration technique is not only fascinating, but also facilitates the achievement of learning completion. Students offered positive reactions to this session, indicating that the demonstration technique made the course more engaging, made it simpler to learn the topic, and was not dull.

Fourth, other findings include student activities during learning, when students actively make observations, fill in observation tables, and communicate with their groups. The fact that students understand science teachings more easily by making direct observations demonstrates the effectiveness of the demonstration method in offering concrete and meaningful learning experiences.

Fifth, errors that occur during the test are caused by factors such as a lack of care in reading the questions, being rushed in finishing the task, and a lack of understanding of sentences. These findings can be a basis for additional advances in establishing learning strategies that are more relevant to student characteristics.

Overall, this in-depth investigation demonstrates that the adoption of the demonstration method in scientific learning about the attributes of objects in grade III elementary school has a considerable favorable impact on student learning outcomes. These findings can serve as a basis for establishing better teaching methods in the future, by altering strategies to be more effective and improve overall student development.

In this research, there is a substantial association between the observed factors, namely the application of the demonstrative method in science learning and student learning results. This relationship can be evaluated from different viewpoints. First, through the implementation of the demonstration method, students are given real and direct learning experiences relating to the material of the attributes of objects. Direct observation by students allows them to understand topics better, having a positive impact on understanding and memory of material.

Second, the increase in classical student learning outcomes from pre-cycle to cycle II reveals that there is a close association between the implementation of the demonstration technique and the accomplishment of learning completeness. The presentation method provides a positive stimulant for student participation, inspires students to be more involved in the learning process, and generally

fosters a supportive learning atmosphere.

Third, the findings of interviews with teachers and students demonstrated that the demonstration approach was judged good, fascinating, and helped the attainment of learning completion. Teachers indicated that seeing the execution of the teaching and learning process was highly engaging and enjoyable for students, while students expressed their satisfaction with the learning carried out using this method. Students' sentiments of satisfaction and positive judgment of learning might be considered indicators of the success of the display technique.

Fourth, the discovery that students learn science teachings more easily by making direct observations suggests that the demonstration technique adds to understanding concepts through practical experience. Student involvement in observation activities, filling in observation tables, and discussions with their groups reveals that there is a beneficial connection between the learning methods employed and student involvement.

Thus, the relationship between the variables in this research may be regarded as evidence that the implementation of the demonstration technique efficiently helps students' achievement of learning mastery in science learning about the features of objects. This strategy not only increases the quality of the learning process, but also has a favorable impact on student learning outcomes, improving the relationship between teaching methods and students' grasp of the subject matter.

Further debate can focus on the significance of the findings and their relevance to improving the quality of learning in educational environments. First of all, the discovery that the demonstration approach is beneficial in increasing student learning outcomes offers a substantial contribution to the development of learning strategies at grade III level. Teachers can profit from these findings by paying attention to the successful application of the demonstration technique in boosting students' knowledge.

In addition, the conclusion that students enjoy and feel joyful when learning science via the display approach can be a basis for inspiring teachers to be more creative and imaginative in designing fascinating teaching tactics. Teachers can leverage parts of the demonstration approach that students find fascinating, such as direct observation, to create a more exciting and enjoyable learning experience.

Furthermore, the results of interviews with teachers regarding students' favorable responses to the demonstration approach can be a basis for enhancing teaching practices in the future. Teachers can share these excellent experiences with colleagues, stimulating the adoption of the presentation technique to other topics or at different grade levels.

From a learning management viewpoint, the results of this research can potentially be utilized as a basis for more effective learning planning. Teachers can take into account the features of successful demonstration methods in building lesson plans that are relevant and entertaining for students. Apart from that, the application of the demonstration technique can be well integrated into the curriculum to increase the quality of learning at the school level.

Overall, these findings provide an essential contribution to the knowledge of effective learning strategies in the third grade context. By recognizing the link between the implementation of the demonstration method and student learning outcomes, educators can be more creative and inventive to create a better learning environment, engage students, and boost academic accomplishment.

CONCLUSION

Through this research, numerous key findings may be taken in the context of developing scientific learning in class III. First, the implementation of the demonstrative technique considerably enhances student learning outcomes in science topics, notably in material about the qualities of things. This rise can be seen from the pre-cycle which only achieved 38% classical learning completeness, to 90.5% in cycle II. Second, the favorable response from teachers and students to the demonstration method provides an indicator that this strategy is not only helpful in reaching learning completion, but also generates a joyful and fascinating learning environment. Students' active involvement in the learning process, direct observation and group discussions demonstrate students' passion for this method.

Third, the result that students understand science teachings more easily by making direct observations emphasizes the value of practical experience in acquiring scientific concepts. This can be a stepping stone for further enhancement of learning methodologies in the science field. Fourth, the findings of the first cycle evaluation which revealed that the majority of students had achieved classical learning completeness (81%) implied that advances in cycle II not only supported the attainment of school standards but also allowed space for significant development.

As an implication of these findings, various recommendations might be suggested. Teachers are expected to continue to expand and enrich the application of demonstration methods in science learning, by paying attention to characteristics that are regarded attractive and successful by students. Schools can promote the development of teacher competency through training and seminars that focus on the use of demonstrative methods.

In the long term, these findings can contribute to curriculum changes and learning standards at the school level. The inclusion of demonstrative methods in curriculum design can increase the quality of teaching at the educational institution level as a whole. Thus, this research not only gives insight into the usefulness of demonstration methods in enhancing science learning outcomes, but also provides a framework for ongoing improvement in learning practices at the primary level.

REFERENCES

Fernandez, F. B. (2017). Action research in the physics classroom: The impact of authentic, inquiry based learning or instruction on the learning of thermal physics. *Asia-Pacific Science Education*, *3*(1), 1–20. https://doi.org/10.1186/S41029-017-0014-Z/TABLES/4

Gerde, H. K. (2018). Early Childhood Educators' Self-Efficacy in Science, Math, and Literacy

Instruction and Science Practice in the Classroom. *Early Education and Development*, *29*(1), 70–90. https://doi.org/10.1080/10409289.2017.1360127

Hairon, S. (2017). Action research in Singapore: Where are we now? *Asia-Pacific Science Education*, *3*(1), 1–18. https://doi.org/10.1186/S41029-017-0016-X/TABLES/1

Landrum, T. J., & Kauffman, J. M. (2015). Behavioral Approaches to Classroom Management. In *Handbook of Classroom Management*. https://doi.org/10.4324/9780203874783.ch3

Moch, S. D., Vandenbark, R. T., Pehler, S.-R., & Stombaugh, A. (2016). Use of action research in nursing education. *Nurs Res Pract.*, *2016*, 1–9. https://doi.org/10.1155/2016/8749167

Prayuda, M. S., Juliana, J., Ambarwati, N. F., Ginting, F. Y. A., & Gultom, C. R. (2023). Students' Writing Error in Parts of Speech: A Case Study of EFL Students. *Jurnal Educatio FKIP UNMA*, *9*(2), 659–665. https://doi.org/10.31949/EDUCATIO.V9I2.4419

Prayuda, M. S., Pangaribuan, J. J., & Linia, A. (2023). The Effect of Genre Based Approach For The Students Writing Skill. *Jurnal Pendidikan Tambusai*, *7*(3), 20152–20158. https://doi.org/10.31004/JPTAM.V7I3.9454

Prayuda, M. S., Silalahi, T. S. M., & Almanda, F. Y. (2022). TRANSLATION OF THEMATIC STRUCTURE OF DESCRIPTIVE TEXT FROM INDONESIAN INTO ENGLISH. *Pendidikan Bahasa Indonesia Dan Sastra (Pendistra)*, 148–151. http://ejournal.ust.ac.id/index.php/PENDISTRA/article/view/2365

Schmidt, J. A., Rosenberg, J. M., & Beymer, P. N. (2018). A person-in-context approach to student engagement in science: Examining learning activities and choice. *Journal of Research in Science Teaching*, *55*(1), 19–43. https://doi.org/10.1002/TEA.21409

Sofyan, N., Buaja, T., & Rahman, O. R. (2018). The Implementation Of Role Play Method In Improving Students' Speaking Skill: A Classroom Action Research At Grade IX Students Of SMP Muhammadiyah 1 Ternate. *INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH*, *7*. www.ijstr.org

Wang, J. (2019). Connecting rural schools to quality education: Rural teachers' use of digital educational resources. *Computers in Human Behavior*, *101*, 68–76. https://doi.org/10.1016/j.chb.2019.07.009