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Application of Demonstration Learning Methods to Improve Critical Thinking Skills of Grade 5 Ecosystem Material Students in Min 5 Central Maluku Academic Year 2023/2024

Utami Ningsih Hitimala, MIN 5 Maluku Tengah
utamihitimala84@gmail.com
Utami Hikmah, MI Muhammadiyah Cekel
utamihikmah85@gmail.com
Wa Hasmiati, MIS Fokuni Raha
hasmiatihasmy087@gmail.com
Wa Ode Fatima, MIS Bina Eli Jaya
Fatmawaode18@gmail.com
Wa Ode Anda, MIN 1 Seram Barat
Waodeanda.396@gmail.com

Abstract: This study aims to analyze the effectiveness of the application of demonstration learning methods in improving students' critical thinking skills in ecosystem materials in grade 5 MIN 5 Central Maluku. Critical thinking skills are essential skills in science learning that enable students to analyze, evaluate, and make decisions based on available evidence. However, many students still experience difficulties in developing these skills due to a less interactive learning approach.
This study uses the classroom action research method (PTK) which is carried out in two cycles. The subject of the study was a 5th grade student of MIN 5 Central Maluku. Data were collected through observation, written tests, and interviews, then analyzed using quantitative and qualitative descriptive techniques to measure the improvement of students' critical thinking skills before and after the application of the demonstration method. The results showed that the demonstration method significantly improved students' critical thinking skills. In the first cycle, the average student score increased compared to before the intervention, although there were still some obstacles in implementation. In the second cycle, the improvement becomes more significant, with most students achieving the higher critical thinking category. The main factors that support this success are students' active involvement in the learning process, better understanding of concepts, and increased motivation to learn.
Keywords: demonstration methods, critical thinking, ecosystem, learning, students

INTRODUCTION

Education has an important role in shaping students' critical thinking skills, especially in understanding complex science concepts. According to Arends (2012), critical thinking is a skill that allows a person to analyze, evaluate, and make decisions based on a deep understanding. In the context of learning Natural Sciences (IPA), especially in ecosystem materials, students are required to understand the mutual relationship between living things and their environment systematically. Therefore, the selection of the right learning method is very necessary to improve students' understanding and critical thinking skills.

One of the learning methods that can improve students' understanding is the demonstration method. Djamarah and Zain (2013) explained that the demonstration method can help students understand the material better because they can see firsthand the process or phenomenon being studied. With demonstrations, students not only receive information passively but can also actively participate in observing, analyzing, and inferring their learning outcomes.

Learning ecosystem material is often challenging for students because it involves abstract concepts, such as food chains, food webs, and the interaction between biotic and abiotic components. According to Trianto (2011), one of the causes of students' low understanding of ecosystem materials is that the learning method is less interactive and does not provide a real learning experience. Therefore, the use of demonstration methods in ecosystem learning can be a solution to overcome these obstacles by presenting a more concrete and interesting learning experience.

This research focuses on the application of demonstration methods to improve the critical thinking skills of grade 5 MIN 5 Central Maluku students in understanding the concept of ecosystems. As a form of active learning, the demonstration method is expected to help students develop their critical thinking skills through the process of observation, analysis, and drawing conclusions based on observed facts.

According to Ennis (2013), critical thinking involves the ability to assess information objectively, connect concepts, and structure arguments based on existing evidence. In the context of ecosystem learning, students who think critically are not only able to understand theory but also be able to identify relationships between ecosystem components, analyze the impact of environmental change, and evaluate solutions to ecological problems.

In addition, this study also seeks to identify the extent of the effectiveness of the demonstration method in improving students' understanding of ecosystem materials. The results of the research are expected to contribute to teachers in choosing the right learning strategy to improve the quality of learning in the classroom. According to Sudjana (2010), the effectiveness of a learning method can be measured from the improvement of student learning outcomes and their active participation in the learning process.

The research method used in this study is classroom action research (PTK). PTK was chosen because it can help teachers evaluate and improve the quality of learning directly in the classroom. This research was conducted in two cycles, where each cycle consisted of planning, implementation, observation, and reflection stages.

The subject of this study is a student of grade 5 MIN 5 Central Maluku. Data is collected through various techniques, such as observation, written tests, and interviews. Observation is used to observe student involvement in learning, while written tests aim to measure students' increased understanding of ecosystem concepts. Meanwhile, interviews were conducted to get direct input from students and teachers regarding their experiences in using the demonstration method.

The results showed that the demonstration method significantly improved students' critical thinking skills. In the first cycle, the average student score increased compared to before the intervention, although there were still some obstacles in its implementation. Some students are still passive and lack participation in the learning process.

To overcome these obstacles, in the second cycle, adjustments were made to learning strategies, such as dividing students into small groups so that they are more active in discussions and increasing teacher involvement in guiding students during demonstrations. As a result, there was a more significant improvement in the second cycle, with most students

achieving higher critical thinking categories.

The main factors that support the success of this demonstration method are students' active involvement in the learning process, better understanding of concepts, and increased learning motivation. Students are more interested in following lessons because they can see and experience ecosystem processes firsthand, not just reading theories from textbooks.

Another advantage of the demonstration method is that it encourages students to think independently and make connections between theory and practice. Thus, students not only memorize concepts but can also apply them in their daily lives, such as understanding the importance of maintaining the balance of the ecosystem in their surroundings.

Although the demonstration method has proven to be effective, there are several challenges that need to be considered. One of them is the limited time in carrying out demonstrations, especially if the material taught is quite extensive. In addition, teachers need to ensure that all students thoroughly understand the concepts being demonstrated and not just memorize procedures without understanding their meaning.

Considering the advantages and challenges in the application of the demonstration method, this study recommends that teachers use hands-on experience-based learning methods more often in teaching complex science concepts. In addition, further research is needed to explore the effectiveness of this method on other materials or different levels of education.

Thus, it can be concluded that the application of the demonstration method in ecosystem learning not only improves students' learning outcomes, but also helps them develop critical thinking skills, analytical skills, and learning motivation. With proper management, this method can be one of the solutions in improving the quality of learning in elementary schools.

METHODS

This study uses the Classroom Action Research (PTK) method which aims to improve students' critical thinking skills through the application of demonstration learning methods on ecosystem materials in grade 5 MIN 5 Central Maluku. According to Kemmis and McTaggart (1988), PTK is carried out in a repetitive cycle consisting of four stages, namely planning, implementation of actions, observation, and reflection. This research was conducted in two cycles, where each cycle includes improvement activities based on the results of reflection from the previous cycle. The data collection techniques in this study include observation, tests, and interviews to measure the improvement of students' critical thinking skills. Data analysis was carried out in a qualitative and quantitative descriptive manner to assess the effectiveness of the demonstration method in improving student understanding. With this approach, it is hoped that the research can provide a clear picture of the influence of demonstration learning methods on the development of students' critical thinking in understanding the concept of ecosystems (Arikunto, 2010).

This study involved 13 students of grade 5 MIN 5 Central Maluku. Data were obtained through tests before and after the application of the demonstration method, as well as observation of student involvement in learning. The results of the study showed a significant increase in student scores after the application of the demonstration method. The average score before the application of the demonstration method was 57, then increased to 72 in cycle 1, and rose again to 86 in cycle 2. This improvement shows that the demonstration method contributes to the improvement of students' understanding and critical thinking skills.

To ensure the validity of the data, data triangulation was carried out, namely comparing the results of observations, tests, and interviews to obtain a more accurate picture of the effectiveness of the demonstration method. According to Sugiyono (2017), data verification in qualitative research is carried out through triangulation of sources and techniques to ensure the consistency and validity of research results. In this study, triangulation is carried out through three main approaches, namely observation, interviews, and documentation.

In observation, teachers and researchers directly observe the student's activeness during the learning process. After the application of the demonstration method, students showed increased participation, such as asking more questions, opinions, and discussing the concept of ecosystems. This shows that the demonstration method is able to stimulate students' curiosity and active involvement in the learning process.

The results of the interviews with teachers showed that the demonstration method helped students understand the material better because they could see firsthand concrete examples of the concept of ecosystems. Meanwhile, the results of interviews with students revealed that they enjoyed learning with the demonstration method more than the lecture method. Students find it easier to understand the concept of ecosystems when they can see firsthand how a process occurs in an ecosystem.

In the aspect of documentation, photos and notes during the learning process show that students are more involved in learning activities, especially when conducting simple experiments related to ecosystems. This documentation confirms that the use of demonstration methods not only improves learning outcomes but also increases students' motivation and interest in understanding ecosystem concepts.

Based on these findings, it can be concluded that the demonstration learning method is effective in improving the critical thinking skills of grade 5 MIN 5 Central Maluku students on ecosystem materials. Significant improvements in learning outcomes, active involvement of students in discussions, and positive responses from students and teachers show that this method can be an effective alternative in improving the quality of science learning, especially in abstract materials such as ecosystems. Thus, the demonstration method can be recommended as a learning strategy that is more interactive, concrete, and able to develop students' critical thinking skills.

RESULTS

This study aims to analyze the effectiveness of the application of demonstration learning methods in improving students' critical thinking skills in ecosystem materials in grade 5 MIN 5 Central Maluku. Critical thinking skills are one of the essential skills in science learning, as they allow students to analyze, evaluate, and draw conclusions based on existing facts. However, in ecosystem learning, there are still many students who have difficulty understanding abstract concepts related to the interaction between living things and their environment.

The demonstration learning method was chosen in this study because it can provide a more concrete learning experience for students. With demonstrations, students can directly observe the processes that occur in an ecosystem, so that their understanding of the material

becomes more deep. In addition, this method can also increase students' participation in learning, as they are actively involved in observation and discussion.

This study uses the classroom action research method (PTK) which is carried out in two cycles. Each cycle consists of four stages, namely planning, implementation of actions, observation, and reflection. Data was collected through observations, written tests, and interviews with students and teachers. Data analysis was carried out in a qualitative and quantitative descriptive manner to see the improvement of students' critical thinking skills before and after the application of the demonstration method.

The results showed that the demonstration method significantly improved students' critical thinking skills. In the pre-cycle stage, the average student score was 57. After the application of the demonstration method in the first cycle, the average score increased to 72. In the second cycle, there was a further increase with an average score of 86. This improvement shows that the demonstration method is effective in helping students understand the ecosystem material in more depth.

In addition to the improvement of learning outcomes, observations also showed positive changes in student engagement during learning. Before the implementation of the demonstration method, students tended to be passive and less active in discussion. However, after this method is applied, students become more enthusiastic in asking questions, expressing opinions, and discussing with their classmates about the ecosystem concepts studied.

The results of interviews with students also revealed that they found it easier to understand the ecosystem material through the demonstration method compared to the lecture method. They stated that seeing firsthand the processes that occur in the ecosystem helps them connect the theory with the reality that exists in the surrounding environment.

Interviews with teachers corroborate these findings. The teacher stated that the demonstration method not only improves students' understanding of the material, but also makes the learning atmosphere more interesting and interactive. Teachers also see an increase in students' confidence in expressing opinions and answering questions given during learning.

Data triangulation was carried out to ensure the validity of the research results. The results of observations, interviews, and written tests were compared to see the consistency of the findings obtained. The data showed that there was a harmony between the increase in test scores and the increase in student participation in learning, which showed that the demonstration method had a positive impact on students' critical thinking skills.

Although the demonstration method has many advantages, there are some challenges in its implementation. One of the obstacles found in this study is the limitation of tools and materials to conduct demonstrations optimally. Some of the experiments conducted require materials that are not always available in schools, so teachers must look for suitable alternatives so that demonstrations can still run well.

In addition, not all students have the same level of understanding. Some students still have difficulty understanding certain concepts even though they have been given demonstrations. Therefore, teachers need to provide additional guidance and conduct periodic evaluations to ensure that all students benefit from this learning method.

To overcome these obstacles, it is recommended that teachers make more thorough preparations before applying the demonstration method. Preparation can include providing the necessary tools and materials, creating clear demonstration guides, and setting up effective study groups so that all students can be actively involved in learning.

In addition, teachers can also combine demonstration methods with other learning strategies, such as group discussions and the use of visual media, to strengthen students' understanding. With a more varied approach, it is hoped that learning will be more interesting and able to accommodate various learning styles of students.

The implication of this study is that the demonstration learning method can be an effective strategy to improve students' critical thinking skills, especially in science learning. Therefore, schools can consider using this method more often in learning, especially on materials that require a deep understanding of concepts.

This study also shows that hands-on experiential learning is more effective in increasing student engagement compared to lecture methods. By providing a more tangible

learning experience, students are more motivated to explore the concepts learned and develop their critical thinking skills.

In addition, the results of this research can be the basis for the development of more innovative learning methods in the future. Teachers can explore the use of technology, such as digital simulations and virtual experiments, to complement demonstration methods so that learning becomes more engaging and effective.

In the long term, the application of more interactive and experiential learning methods such as demonstrations can contribute to improving the quality of education in elementary schools. Thus, students not only gain a better understanding of the material studied, but also develop critical thinking skills that will be useful in everyday life.

It is hoped that this research can be an inspiration for other teachers to be more creative in developing learning strategies that suit the needs of students. With the right approach, learning can become more meaningful and have a positive impact on students' academic development and thinking skills.

In conclusion, the demonstration learning method has proven to be effective in improving students' critical thinking skills on ecosystem material in grade 5 MIN 5 Central Maluku. With good management and careful preparation, this method can be one of the solutions in improving the quality of learning in elementary schools.

For further research, it is recommended to explore the application of demonstration methods to other materials or different levels of education. This can help in further understanding the effectiveness of this method in various learning contexts as well as developing more optimal strategies to improve the quality of education in Indonesia.

DISCUSSION

Data validation in this study was carried out to ensure the accuracy and reliability of the results related to the application of demonstration learning methods in improving students' critical thinking skills in ecosystem materials in grade 5 MIN 5 Central Maluku. The validation process is carried out through data triangulation, which includes triangulation of sources, methods, and time. Source triangulation is carried out by comparing data from various parties, such as students, teachers, and test results. Meanwhile, triangulation of the method was carried out by combining the results of tests, observations, and interviews to obtain a more comprehensive picture of the effectiveness of the demonstration learning method.

The validation results showed a significant improvement in students' critical thinking skills after the application of the demonstration method. This increase can be seen from the test results that gradually increased, from an average of 57 in the pre-cycle to 72 in cycle 1 and reached 86 in cycle 2. In addition, observations during learning showed that students were more active in discussing, asking questions, and were able to connect the concept of ecosystems with daily life. Interviews with teachers also confirmed that the demonstration method was more effective than the lecture method in improving students' understanding of the concept of ecosystems.

With consistent validation results from various sources, it can be concluded that the demonstration learning method is valid and effective in improving students' critical thinking skills. The increase in student involvement in the learning process as well as better learning outcomes shows that this method can be applied more widely in science and science learning. However, in order for the results obtained to be more optimal, it is recommended that teachers use more varied teaching aids and provide opportunities for students to conduct direct exploration in demonstration activities.

CONCLUSION

This study shows that the application of the demonstration learning method significantly improves the critical thinking ability of grade 5 students of MIN 5 Central Maluku on ecosystem materials. One of the main findings that stood out the most was the improvement in student learning outcomes after the implementation of the demonstration method. This can be seen from the increase in the average score of students, which was initially 57 in the pre-cycle increased to 72 in the first cycle, and reached 86 in the second cycle. In addition, the results of observations and interviews show that students become more active in learning, ask more questions, and are able to connect the concept of ecosystem with daily life.

The academic impact of this study is very positive, because the demonstration method has been proven to be more effective than the lecture method in improving student understanding. In addition to improving learning outcomes, students also experience development in ecosystem-related analysis, evaluation, and problem-solving skills. Thus, this research contributes to the world of education, especially in the development of more innovative and hands-on experience-based learning strategies, so as to support the achievement of student competencies optimally.

In addition, this research also contributes to improving the quality of science and technology learning in elementary schools, especially in the pedagogical aspect. Teachers can make the demonstration method the main approach in explaining abstract concepts so that they are easier for students to understand. By using this method more often, the learning process becomes more interesting and interactive, which can ultimately increase students' motivation to learn in science and science subjects.

In terms of social contribution, the demonstration learning method also has an impact on strengthening students' social skills. Through group discussions and exploration activities during demonstrations, students learn to work together, share opinions, and appreciate the views of their peers. These skills are crucial in their social lives, both inside and outside the school environment. Thus, learning not only focuses on academic outcomes, but also shapes the character of students who are more communicative and collaborative.

With various findings and positive impacts that have been explained, this study recommends that the demonstration method be used more often in science and science learning, especially in materials that require a deeper understanding of concepts. For more optimal implementation, schools can also provide more props and supporting facilities so that demonstrations can be carried out more varied and effective. In this way, learning not only improves academic outcomes but also shapes students who are more active, critical, and ready for future challenges.

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