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# Improving Science Learning Outcomes Through Demonstration Methods: Classroom Action Research in Public Elementary Schools

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**ABSTRACT**

Understanding concepts in natural science (science) learning in elementary schools is often a challenge, especially in abstract material such as gravitational force. This research aims to analyze the effectiveness of the demonstration method in improving student learning outcomes in gravity material at one of the state elementary schools in Banten, Indonesia. This research uses a classroom action approach (PTK) which consists of two cycles, with research subjects as many as 36 students. Data collection techniques were carried out through observation, learning results tests, and interviews, while the data was analyzed descriptively quantitatively. The research results showed that before the action (pre-cycle), only 25% of students achieved learning completion. After applying the demonstration method in the first cycle, completion increased to 52.78%, and in the second cycle it reached 100%. These findings indicate that the demonstration method contributes significantly to increasing students' understanding of the concept of gravitational force and the completion of their learning. Thus, this research recommends the use of the demonstration method as an effective learning strategy in improving the quality of science learning at the elementary school level.

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## INTRODUCTION

Improving the quality of education is one of the main priorities in national development to create a generation that is ready to face global challenges (Marina et al., 2020). At the basic education level, Natural Sciences (IPA) has a crucial role in building

students' scientific understanding and critical thinking skills (Bennett et al., 2019). However, in many elementary schools, science learning still faces various obstacles which have an impact on low learning outcomes. Among other things, many students do not play an active role in the learning process, do not pay attention to the teacher when delivering material, and have limited use of interactive teaching methods. Most classes still apply a one-way method, where the teacher is the main center of learning, so that students only become passive recipients of information (Sørensen et al., 2023). In addition, the teaching aids and learning media used are often inappropriate, thus hampering students' understanding of abstract scientific concepts, such as gravitational force (Hsbollah et al., 2022).

The low level of student participation and less than optimal understanding of science concepts at the elementary level is increasingly visible in findings at one of the state elementary schools in Banten, where only 25% of students achieved the Minimum Completeness Criteria (KKM) in the material on Earth's gravitational forces in the pre-cycle stage (Chen, 2022). The main factor causing this problem is the learning approach which is still traditional and does not involve students in active learning experiences. Therefore, innovative strategies are needed that not only increase student engagement, but also make scientific concepts easier to understand through an experience-based approach. One method that has great potential in increasing the effectiveness of science learning is the demonstration technique, which allows students to directly observe scientific principles in real life (Garrels, 2022).

With a structured Classroom Action Research (CAR) framework, this research identifies the limitations of traditional educational practices and evaluates the effectiveness of demonstration techniques in increasing student engagement and their understanding of the science curriculum (Ruelmann et al., 2023). Through observation, reflection and assessment of learning outcomes, this research seeks to provide practical solutions and learning models that can be widely applied to support experience-based learning processes (Shalimar, 2024).

Although many studies have demonstrated the effectiveness of interactive pedagogical approaches in improving student learning outcomes, there is a significant paucity in the literature regarding the application of demonstration techniques to Earth's gravity material in elementary education (Tavan et al., 2022). Most existing studies emphasize abstract theoretical constructs and provide less practical guidance for implementing methodologies that can encourage experience-based learning through direct participation (Yao, 2023). This highlights the need for research that not only evaluates the effectiveness of demonstration techniques, but also formulates pragmatic frameworks that can be used by educators to improve students' understanding of scientific principles (Loiser & Endne, 2022). Therefore, this research aims to overcome existing shortcomings by offering an empirical analysis of the influence of demonstration methodology on student learning outcomes, as well as contributing to the development of existing literature in the field of science pedagogy (Hermawan et al., 2024).

This research offers novelty in the development of science learning methodology at the basic education level by adopting more interactive and evidence-based demonstration techniques. Using the Classroom Action Research (CAR) framework, this research not only evaluates the effectiveness of the demonstration method in increasing students' understanding of gravitational forces, but also develops a learning model that can be widely applied by educators (Ruelmann et al., 2023). This study addresses the gap in the literature which has so far focused more on abstract theory compared to the practical

application of demonstration techniques in science learning in elementary schools (Tavan et al., 2022). Apart from contributing to improving student learning outcomes, this research also provides new insights for teachers in developing teaching strategies that are more innovative and appropriate to the characteristics of elementary school students. Thus, this research not only enriches academic literature in the field of science pedagogy, but also has a real impact in improving the quality of learning at the basic education level (Hermawan et al., 2024).

## METHOD

This research applies a qualitative approach using classroom action (Classroom Action Research), where this method is carried out by educators to improve learning practices through reflection and direct action (Srivastava, 2022). This approach is reflective and collaborative, aiming to improve the learning process in a sustainable manner (Dutta et al., 2023). The research process begins with identifying problems that arise in learning, followed by planning actions or strategies to overcome these problems.

Next, the actions implemented in the classroom will be analyzed to assess their impact on learning. This cycle usually occurs repeatedly, including planning, action, observation and reflection steps (Kemmis et al., 2014).

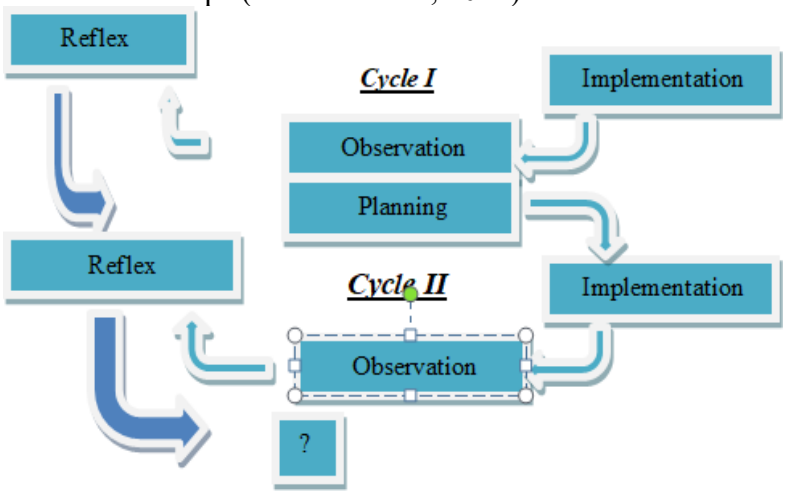


**Figure 1. Schematic of the Kemmis & McTaggert Model (Dadds, 2020)**

This method is superior because of its flexibility, allowing teachers to adapt the approach to student needs and classroom context (Kasari & Meaney, 2024). In addition, this research involves students in the change process, increasing their sense of responsibility for learning outcomes. With a qualitative approach, the data collected includes interactions, attitudes, and perceptions during learning, providing practical insights for educators for direct improvement in the classroom (Creswell, 2018; Pilo, 2024). This method is appropriate for exploring the application of demonstrations in science learning at Banten State Elementary Schools (Pangaribuan et al., 2022).

This research involved 36 grade 5 students (20 boys, 16 girls) at an elementary school in Banten. Grade 5 was chosen because students at this stage are more ready to participate in learning based on observation and active participation (Moreira-Párraga et al., 2022). The science material taught, such as gravitational forces and changes in objects, is relevant to the demonstration method, helping students understand the relationship between theory and practice. Respondents were selected based on consistent attendance and ability to understand instructions (Nurnaifah et al., 2023).

## Learning Improvement Design

The learning improvement design implemented by researchers is Classroom Action Research (PTK) or classroom action research. PTK is known as a form of action research specifically applied in educational contexts, with the aim of improving learning practices through systematic reflection and planned action. This concept is very relevant in the learning environment, because it provides educators with the opportunity to identify problems, implement new strategies, and evaluate the results directly in the classroom.

The steps in classroom action research can be fully aligned with the more general stages of action research, which consist of four main steps: (1) Planning, which includes identifying the problem and developing strategies to overcome it; (2) Action, which involves implementing the learning plan that has been prepared; (3) Observation, where researchers collect data about the implementation of actions and their impact on students; and (4) Reflection, which is the stage where the researcher reflects on and analyzes the results obtained to determine the effectiveness of the actions taken (Ratnasari & Permana, 2021).

Through repeated cycles of these steps, CAR not only serves as a tool for practical improvement in the field, but also as a means to build a better understanding of the learning process itself. With this approach, it is hoped that researchers can identify aspects that need to be improved, as well as find the right solution to improve the quality of learning in the classroom. In addition, PTK allows for collaboration between teachers and students, thereby creating a learning environment that is more interactive and responsive to student needs.

## Pre Cycle

In the pre-cycle stage, researchers carried out a series of plans consisting of several important steps. First, the researcher prepared a Learning Implementation Plan (RPP) which focused on the material of the Earth's gravitational force (Maryani et al., 2024). Next, the researcher prepared the necessary sources of materials and learning media. Apart from that, researchers also developed worksheets for students to support learning activities (Nikmah & Utami, 2023). The teaching method used was lecture, and finally, the researcher created an observation sheet to assess the teacher's activities during the learning process.

In implementing science learning regarding the Earth's gravitational force, the activity was carried out over two sessions, each lasting 35 minutes at a state elementary school located in Banten. In this activity, the researcher applied the lecture method and gave assignments during the learning process. The implementation process is divided into several stages. First, at the pre-activity stage, the teacher invites students to pray before the lesson starts and takes attendance. Then, in the initial activity, the teacher provides apperception through a question and answer session about the Earth's gravitational force and explains the learning objectives. In the core activity, the teacher explains the material to be studied and gives worksheets to students. At the final stage, the teacher summarizes the material that has been studied, checks the results of the students' assignments, and provides additional assignments in the form of remedial and enrichment questions that must be done as homework. Before ending the session, the teacher closed the lesson with prayer.

In the observation stage of the learning process, it was found that the teacher had not fully prepared the learning media properly. The teacher's explanation of the material was brief and paid little attention to each student's activities. In addition, teachers are not responsive enough to students' questions related to the material, so this aspect does not

receive adequate attention. The method applied seems monotonous, which makes students feel bored and bored, so that the classroom situation does not support the learning process.

In the reflection stage regarding the learning process that had been implemented in the pre-cycle, several deficiencies were found that needed to be corrected by the researcher. Among other things, teachers have not provided sufficient motivation to students. The method applied was felt to be less suitable for the learning material this time, and the learning media used was not effective in attracting students' attention. This causes the class atmosphere to become noisy and shows a lack of attention from the teacher during the learning process.

**Cycle I**

At the planning stage, the researcher prepared steps for improvement in the learning process based on the results of reflection obtained from the pre-cycle. The planned steps include creating a Learning Implementation Plan (RPP) for cycle I with a focus on material on Earth's gravitational forces, preparing learning materials and media to be used, preparing worksheets for students, choosing a demonstration method as a teaching approach, and preparing observation sheets to assess teacher performance during learning.

In the implementation phase of the first cycle of learning improvements for science subjects which discuss the Earth's gravitational force, this activity was carried out in two sessions, each lasting 35 minutes. Researchers use the demonstration method in learning, supported by media in the form of images that have been prepared previously (Rijanto, 2023). The process begins with pre-activities, where the teacher prepares the class atmosphere by inviting students to pray before the lesson starts and taking attendance. Furthermore, in the initial activity, the teacher provides apperception through questions and answers regarding the Earth's gravitational force and conveys the objectives of the learning. In the core activity, the teacher shows pictures of various examples of Earth's gravitational force that are commonly encountered in everyday life. Students are then grouped to discuss the images and asked to present the results of their discussion. In the closing stage, the teacher and students conclude the material that has been discussed, followed by students working on the posttest sheet. After that, the teacher corrects the posttest results and provides follow-up in the form of corrective and enrichment questions for homework, then closes the lesson with prayer.

At the observation stage, the teacher has held an apperception to open the learning with a warm communication atmosphere and interactive two-way communication (Syifa et al., 2024). The teacher asks questions and answers about the material that will lead them to the actual material and explains the learning objectives at this meeting.
In the learning process this time students are more active and participate because the media and methods used are interrelated and interesting for students, the teacher's attention to all students has changed.

At the reflection stage of the learning improvement process that took place in cycle I, there were still deficiencies that needed to be corrected by researchers, including the learning media used that did not attract students' attention, the teacher's lack of attention during the learning process.

**Cycle II**

At the planning stage, the researcher prepared steps for improvement in the learning process based on the results of reflection from cycle I. Preparations for this improvement

included preparing a Learning Implementation Plan (RPP) for cycle II with a focus on material on the Earth's gravitational force, providing the necessary learning materials and media, creating worksheets for students, choosing a demonstration method as a teaching approach, and preparing observation sheets to evaluate teacher activities.

At the implementation stage of the first cycle of learning improvements for science subjects which discussed the Earth's gravitational force, activities were carried out in two sessions of 35 minutes each. In this process, researchers used demonstration methods and learning media in the form of previously prepared images. The activity begins with a pre-activity, where the teacher greets and asks students to pray before the lesson begins, as well as taking attendance and providing motivation while preparing learning media and resources. In the initial activity, the teacher introduces the lesson by dropping the pencil from a sheet of paper several times while asking the students why the pencil and paper fell when released (Narayanan, 2023).

The teacher explains that objects fall to the floor, introduces the topic of the Earth's gravitational force, and encourages students to formulate questions about why objects of different weights, sizes, and shapes do not fall together (Le, 2024). In the core activity, the teacher assigns each group to carry out an experiment by dropping a piece of paper and a ruler simultaneously from the same height. The teacher then asks about the weight of the two objects and which one falls to the floor faster. Students work in groups, and one group is asked to read the results of their experiment to the class, followed by responses from the other groups. Students take turns showing the results of their discussion, and the teacher and students conclude that the heavier object will reach the floor more quickly. In the closing section, the teacher and students together conclude the material they have studied, then students are asked to work on the posttest sheet. After the posttest results are checked, the teacher provides follow-up in the form of improvement and enrichment questions that must be done as homework, before ending the lesson with prayer.

At the observation stage, the teacher has shown a better learning process where the teacher has mastered the class and the students look active.At the reflection stage, the improvement process in learning carried out in cycle II showed significant changes, including the methods used, the media applied, the condition of students in class, and the teacher's attention to students. The teacher succeeded in improving student learning outcomes, so that Classroom Action Research (PTK) for science subjects was completed.

**Data collection technique**

This research uses two main techniques in data collection, namely participant observation and non-participant observation (Miller, 2022). In participant observation, researchers are directly involved in the learning process, participating in classroom activities to directly observe interactions between students and the relationship between students and teachers (Bazan-Ramirez et al., 2022). On the other hand, non-participant observation is carried out by research supervisors who observe the learning process from outside without direct involvement, so that it can provide a more objective perspective regarding the application of the demonstration method (Creswell, 2018).

Apart from observations, data is also collected through test instruments designed to measure students' understanding of the Natural Science (IPA) material that has been taught (Amerlin et al., 2024). This test instrument consists of multiple choice questions and description questions which include indicators of competency achievement on the topics taught, such as gravitational forces and changes in objects (Habellia et al., 2023).

This test is carried out before and after implementing the demonstration method in order to evaluate improvements in student learning outcomes.

During the research improvement process, researchers use various tools to collect data. First, the observation sheet is used to make observations with a specific purpose, namely to collect data related to improvement results. In classroom action research, observations are carried out on teachers who act as researchers, as well as on students as research subjects, with implementation assisted by supervisor I and supervisor II. In addition, to assess the results of learning improvements in each cycle, researchers used test sheets prepared based on the Learning Implementation Plan (RPP).

### Data analysis

Based on data collected through observations and tests, analysis was carried out using an approach that reflects a continuous reflection process. According to Miles & Huberman (2014), in classroom action research, data analysis involves three main stages: data reduction, data presentation, and drawing conclusions. This process begins by summarizing and simplifying relevant data to make it easier to identify main patterns or themes. Data from observation instruments, both involving participants and non-participants, were analyzed to assess interactions and the effectiveness of implementing the demonstration method. On the other hand, data from learning tests, in the form of test sheets created based on the Learning Improvement Plan (RPP), are analyzed to assess improvements in student learning outcomes in each research cycle.

Analysis was carried out systematically to ensure the data was valid and reliable.Throughout the analysis process, data is collected from initial observations to the implementation of learning tests. The data is then processed by summarizing, selecting core information, focusing on relevant elements, and identifying emerging themes and patterns. Through data reduction, a clearer picture of the data can be obtained. After that, at the data presentation stage, the researcher compiles the data that has been collected to draw conclusions and determine further steps. The presentation of this data includes a clear and concise narrative, as well as graphs showing the results of learning tests. The final stage is drawing conclusions, where the resulting conclusions will be based on evidence that gives more credibility to the research.

## RESULTS AND DISCUSSION

### Results

Based on findings from learning improvement research conducted by the author on fifth grade students at a public elementary school in Banten, the demonstration method was applied in science learning about the Earth's gravitational force as part of the improvement program. The researcher then described the results of the learning improvement research at the pre-cycle, cycle I and cycle II stages as follows:

### Before Learning Improvement (Pre cycle)

In pre-cycle learning for science subjects, the results achieved by class V students regarding the material on Earth's gravitational force showed inadequate achievement. At the pre-cycle stage, only 9 students managed to get a score above the Minimum Completeness Criteria (KKM) 65, while 27 other students got a score below the KKM. To provide a more detailed picture of the percentage of student learning evaluation results at the pre-cycle stage, it can be seen in Table 1.

**Table 1. Pre-Cycle Learning Outcome Indicators**

| Indicators | Information |
|---|---|
| Minimum Score | 45 |
| Maximum Score | 80 |
| Total Score | 2025 |
| Average Score | 56,25 |
| Numbers of students with score > 65 | 9 |
| Numbers of students with score < 65 | 27 |
| Percentage of students with score > 65 | 25% |
| Percentage of students with score < 65 | 75% |

If the results of the pre-cycle evaluation before learning improvement are depicted in diagram form, the results will look as shown in Figure 1.

**Table 2. Percentage of Pre-Cycle Student Learning Evaluation Results**

| Score Range | Number of Students | Percentage |
|---|---|---|
| 41 – 50 | 18 | 50% |
| 51 – 60 | 9 | 25% |
| 61 – 70 | 3 | 8,3% |
| 71 – 80 | 6 | 16,7% |
| | **36** | **100%** |

If the results of the pre-cycle evaluation before learning improvement are presented in diagram form, they will appear as shown in Figure 1.

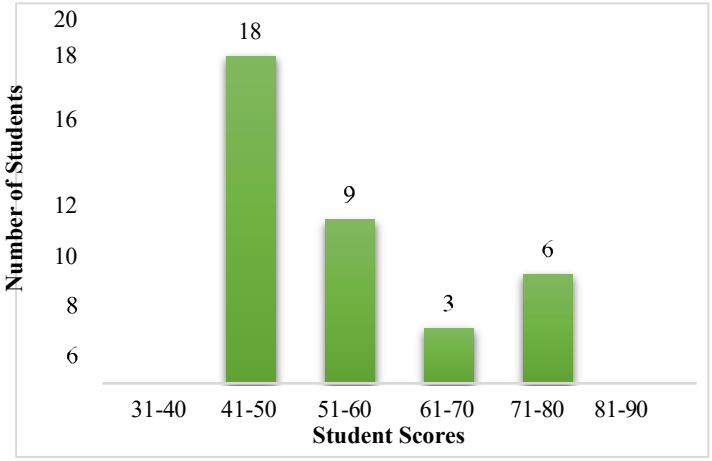


**Figure 1. Percentage of Pre-Cycle Student Learning Evaluation Results**

Based on the analysis of the pre-cycle test results and the diagram shown previously, it can be concluded that the average student score in science lessons regarding the Earth's gravitational force only reached 56.25. This shows that students' understanding of the material being taught is still relatively low. Therefore, researchers must immediately take corrective steps to improve the quality of learning so that students can better understand the material presented.

## Cycle I

The results of learning improvements in cycle I showed that 15 students succeeded in achieving a score of 65 or more, while 16 other students obtained scores below 65. Further explanation regarding the results of the evaluation of learning improvements in cycle I can be seen in Table 3.

**Table 3. Learning Outcome Indicators from Cycle I**

| Indicator | Information |
|---|---|
| Minimum Score | 50 |
| Maximum Score | 85 |
| Total Score | 2365 |
| Average Score | 65,69 |
| Numbers of student with score > 65 | 19 |
| Numbers of student with score < 65 | 17 |
| Percentage student with score > 65 | 52,78% |
| Percentage student with score < 65 | 47,22% |

In table 4, you can see the percentage of evaluation results after improving learning in cycle I. Of the 36 students, there were 6 students who got scores between 41 and 50, 11 students got scores between 51 and 60, 7 students got scores between 61 to 70, 3 students scored between 71 to 80, and 3 other students get a score between 81 to 90.

**Table 4. Percentage of Student Learning Evaluation Results for Cycle I**

| Score Ranger | Numbers of Student | Percentage |
|---|---|---|
| 41 – 50 | 6 | 16,67% |
| 51 – 60 | 11 | 30,56% |
| 61 – 70 | 7 | 19,44% |
| 71 – 80 | 9 | 25% |
| 81 – 90 | 3 | 8,33 |
| **Total** | **36** | **100%** |

If the results of the pre-cycle evaluation before learning improvement can be presented in diagram form, it will look like Figure 2.

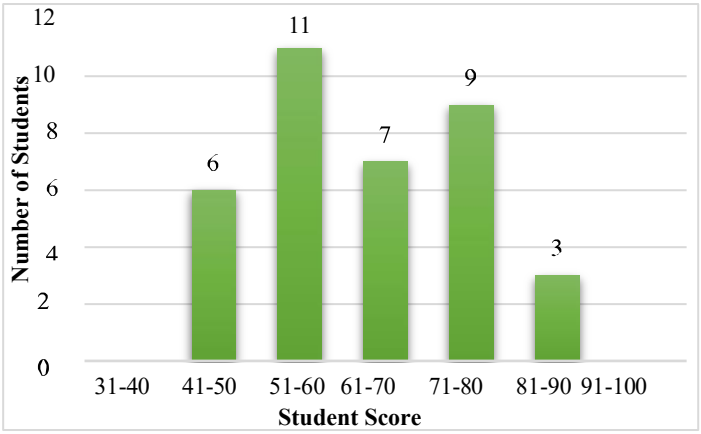


**Figure 2. Percentage of Student Learning Evaluation Results for Cycle II**

Based on the analysis of the pre-cycle test results and existing diagrams, it can be concluded that in science lessons regarding the Earth's gravitational force, the average student score only reached 65.69. A total of 17 students had not achieved completeness in learning, while 19 students managed to obtain a complete score, with a learning completion percentage of 52.78%. Even though there has been an increase in student learning outcomes, there is still a need to improve their understanding in order to better master the science material about the Earth's gravitational force which is delivered by teachers using the demonstration method (Tuan, 2023).

Therefore, researchers must immediately take corrective steps in learning so that students can understand the material according to the expected competencies (Nsyengula et al., 2024).

## Cycle II

Learning improvements in cycle II are carried out with the help of supervisor I and supervisor II, who act as observers or researchers to ensure implementation is in accordance with the plans that have been prepared. The learning process runs smoothly. At the end of the session, the researcher evaluated the learning outcomes to assess the level of success. The results of science learning regarding the Earth's gravitational force showed a significant improvement, where all students succeeded in achieving completeness with a score above KKM 65. After the test in cycle II learning improvement activities, the results of the improvement evaluation can be explained in more detail in Table 5.

**Table 5. Evaluation Results of Cycle II Learning Improvements**

| Indicator | Information |
|---|---|
| Minimum Score | 75 |
| Maximum Score | 95 |
| Total Score | 2940 |
| Average Score | 81,67 |
| Number of students with grades > 65 | 36 |
| Number of students with grades < 65 | 0 |
| Percentage of students with grades > 65 | 100% |
| Percentage of students with grades <65 | 0% |

Table 6 shows the percentage of learning improvement evaluation results in cycle II. Of the 31 students, none got a score between 31 and 70. A total of 20 students got a score between 71 and 80, 8 students got a score between 81 and 90, and 3 students managed to get a score between 90 and 100.

**Table 6. Percentage of Student Learning Evaluation Results for Cycle II**

| Value Range | Number of Students | Percentage |
|---|---|---|
| 71 – 80 | 22 | 61,11% |
| 81 – 90 | 10 | 27,78% |
| 91 – 100 | 4 | 11,11% |
| **Total** | **36** | **100%** |

If the results of the pre-cycle evaluation before learning improvement can be presented in diagram form, it will look like Figure 3.

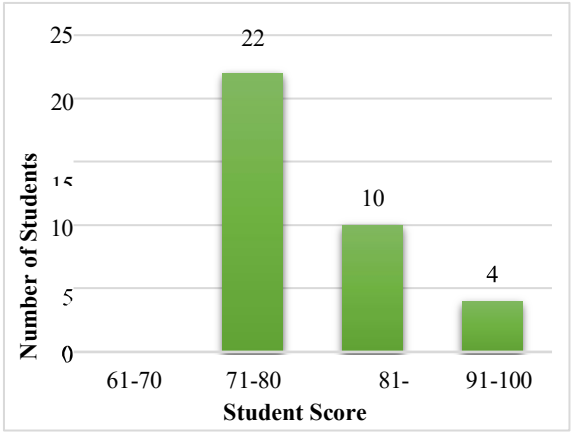


**Figure 3. Diagram of Evaluation Results for Cycle II Learning Improvements**

Based on the analysis of the test results in cycle II and the diagram shown previously, it can be concluded that in science learning regarding the Earth's gravitational force, the average class score reached 81.67. All 36 students managed to achieve learning completion with a percentage of 100%. This shows that the application of the demonstration method by teachers has succeeded in improving student learning outcomes. After the two learning improvement cycles were implemented, significant improvements were observed, which can be seen in Table 7.

**Table 7. Increase in Mastery of Learning Outcomes and Average Score**

| Criteria | Pre Cycle | | Cycle I | | Cycle II | |
|---|---|---|---|---|---|---|
| | Total | % | Total | % | Total | % |
| Complete | 9 | 25% | 19 | 47,22% | 36 | 100% |
| Not Completed | 27 | 75% | 17 | 52,78% | 0 | 0% |
| Average Score | 55,5 | | 67,9 | | 81,8 | |

The Table 7 shows that before learning improvements, only 9 out of 36 students scored above the KKM 65, or around 25%. However, after improving learning in cycle I, there was a significant increase, with the number of students achieving a score above KKM 65 increasing to 19 students, or 52.78%. In cycle II, all students, namely 36 people or 100%, managed to get a score above the KKM 65. Apart from that, there was a significant increase in the average score. Before the cycle, the average value was 56.25, which then increased to 65.69 in cycle I, and reached 81.67 in cycle II. Because all students had finished, improvements were not continued to cycle III. If this learning completion is presented in diagram form, the results will look as follows.

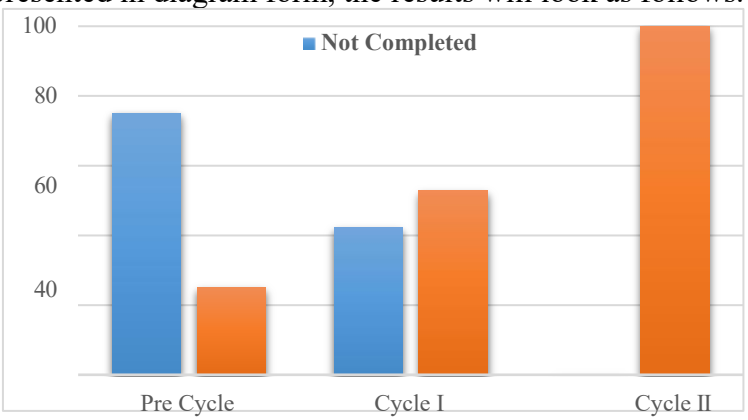


**Figure 4. Diagram of Increasing Completeness of Learning Outcomes from Pre-Cycle to Cycle II stages**

The increase in average value from before improvement or pre-cycle to cycle II, if presented in bar chart form, can be seen as follows.

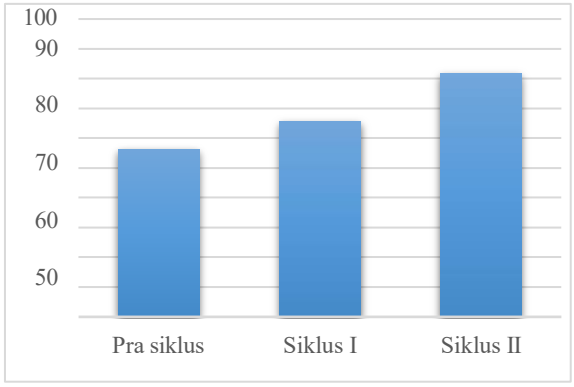


**Figure 5. Diagram of Increase in Average Value from Pre-Cycle Stage to Cycle II Stage**

## Discussion

Before improvements were made, the data showed that only 9 out of 36 students, which is equivalent to 25%, managed to reach the level of learning completion. Meanwhile, 27 students or 75% have not been able to meet the specified standards. This situation clearly reflects serious problems in the learning process, indicating that many students face difficulties in understanding the material presented. Therefore, an in-depth evaluation of the methods and approaches used by teachers is very necessary (Afrizal et al. 2022).

After reflecting, researchers found several factors that caused this failure. One of the main factors is that the teaching methods used by teachers are considered inappropriate and may not be in line with students' learning styles. In addition, teachers do not use learning media that suit students' developmental needs, thus potentially hindering their understanding of the material. This mismatch may cause students to be less motivated to be actively involved in the learning process. The lack of attention that teachers give to each student in assignments is also an important factor; This condition reflects that not all students get the support they need to complete their assignments well.

By identifying the causes of failure, the researcher decided to take steps to improve learning in cycle I. This shows the researcher's commitment to improving the quality of education and realizing the importance of adjusting teaching strategies to make them more relevant and effective to meet student needs (Lam 2019). This effort is not only aimed at improving student learning outcomes, but also at creating a more inclusive and supportive learning environment for every student. With this reflective and evaluative approach, it is hoped that better achievements can be achieved in the future.

In improving learning in cycle I which applies the demonstration method, the teacher has provided learning media in the form of images taken from the internet. The evaluation results of 36 students showed that 19 students managed to score above the Minimum Completeness Criteria (KKM) 65, which means 52.78% of them had achieved learning completeness. However, there are still 17 students, which is equivalent to 47.22%, who have not achieved completion, so this shows that there are challenges that must be overcome. In addition, the average score obtained in cycle I showed an increase from 56.25 to 65.69, with an additional 9.44 points compared to the results before improvements were implemented. These improvements, while promising, also show that there is still room for further improvement.

After reflecting, the researcher identified several causes of failure that occurred in learning cycle I. First, the learning media used was considered less effective in attracting students' attention. This shows the importance of choosing media that is not only

appropriate but can also attract students' interest so that they are more actively involved (Kencono, M and Ratnasari 2021). In addition, researchers noted that teachers have not provided sufficient motivation to students, which is very necessary to encourage their engagement. During the application of the demonstration method, it was seen that some students were passive and less interested, some even played alone or were distracted by things outside the classroom, which of course affected the overall learning process.

Considering that there are still students who have not achieved completeness in learning cycle I, researchers understand the importance of continuing improvement in cycle II. This shows the researchers' commitment to overcoming existing challenges and improving the quality of learning. By conducting in-depth analysis of the results obtained and observing student behavior, researchers are expected to be able to develop more effective strategies to increase overall student engagement and ensure that all students gain a good understanding of the material being taught. (Zitha et al., 2023). By setting clearer goals and correcting identified deficiencies, researchers hope to achieve better results in the next cycle.

Researchers recorded very positive achievements in improving learning in cycle II, where all 36 students succeeded in meeting the criteria for learning completeness with a score above the Minimum Completeness Criteria (KKM), namely 65. The average score obtained by students in this cycle reached 81.67, which shows that each student was able to understand the material being taught well. These achievements not only reflect individual progress, but also demonstrate the effectiveness of the teaching methods implemented during this cycle.

With very satisfactory results, the researcher feels confident that the improvement steps implemented in cycle II have had a significant impact on the learning process. Because all students had achieved learning mastery, the researchers decided not to continue improving learning in cycle III for class V Natural Sciences subjects, especially regarding the Earth's gravitational force, at one of the state elementary schools in Banten. This decision shows the researcher's confidence that the methods and strategies used are effective enough to achieve the learning objectives, so there is no need to make further changes in the next cycle.

Furthermore, the decision not to continue to cycle III reflects a good evaluation of the results that have been achieved and opens up space to build a strong foundation for further learning. Researchers believe that students are ready to move on to the next concepts in the curriculum and can apply their understanding of gravitational forces in a broader learning context. Thus, the results achieved from cycle II become a solid foundation for the development of other scientific concepts which will be discussed in the future.

## CONCLUSION

Based on the results of learning improvements carried out in each cycle, there are several conclusions that can be drawn. First, the application of the demonstration method has proven successful in increasing students' understanding of the Earth's gravitational force. In addition, improvements made from the pre-cycle stage to cycles I and II showed a significant increase in learning completeness; in the pre-cycle stage, only 25% or 9 students completed, while in cycle I, this figure increased to 52.78% or 27 students, and in cycle II it reached 100% or 36 students. This means there is an increase in learning completeness by 27.78% to 47.22%. Through the pre-cycle, cycle I and cycle II stages, fifth grade students at one of the state elementary schools in Banten showed an increase in learning outcomes after the teacher implemented the demonstration method in natural

science (science) learning about the earth's gravitational force. This demonstration method makes the learning process more active, creative and effective. Therefore, it is important to use appropriate learning methods and media so that the teaching and learning process can take place optimally.

Based on the conclusions that have been presented, the researchers put forward several suggestions that could help improve and advance the quality of education. First, teachers should understand every problem students face during the learning process and try to find the right solution. Second, it is important for teachers to improve their performance and skills by mastering various approaches, methods and learning media that can attract students' interest and attention. Apart from that, teachers need to give assignments to students that involve listening, observing, taking notes, and expressing opinions or ideas so that the results obtained can be maximized. Lastly, teachers must always motivate students and try to optimize students' understanding of the material taught during the learning process.

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