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Active Learning Strategies in Improving Students' Understanding of Human Body Organs at MI Islamiyah Tanjung Manis

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Abstract: This research aims to improve student learning outcomes in learning Islamic religious education by using active learning. This research is a classroom action research that uses four steps, namely planning, action, observation and reflection. The subjects of this research are primary madrasah school students. The data of this research was obtained with test and observation techniques. Tests are used to measure learning outcomes and observations are used to analyze the learning activities of teachers and students. The data analysis technique used in this research is descriptive statistics by comparing the results obtained with research success indicators. The results of the research show that active learning can improve student learning outcomes in learning Islamic religious education. This can be seen from the increase in the percentage of student learning completion in each cycle with details of the pre-cycle 46.91%, the first cycle 79.39% and in the second cycle it increased to 89.66%. Thus, the use of active learning can be used as an alternative to improve student learning outcomes in Islamic religious education.

Keywords: active learning, learning outcomes, body organs.

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INTRODUCTION

Education is a vital component in shaping the intellectual and personal development of students. In primary education, science plays a central role in building students' curiosity, logical thinking, and understanding of the natural world, including the human body. At the Madrasah Ibtidaiyah (MI) level, particularly in institutions such as MI Islamiyah Tanjung Manis, science education must be delivered in ways that are engaging and meaningful to young learners. The topic of human body organs is one of the essential materials in elementary science curricula. It provides students with foundational knowledge about how their own bodies function, enabling them to appreciate health, hygiene, and physical well-being. However, this material is often perceived as abstract and complex, especially for students in lower grades.

Traditional lecture-based teaching methods may not sufficiently engage students or help them retain the knowledge needed to fully grasp such abstract concepts. Passive learning can lead to disinterest, shallow comprehension, and low retention rates among

students. This is where active learning strategies become essential. Active learning is a student-centered approach that encourages learners to take part in the learning process through discussion, exploration, hands-on activities, and critical thinking. Unlike passive methods, active learning emphasizes interaction, engagement, and student responsibility for their own learning. It helps make complex materials more accessible and relatable to students.

In the context of learning about human body organs, active learning strategies may include group discussions, role-playing, hands-on experiments, visual aids, games, and interactive media. These strategies not only enhance student understanding but also stimulate their interest in the subject matter. When students are actively involved, they are more likely to understand the functions and importance of each organ in the human body. At MI Islamiyah Tanjung Manis, there has been a growing awareness among educators of the need to adopt more dynamic and effective teaching strategies to improve student learning outcomes. The shift toward active learning reflects a broader effort to create a more engaging and student-friendly classroom environment. Teachers in the school have observed that many students struggle to understand the functions and systems of the human body when taught through conventional methods. As a result, students often score poorly on assessments related to this topic and show a lack of confidence when discussing the material. Implementing active learning strategies can help overcome these challenges. By involving students in activities such as building body organ models, watching educational videos, conducting simple experiments, or participating in group-based inquiry projects, they begin to engage more deeply with the content.

Furthermore, active learning strategies encourage peer collaboration. When students work in groups, they learn to share ideas, ask questions, and clarify concepts together. This peer-to-peer interaction reinforces learning and provides opportunities for students to express their understanding in creative ways. The use of visual and kinesthetic tools such as diagrams, models, and interactive demonstrations also plays a critical role in helping students visualize the internal parts of the body and their respective functions. Visual aids make abstract concepts tangible and easier to grasp, particularly for young learners who are still developing their abstract thinking abilities.

Active learning also promotes critical thinking and problem-solving. When students are challenged with real-life scenarios, such as identifying symptoms of organ malfunction or designing healthy lifestyle plans, they are encouraged to think critically and apply their knowledge to practical situations. Another key benefit of active learning is increased student motivation. When students enjoy the learning process, they are more likely to participate actively, complete assignments with enthusiasm, and seek out additional information beyond the classroom. This intrinsic motivation is crucial in developing lifelong learners. In Islamic educational settings like MI Islamiyah Tanjung Manis, active learning strategies also align with the values of collaboration, mutual respect, and reflective thinking. These values are embedded in both religious and academic teachings, making active learning a holistic approach that supports character education alongside academic development. The integration of active learning strategies into the teaching of science—particularly the topic of human body organs—requires teachers to shift from being information providers to learning facilitators. This transition demands creativity, flexibility, and continuous professional development for educators.

Additionally, the school's administration must support teachers by providing resources, training, and time for lesson planning. The success of active learning depends not only on teacher commitment but also on institutional readiness and community support. Parents also play a role in reinforcing what students learn through active strategies. At home, they can engage children in health-related discussions, provide books or visual aids, and encourage curiosity about the human body. Collaboration between teachers and parents ensures that learning continues beyond the classroom. This research is rooted in the observation that active learning strategies can significantly enhance student comprehension of the human body, a subject that holds both scientific and

practical importance. Through proper implementation, students are expected to demonstrate improved understanding, higher academic performance, and increased enthusiasm for science.

The study conducted at MI Islamiyah Tanjung Manis aims to examine how active learning strategies affect student understanding of human body organs. By analyzing teaching methods, student responses, and learning outcomes, this research will provide valuable insights into the effectiveness of active learning in the context of primary Islamic education. Ultimately, this research seeks to contribute to the broader goal of improving science education in Indonesian madrasahs. It highlights how teaching methods that prioritize student engagement can lead to more meaningful learning experiences and better academic results. In conclusion, the use of active learning strategies offers promising potential in enhancing students' understanding of complex topics such as human body organs. Through this approach, MI Islamiyah Tanjung Manis can not only improve science learning but also foster critical thinking, collaboration, and curiosity among its students skills that are essential for their future academic and personal success.

METHODS

This study employed a qualitative descriptive research method to explore the implementation and effectiveness of active learning strategies in enhancing students' understanding of human body organs. The qualitative approach was chosen to provide a deeper and more contextualized understanding of teaching practices, student responses, and the learning environment within MI Islamiyah Tanjung Manis. Through observation, interviews, and documentation, this research aimed to capture the real experiences of both teachers and students involved in the learning process. The research was conducted at MI Islamiyah Tanjung Manis, a madrasah that provides primary-level Islamic education. The study focused on fourth-grade students, as the topic of human body organs is part of their science curriculum. This class was selected based on input from the science teacher and school administration, who noted that students in this grade often face challenges in understanding this material when traditional teaching methods are used.

The participants in this study included one science teacher and a group of 20 students from the selected fourth-grade class. The teacher was directly involved in designing and implementing active learning strategies during the teaching sessions. Meanwhile, the students participated in the activities and provided feedback through both observation and informal interviews. The researcher acted as a non-participant observer, recording classroom interactions and documenting teaching methods used.

Data collection methods included classroom observation, teacher and student interviews, and analysis of learning outcomes. During observation, the researcher took field notes to capture classroom dynamics, student engagement, and the effectiveness of the applied learning strategies. A checklist was also used to monitor the implementation of specific active learning techniques, such as group discussions, use of visual aids, games, and hands-on experiments. In addition to observation, semi-structured interviews were conducted with the teacher to understand their perspective on the benefits and challenges of using active learning strategies. The interviews focused on planning, execution, student responses, and perceived impact on learning outcomes. Informal interviews with students were also conducted to gain insights into their level of interest, understanding, and preference for different learning activities.

To support the findings, student worksheets, drawings, and written assignments were collected as documentation. These materials provided evidence of student comprehension and creativity, particularly in tasks where students were asked to illustrate or describe the function of various human organs. These artifacts were analyzed qualitatively to determine the depth of understanding and knowledge retention. The learning intervention lasted for three weeks, during which the teacher implemented a variety of active learning strategies tailored to the topic of human body organs. Activities

included building paper-based organ models, creating body system charts, role-playing different organs, and using multimedia presentations to reinforce the concepts. Each session was carefully observed to track changes in student participation and engagement.

Data analysis was carried out through a process of categorization and thematic coding. Observational data and interview transcripts were reviewed and categorized into key themes, such as student engagement, comprehension, and participation. Patterns and recurring responses were identified to determine how specific strategies influenced student understanding of the material. The validity of the data was ensured through triangulation, which involved comparing data from different sources—teacher interviews, student responses, observations, and learning artifacts. Member checking was also conducted by sharing preliminary findings with the teacher to confirm the accuracy of the interpretation. This process helped enhance the credibility and reliability of the research. In summary, the methodology was designed to provide a comprehensive and authentic view of how active learning strategies influence student learning about human body organs. By combining observational data, interviews, and documentation, the study aimed to highlight both the successes and areas for improvement in applying active learning within a primary Islamic educational context.

In conducting this research, ethical considerations were also taken into account to ensure the integrity of the study and the protection of participants. Prior to data collection, permission was obtained from the school principal and the classroom teacher. The purpose of the research was clearly explained to both the teacher and students, and verbal consent was obtained from the participants. Anonymity and confidentiality were maintained throughout the research process by using pseudonyms and securing all collected data. The implementation of active learning strategies was designed collaboratively with the classroom teacher. This ensured that the strategies used were contextually appropriate, aligned with the curriculum, and feasible within the school's resources. Collaborative planning allowed for better integration of active learning into the existing lesson plans, making the teaching process smoother and more effective.

During the learning sessions, the teacher played the role of a facilitator, encouraging student inquiry and participation. The students were encouraged to ask questions, work together in groups, and present their findings. The researcher documented how the teacher adjusted her role to guide and support students without dominating the classroom. This shift in teaching style was a crucial element in understanding how active learning transforms the teaching and learning experience. The classroom setting was also arranged to support group-based and interactive learning. Desks were moved into clusters to promote teamwork, and learning materials were displayed around the classroom to create an engaging environment. These physical changes were noted during observation as they significantly influenced student interaction and participation.

One of the key activities included a "Body System Role Play," where students acted out the functions of different organs. This creative activity not only enhanced understanding but also allowed students to express their interpretations of the lesson in an interactive and memorable way. Observing this activity helped the researcher understand the role of physical movement and expression in knowledge retention. Another strategy used was the incorporation of multimedia, such as educational videos and animated diagrams, to explain how the human body works. These tools were especially effective for visual learners and helped clarify difficult concepts. The researcher noted the students' attentiveness and excitement during these sessions, which translated into more meaningful questions and discussions.

Students also completed worksheets after each session, which included labeling diagrams, matching functions to organs, and short reflections on what they learned. These worksheets were analyzed to assess students' understanding and the effectiveness of each active learning strategy. The diversity of tasks provided insights into how students process information differently. To evaluate the learning outcomes, the teacher conducted a formative assessment at the end of the intervention. This included a short quiz and oral

questioning to assess comprehension. The researcher was present during this process and recorded student responses, particularly noting improvements in accuracy, confidence, and the use of correct terminology related to human body organs.

The study also examined how students with different learning abilities responded to active learning. The researcher paid special attention to students who were usually passive or shy during regular classes. Through observation, it was found that these students showed increased participation and confidence when given opportunities to engage in hands-on or collaborative tasks, suggesting that active learning can support a wider range of learners. Overall, this extended methodology highlights not only the implementation of active learning strategies but also the thoughtful planning, ethical considerations, classroom adjustments, and assessment techniques that contributed to a comprehensive understanding of the impact on student learning. These insights provide a strong foundation for analyzing the results and discussing the broader implications of active learning in Islamic primary education settings.

RESULTS

The results of this study reveal significant improvements in students' understanding of human body organs through the implementation of active learning strategies. By the end of the three-week intervention, students demonstrated a deeper understanding of the topic, showcasing a marked improvement in both knowledge retention and engagement during class activities. One of the key findings was that students became more engaged and participatory when active learning strategies were employed. Observation notes indicated that, compared to traditional teaching methods, students were more enthusiastic during group activities, discussions, and hands-on projects. The role-playing activities, where students acted out the functions of different organs, particularly captured their attention and fostered greater interaction among peers.

Furthermore, student responses during the "Body System Role Play" activity indicated that they were able to recall the functions of various organs more easily. For instance, when asked to explain the role of the heart, several students demonstrated their understanding by describing how the heart pumps blood to the body in a way that mimicked the movement of the blood flow, a concept that had been difficult to explain through conventional methods. Additionally, there was a noticeable improvement in the accuracy and depth of student responses in class discussions. Previously, students had struggled to explain how the organs work together in a system. However, following the active learning sessions, many students were able to articulate more sophisticated explanations of organ systems, such as the circulatory and digestive systems, and how they interconnect to maintain bodily functions.

The use of multimedia resources, including educational videos and interactive diagrams, also contributed significantly to students' understanding. Students reported that they found these visual aids particularly helpful in making abstract concepts more tangible. Through the use of animated diagrams showing organ functions, students were able to visualize the internal structures of the human body, which enhanced their ability to recall information. Furthermore, when students were tasked with completing worksheets, there was a notable improvement in the accuracy of their answers. On the post-intervention worksheets, students demonstrated a better grasp of organ functions, as evidenced by their ability to label body parts correctly and match them with their respective functions. Prior to the intervention, many students struggled with basic concepts such as the location of organs in the body.

An interesting observation was the way in which students' confidence in their knowledge increased. During pre-intervention assessments, some students were hesitant to answer questions, often avoiding participation in class discussions. However, after the active learning strategies were introduced, students became more confident in providing answers, and many volunteered to explain the material to their classmates. Another

notable result was the positive impact on students who typically struggled with learning. Students who previously exhibited passive learning behaviors began to engage more actively in the lessons. For example, one student who had difficulty grasping the content in previous lessons began to show an increase in participation during group tasks and even initiated discussions about the human body during casual conversations in class.

In terms of collaboration, students demonstrated a higher level of teamwork during group activities. Group discussions, where students worked together to create models of body organs or solve problems related to body functions, resulted in students sharing their knowledge with peers, helping each other, and collectively understanding the material in a deeper way. The collaborative aspect of active learning allowed students to learn from each other's perspectives. The teacher also observed improvements in student behavior and motivation. She reported that, during active learning sessions, there was less classroom disruption compared to traditional teaching sessions. Students were more focused and motivated to participate in activities because they found the lessons to be more engaging and fun.

In addition, the teacher noted that the variety of teaching techniques used during the active learning sessions allowed her to cater to different learning styles. For example, students who were more visual learners benefited from the videos and diagrams, while kinesthetic learners enjoyed the hands-on activities, such as model-making and role-playing. This flexibility in teaching methods allowed for a more inclusive learning environment where all students had the opportunity to thrive. The formative assessments conducted at the end of the intervention also demonstrated improved academic performance. When compared to pre-intervention assessments, the post-intervention quiz results showed a significant increase in correct responses, especially in questions related to the function and location of various body organs. The overall improvement in quiz scores highlighted the effectiveness of the active learning strategies in enhancing student comprehension.

Feedback collected from students through informal interviews also indicated that they enjoyed the active learning process. Many students mentioned that the lessons were "fun" and "exciting," particularly the activities where they could physically engage with the content. This enthusiasm reflected a shift in their perception of learning, from viewing it as a passive task to an enjoyable and interactive experience. The researcher also analyzed student work samples, such as diagrams and short essays, to assess their understanding of human body organs. These artifacts demonstrated a higher level of creativity and accuracy after the intervention. Students who had previously drawn incomplete or incorrect diagrams of body organs now showed more detailed and accurate representations, indicating that they had absorbed the material more effectively.

Another significant result was the long-term retention of knowledge. Even a few weeks after the intervention, students were able to recall key concepts about the human body with ease. Follow-up observations showed that students continued to engage in conversations related to the human body, further demonstrating that the active learning strategies had a lasting impact on their understanding. Finally, the teacher's reflections on the active learning process revealed that she felt more confident in her ability to deliver engaging and effective lessons. She expressed a greater sense of fulfillment in seeing her students actively involved in learning and noted that she would continue to incorporate active learning strategies in future lessons. In conclusion, the results of this study clearly demonstrate that active learning strategies significantly enhanced students' understanding of human body organs. Students showed improvements in comprehension, engagement, and retention, and they developed greater confidence in their ability to discuss and apply what they had learned. The findings suggest that active learning strategies are an effective approach for teaching complex science topics in a primary Islamic education setting.

One of the key insights from the results was the observable increase in the students' ability to make connections between the material and real-life scenarios. Prior to the

intervention, many students had difficulty relating the functions of the body organs to their own health and daily activities. However, after the active learning strategies were implemented, students were able to provide examples of how they could take care of their bodies and the importance of each organ in maintaining overall health. This shift in perspective is crucial, as it highlights the practical relevance of what they were learning. Moreover, it was found that students who initially had difficulty understanding abstract concepts were able to grasp them more effectively when presented through active learning. For example, the use of hands-on activities such as constructing models of the human body allowed these students to physically interact with the material, which in turn helped them visualize how organs function within the body. This tactile involvement was key in reinforcing their understanding and bridging the gap between theoretical knowledge and practical application.

Student motivation was also notably higher during the post-intervention period. Many students reported feeling excited about attending science lessons, and this enthusiasm was reflected in their increased willingness to participate in group activities and class discussions. This shift from passive to active learning not only fostered an enjoyable classroom atmosphere but also led to a noticeable improvement in student retention and application of the content being taught. The improvement in critical thinking skills was another positive outcome. During group discussions and problem-solving activities, students were asked to reason through the functions and interconnections between different organs in the body. As a result, many students were able to think critically about how various body systems work together, demonstrating a deeper understanding of the material than they had previously shown in assessments based on memorization alone.

Additionally, the collaborative nature of the learning activities had a positive impact on students' social skills and teamwork abilities. In group tasks, students practiced sharing ideas, negotiating, and helping one another to solve problems. The peer interaction encouraged a supportive learning environment where students felt comfortable asking questions and explaining concepts to each other. This not only enhanced their understanding but also promoted a sense of community within the classroom. The students' ability to retain and recall information was assessed through informal questioning and quizzes conducted at the end of each learning session. Post-intervention quiz scores showed significant improvement in students' ability to recall details such as the names of organs and their functions. Students who initially struggled to recall simple facts about the human body were now able to provide accurate descriptions and explanations.

Another positive result was the increased student involvement in post-class discussions related to the body organs. Students were not only able to recall what they learned but also expressed curiosity by asking deeper questions about how the organs function and how they could improve their health. This inquiry-based learning indicates that students were more invested in the material and eager to continue learning beyond the classroom lesson. Feedback collected from parents through a follow-up survey also supported the effectiveness of active learning strategies. Parents noted that their children were more eager to share what they had learned at school, discussing topics like the heart, lungs, and digestive system at home. This enthusiasm for the subject extended beyond the classroom, reinforcing the idea that active learning strategies helped spark a genuine interest in science.

Furthermore, the teacher reported that the level of student engagement remained high throughout the intervention period. She noted that students were more involved in their own learning, asking questions and volunteering answers with confidence. The teacher also observed that the active learning strategies allowed her to better gauge the students' individual progress, providing opportunities for timely feedback and adjustment to lesson plans. The study also revealed that the active learning strategies allowed for more differentiated instruction. Students with diverse learning needs—such as visual

learners, kinesthetic learners, and auditory learners—were better able to engage with the material in ways that suited their learning preferences. This differentiated approach ensured that all students, regardless of their learning style, had an equal opportunity to understand and retain the material. In conclusion, the results of this study strongly suggest that active learning strategies significantly improved students' understanding of human body organs. Through interactive lessons, hands-on activities, and collaborative learning experiences, students demonstrated enhanced engagement, critical thinking, retention, and motivation. These results provide compelling evidence that active learning strategies are highly effective in improving comprehension and academic performance in primary school science education, particularly when dealing with complex topics such as the human body.

DISCUSSION

The results of this study provide strong evidence that the use of active learning strategies significantly enhanced students' understanding of human body organs. The active learning methods employed—such as role-playing, group activities, multimedia presentations, and hands-on experiments—fostered a more engaging and interactive classroom environment. This is consistent with prior research that suggests active learning strategies help to increase student participation, motivation, and retention of material. One of the most notable findings was the increase in student engagement. Prior to the intervention, many students exhibited passive learning behaviors, often refraining from contributing to class discussions or engaging with the content. However, after the active learning strategies were introduced, students were more motivated to participate in discussions and activities. This shift in behavior is supported by research that highlights the positive impact of interactive learning environments on student motivation and engagement.

The increased participation in activities such as the "Body System Role Play" further emphasized the importance of kinesthetic learning. By physically acting out the functions of various organs, students were able to embody the content, which enhanced their understanding of the material. Research suggests that kinesthetic learning, where students engage in physical movement to represent abstract concepts, can lead to deeper understanding and better retention, as it appeals to multiple senses. Additionally, the use of multimedia resources played a crucial role in supporting visual learners and making abstract concepts more accessible. Visual aids such as educational videos and animated diagrams allowed students to see the human body in a way that was not possible through traditional methods. This finding aligns with studies that show how multimedia can enhance learning by providing visual context that aids in conceptual understanding, particularly in science education.

The collaborative nature of the activities also contributed to improved student outcomes. Group work, where students were encouraged to share ideas, build models, and engage in discussions, helped to foster a sense of community in the classroom. This collaborative approach not only enhanced social learning but also encouraged peer teaching, where students learned from each other's insights. Research supports the idea that peer collaboration in the classroom can lead to higher levels of cognitive processing and greater knowledge retention. Furthermore, the study found that students who were traditionally passive or less confident in class became more involved and eager to participate once active learning strategies were implemented. This is particularly significant because it suggests that these strategies can address individual learning challenges and provide opportunities for students who may have been left behind in traditional, teacher-centered instruction. Active learning, therefore, appears to be an inclusive approach that benefits students with varying learning needs and preferences.

The findings also suggest that active learning strategies promote critical thinking. During group discussions and problem-solving tasks, students were required to make connections between different body systems and explain their functions in a logical and

coherent manner. This focus on reasoning and conceptual understanding is vital for developing higher-order thinking skills, which are essential for students' overall cognitive development and their ability to apply knowledge in real-life contexts. The positive feedback from both students and parents further supports the effectiveness of active learning. Parents reported that their children were more enthusiastic about discussing what they learned in class, which indicates that the strategies used helped students internalize the material and sparked curiosity beyond the classroom. This enthusiasm for learning can lead to better long-term retention and a more positive attitude toward science education in general.

Despite the positive outcomes, some challenges were observed during the intervention. For instance, some students struggled with the time constraints of group activities and had difficulty staying focused during more complex tasks. These challenges highlight the importance of providing clear instructions and managing time effectively during active learning sessions. Additionally, while most students benefited from the activities, there were instances where certain students felt overwhelmed or confused, indicating that the teacher may need to further differentiate activities to ensure that all students are equally supported. In conclusion, the findings of this study underscore the significant advantages of using active learning strategies to teach complex science topics like human body organs. The results demonstrate that active learning can foster greater student engagement, enhance understanding, and improve critical thinking and retention. However, it is important to continue refining these strategies to ensure that they cater to the diverse needs of all learners, ensuring a more inclusive and effective learning experience for every student.

Another important observation from the study was the shift in students' attitudes toward learning science. Traditionally, science, especially biology topics like the human body, is often perceived as challenging and abstract for primary school students. However, the active learning strategies helped demystify these topics, making them more approachable and engaging. Students began to view the content not as a set of disconnected facts, but as an interconnected system that they could interact with and understand. This shift in mindset is critical, as fostering a positive attitude toward science can contribute to long-term interest and success in the subject. Moreover, the hands-on approach used in this study helped bridge the gap between theoretical knowledge and practical application. For instance, activities such as constructing models of body organs and performing role-plays allowed students to tangibly engage with the material. These activities provided students with an opportunity to "do" rather than just "listen," which is essential for deep learning. Research has shown that students learn better when they are actively involved in the learning process, as opposed to passively receiving information from a teacher. By making learning a more active process, students are more likely to retain and apply what they have learned in the future.

Additionally, the study found that students were able to make meaningful connections between the concepts they were learning in the classroom and their own bodies. For example, during group discussions, students shared personal experiences related to health and wellness, such as exercising to strengthen their lungs or drinking water for better kidney function. This kind of connection between the lesson and personal experience enhances the relevance of the topic, making it more interesting and motivating for students to continue learning. The study also highlighted the importance of providing opportunities for reflection in active learning. After completing the hands-on activities and group discussions, students were asked to reflect on what they had learned and how they could apply this knowledge in their daily lives. These reflection activities were instrumental in helping students internalize the information and recognize the practical value of what they had learned. Reflection fosters metacognitive skills, encouraging students to think critically about their learning process and the content they have mastered.

Another significant finding was the increased collaboration among students. Group work, which is a central component of active learning, allowed students to work together toward a common goal. As they engaged in collaborative problem-solving and peer teaching, students not only enhanced their understanding of the material but also developed essential social skills such as communication, cooperation, and negotiation. This collaborative aspect of learning is particularly valuable in promoting a positive classroom environment where students support each other and work as a team. While the active learning strategies proved effective, it is also important to acknowledge that some students faced challenges during the intervention. For instance, students who were initially more introverted or less confident in their knowledge were hesitant to participate in group discussions and activities. These students required additional support and encouragement to fully engage in the active learning process. This highlights the importance of teachers being mindful of the varying levels of confidence and participation in the classroom and ensuring that all students feel included and supported.

The teacher's role as a facilitator was also crucial to the success of the active learning strategies. Throughout the study, the teacher demonstrated flexibility in her approach, adapting the activities to meet the needs of the students and providing guidance when necessary. For example, when students encountered difficulties in group discussions, the teacher intervened with clarifications and prompts to help students stay on track. This shows that, while students take on a more active role in learning, teacher support remains an essential component in guiding the learning process effectively. One limitation of the study was the relatively short duration of the intervention. Although the results were promising, a longer-term study could provide more robust data on the lasting effects of active learning on students' understanding of the human body. Additionally, further research could explore how active learning strategies impact other science topics, such as ecosystems or the water cycle, to determine whether the findings can be generalized to other areas of the curriculum.

Another area for future research is the potential of active learning in addressing the diverse learning styles of students. While this study focused on group activities and multimedia, further exploration could investigate other active learning techniques such as project-based learning, inquiry-based learning, or gamified learning. By using a variety of approaches, teachers can better cater to the individual needs of students and ensure that all learners are provided with an opportunity to succeed. Finally, it is important to recognize that while active learning has shown positive results, it requires careful planning and resource allocation. Teachers must invest time in designing engaging activities, preparing materials, and ensuring that all students are supported throughout the learning process. For schools with limited resources, the implementation of active learning strategies may require additional training for teachers and adjustments to the curriculum. Despite these challenges, the positive impact of active learning on student engagement, comprehension, and retention makes it a valuable teaching strategy in primary education. In conclusion, this study has provided valuable insights into the effectiveness of active learning strategies in enhancing students' understanding of complex topics such as human body organs. By fostering engagement, critical thinking, and collaboration, active learning has proven to be an effective tool in helping students develop a deeper understanding of scientific concepts. The findings suggest that schools and educators should consider integrating active learning strategies into their teaching practices to promote better learning outcomes and foster a more interactive and inclusive classroom environment.

CONCLUSION

The data from the study clearly indicate that the implementation of active learning strategies had a significant impact on students' understanding of human body organs. Before the intervention, the average score of students on quizzes related to the human

body was 65%, with many students struggling to recall key information about the functions of organs. However, after the active learning strategies were introduced, the average quiz score increased to 85%. This 20% improvement in student performance suggests that the active learning strategies were highly effective in enhancing their understanding and retention of the material. In addition to the improvement in quiz scores, the number of students who demonstrated an ability to make connections between the functions of different organs also increased significantly. Initially, only 35% of students were able to explain the interconnections between organs, but after the intervention, this number rose to 75%. This 40% increase indicates that the active learning methods, such as group discussions and hands-on activities, helped students understand not only individual organs but also how they function as part of an integrated system. The results from the post-intervention surveys further support the positive impact of active learning strategies. 90% of students reported feeling more engaged and excited about learning science compared to before the intervention. This indicates a strong shift in student motivation, which was reflected in their active participation during lessons. Prior to the intervention, only 60% of students were actively participating in classroom discussions and activities, but after the active learning strategies were applied, this figure rose to 90%, demonstrating a 30% increase in student involvement. Moreover, the level of student collaboration and teamwork also saw significant improvement. During group activities, 80% of students were able to effectively collaborate with their peers to solve problems and discuss concepts, compared to only 50% of students before the intervention. This 30% increase in collaboration shows that active learning strategies helped foster better communication, teamwork, and peer interaction among students, which are essential skills for their overall development. In conclusion, the numerical data from this study provide strong evidence that active learning strategies significantly enhanced students' understanding of the human body, improved their motivation and engagement, and fostered greater collaboration among peers. The results clearly indicate that active learning is an effective method for improving academic outcomes in science education, and its implementation should be considered in other areas of the curriculum for primary school students.

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