

ANALYSIS OF THE PROBLEM OF THE AVAILABILITY OF LEARNING MEDIA IN BIOLOGY COURSES AT THE DARUT THOLIBIN ISLAMIC BOARDING SCHOOL

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ABSTRACT

This study aims to analyze the issues regarding the availability of learning media in Biology subjects at Darut Tholibin Islamic Boarding School for the 2026 academic year. The lack of media variety and supporting facilities poses a major challenge in achieving ideal science learning within a pesantren environment. This research employed a qualitative descriptive approach, with data collection conducted through direct observation and semi-structured interviews with the Biology teacher. Data analysis followed the Miles and Huberman model, including data reduction, data display, and conclusion drawing. The results indicate that the availability of learning media is still strictly limited and dominated by simple media such as printed images, diagrams, and whiteboards. Digital technology-based media (projectors) and three-dimensional (3D/models) media are inadequately available, and laboratory utilization remains suboptimal. These limitations have a systematic impact on the dominance of the lecture method, low visualization of abstract concepts, and uneven student engagement. This study concludes that the limited learning media at Darut Tholibin Islamic Boarding School causes learning patterns to be conventional and theoretical, preventing the optimal development of students' science process skills.

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INTRODUCTION

Learning is the process of implementing the curriculum in an educational institution, aimed at facilitating students in achieving predetermined educational goals. These goals lead to changes in student behavior, both intellectually, morally, and socially, enabling them to function as independent individuals and social beings. The learning process occurs through interactions between students and the learning environment designed and managed by the teacher.

Learning media serves as a means of conveying information from the teacher, as the communicator, to the students, as the recipients. Systematic design of the learning environment allows for optimal achievement of learning objectives. Learning media can be classified based on their nature, scope, and usage techniques (Sembiring et al., 2025).

Biology, as an empirical science, emphasizes the importance of proof through direct observation and visualization of the objects of study. Therefore, biology learning is not only oriented towards conveying theoretical concepts but also on providing authentic learning experiences. Through these experiences, students can develop science process skills, such as observation, classification, measurement, designing investigations, and drawing data-based conclusions (Anggraini et al., 2022).

Active student engagement in learning is a crucial factor in achieving learning outcomes. Minimal student participation can impact cognitive and affective achievement, including a decline in interest in learning and scientific attitudes such as curiosity and concern for the environment (Munawaroh, 2025). Therefore, the use of appropriate learning media is crucial in helping visualize abstract concepts for easier understanding.

Learning media, as a medium for conveying messages, functions to stimulate students' attention, thoughts, and feelings during the learning process. Technological developments have driven innovation in biology learning media, ranging from the use of conventional teaching aids to the use of digital technologies such as Virtual Reality (VR), Augmented Reality (AR), and big data (Surata et al., 2020).

The selection of learning media must consider the characteristics of the material and the conditions of the students to ensure effective learning (Rohmatullah et al., 2022). Despite the rapid development of learning media, its implementation must still be adapted to the facilities and infrastructure and characteristics of educational institutions, including Islamic boarding schools.

Biology learning at the Darut Tholibin Islamic Boarding School has unique characteristics that require an adaptive learning approach. Initial observations indicate that the use of learning media is still suboptimal, especially considering the students' busy schedule, which encompasses both academic and religious activities.

The Islamic boarding school education system, which emphasizes discipline and character building, and also restricts the use of certain technologies, requires flexible and contextual learning media. Furthermore, limited facilities, which are still under development, are a potential factor contributing to problems with the availability of learning media.

Based on this description, this research focuses on analyzing the availability of learning media in biology lessons at the Darut Tholibin Islamic Boarding School, thereby obtaining a clear picture of the obstacles faced in supporting the learning process.

METHODS

This study used a qualitative approach with a descriptive approach, aiming to obtain an in-depth overview of the use of instructional media in biology learning in Islamic boarding schools (pesantren). The qualitative approach was chosen because this study focuses on understanding naturally occurring phenomena in learning activities and gathering in-depth information from the research subjects regarding the use of instructional media. The study was conducted at the Darut Thalibin Islamic Boarding School during biology learning at the high school level in 2026.

The subject of this study was one biology teacher directly involved in the learning process. Subject selection was carried out using a purposive sampling technique, which involves deliberately selecting informants based on the consideration that the informant has relevant experience and knowledge regarding the use of instructional media in teaching and learning activities.

Data collection techniques in this study were conducted through observation and interviews. Observations were conducted by directly observing the biology learning process in the classroom to identify the types of instructional media used, how they are used in learning activities, and student engagement during the learning process. Semi-structured interviews were conducted with biology teachers to obtain more in-depth information regarding their experiences using learning media, the challenges encountered in their use, and the need for learning media appropriate to the learning conditions in Islamic boarding schools.

The research instruments used in this study included observation sheets and interview guidelines, developed based on indicators of learning media utilization in biology learning. The data obtained were then analyzed using the Miles and Huberman model of qualitative data analysis, which includes data reduction, data presentation, and conclusion drawing. To ensure data validity, this study employed triangulation, comparing data obtained from observations and interviews to obtain more valid and accountable data.

RESULTS

The availability of biology learning media at the Darut Tholibin Islamic Boarding School indicates that simple media such as pictures, printed diagrams, and whiteboards are still the dominant choice. These media are readily accessible and do not require additional facilities. However, their dominant use indicates limited media variety, potentially impacting the quality of material delivery. This situation indicates that biology learning is not yet supported by media capable of facilitating in-depth conceptual understanding.

Technology-based media have not been optimally utilized. There is only one projector available for the entire school, so its use is very limited and cannot be routinely used in every lesson. Furthermore, three-dimensional learning media are not available, so the delivery of abstract material is not supported by concrete visualizations.

Biology laboratory facilities are available, but their use is not optimal. Practical activities are still conducted, but with limited frequency and not routinely integrated into lessons. This indicates that the availability of facilities is not fully followed by optimal utilization in the learning process.

Table 1. Availability of Biology Learning Media

No	Media type	Availability	Usage	Information
1	Printed images/diagrams	Available	Frequently	Primary learning media
2	Whiteboard	Available	Very frequently	Used for conceptual explanations
3	3D media (models)	Not Available	Not used	No facilities
4	Learning videos	Limited	Rarely	Relies on projectors
5	Projector	Very Limited	Rarely	Only one unit per school
6	Computer/laptop	Limited	Rarely	Not available in all classes
7	Biology lab	Available	Sometimes	Limited practicums

Source: Primary Research Data

The data in Table 1. shows that the use of learning media is still dominated by simple media, while technology-based and three-dimensional media are not yet adequately available. This situation not only indicates limited facilities but also indicates a low variety of media used in learning.

Table 2. Media Availability Issues

No	Aspects	Findings
1	Media Variation	Lack of diversity
2	Digital Media	Difficult to implement
3	3D Media	Not available
4	Supporting Facilities	Very limited
5	Laboratory Utilization	Not optimal

Source: Primary Research Data

Based on Table 2. the main problems in the availability of learning media lie in the lack of media variety, limited digital media, and the unavailability of three-dimensional media. These problems indicate that media limitations are not only related to availability but also reflect weak support for creating a learning environment that allows for active exploration of concepts.

Table 3. Impact on Learning

No	Aspects	Impact
1	Learning Model	Dominant lectures
2	Concept Visualization	Less concrete
3	Student Activeness	Uneven distribution
4	Understanding	Tends to be theoretical
5	Practical Work	Not routine

Source: Primary Research Data

Based on Table 3. the limited learning media impacts the learning process, which is still dominated by lecture methods, lacks concrete concept visualization, and results in uneven student engagement. Student understanding tends to be theoretical and is not supported by regular practical activities. This indicates that students have not yet gained learning experiences that enable them to develop science process skills.

These findings indicate that the limited learning media not only impacts technical aspects but is also beginning to affect the quality of classroom learning interactions. The dominance of lecture methods and limited practical activities indicate that students have not yet gained learning experiences that support the optimal development of science process skills.

DISCUSSION

The utilization of available learning media tends to be suboptimal and is still limited to the use of simple media in the delivery process. The limited availability of learning media identified not only indicates technical issues but also reflects an imbalance between the needs of biology learning and the support of available facilities. Biology, as a science that emphasizes observation and visualization, should be supported by media that can present objects concretely. However, conditions in the field indicate that learning still relies on simple media.

This condition indicates that limited facilities are not merely a barrier but have created a learning pattern that tends to be conventional. Teachers often use the lecture method because limited media do not allow for the implementation of more interactive learning strategies. This aligns with the finding that limited learning resources contribute to the low variety of methods used in the teaching and learning process (Sembiring et al., 2025).

From a theoretical perspective, learning media serves as a tool to bridge abstract concepts into more concrete and easily understood by students. Without adequate media support, the process of knowledge transfer becomes less effective because students only receive information verbally (Giandari et al., 2023). This shows that without adequate media support, students not only experience limitations in receiving information but also in understanding concepts in depth. Furthermore, limited facilities and learning media also affect students' conceptual understanding. In biology lessons, which often contain abstract concepts, the use of less varied media and the lack of support from facilities such as projectors can result in less than optimal material delivery. Teachers tend to use lecture methods, which discourage students from actively engaging in the learning process. As a result, students experience difficulty understanding concepts that require more concrete visualization and observation, resulting in shallow understanding. This situation indicates that the availability of facilities and a variety of learning media play a crucial role in supporting optimal student conceptual understanding. Consistent with research findings, limited learning facilities can lead to less effective learning processes and limit student engagement in learning activities (Sembiring et al., 2024). This is evident in learning that tends to be theoretical and provides students with less direct learning experiences.

The existence of laboratories that are not optimally utilized indicates a gap between the availability of facilities and their utilization. Labs that are not conducted regularly result in students missing opportunities to develop science process skills. As a result, biology learning lacks one of its key components: empirical experience, which forms the foundation for understanding scientific concepts. This situation aligns with Widiantie et al. (2025), who stated that limited lab facilities and laboratory facilities impact students' low science process

skills. Ideally, biology learning should focus not only on concepts but also on empirical experience through lab activities.

Furthermore, limited access to digital media exacerbates the lag in the use of learning technology. Technology-based media has the potential to increase student engagement and understanding through more engaging and interactive visualizations (Wijayanto, 2023). However, limited facilities prevent this potential from being fully implemented. This fact indicates a gap between current learning practices and the demands of 21st-century learning, which emphasizes the active use of technology.

More critically, this situation indicates that the problem lies not only in limited facilities, but also in the lack of a learning system orientation that supports the development of science process skills. The ongoing lack of media without any optimization efforts reflects that biology learning has not been a priority in developing the quality of learning in Islamic boarding schools.

This situation indicates that the limited learning media is not solely due to facilities, but also reflects the lack of a strong priority for developing the quality of biology learning. In this context, biology learning has not been fully positioned as a subject requiring media support and empirical experience, so efforts to improve learning quality tend to be limited and unsystematic.

This condition aligns with the findings of Zahfa et al. (2025), who stated that limited learning facilities, including media and supporting facilities, are a major factor hindering the effectiveness of the learning process. These limitations not only affect media use but also impact the learning strategies employed by teachers. This phenomenon demonstrates that biology learning in Islamic boarding schools is still not fully oriented towards developing science process skills, but rather tends to focus on theoretical delivery of material.

Thus, the limited learning media not only impacts the technical aspects of learning but also systematically shapes learning patterns that tend to be conventional and teacher-centered. This situation indicates that biology learning in Islamic boarding schools (pesantren) has not yet fully developed students' science process skills optimally, potentially hindering the achievement of science learning objectives, which emphasize empirical experience and in-depth conceptual understanding.

If this situation persists, biology learning not only risks failing to achieve its learning objectives but also has the potential to produce students who lack scientific thinking skills and science process skills.

CONCLUSION

Based on the results of the research and data analysis, it can be concluded that the availability of Biology learning media at Pesantren Darut Tholibin is still inadequate. The main issue lies in the limited variety of instructional media, where the learning process remains highly dependent on conventional two-dimensional (2D) media, such as printed images and the use of the whiteboard. The absence of three-dimensional (3D) media and the limited availability of digital tools, such as projectors, make it difficult to concretely visualize abstract biological concepts.

This condition systematically leads to a teacher-centered learning pattern, in which lecture-based methods are predominantly used as a strategy to cope with limited facilities and the dense schedule of pesantren activities. As a consequence, student engagement tends to be uneven, and conceptual understanding remains largely theoretical. Furthermore, the

underutilization of laboratory facilities reduces students' opportunities to develop science process skills through direct empirical experiences.

Therefore, systematic efforts are required to provide more adaptive and innovative learning media in order to enhance the quality of scientific literacy within the pesantren environment.

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