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# Exploring Factors Affecting Students' Difficulties in Learning Science at MTs Raudlatul 'Uluum Aek Nabara Junior High School: *Focus on Animal and Plant Reproduction Materials*

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**Abstract**

*The learning process is inseparable from internal and external obstacles experienced by individual students. When students fail to meet the established learning standards, we categorize them as learning difficulties. This study aims to analyze the factors of learning difficulties experienced by MTs Raudlatul 'Uluum students in the science subject of animal and plant reproduction. Therefore, this research information will be an indicator in efforts to create conducive learning conditions and environments in this school. This study used a quantitative descriptive method with a total sampling technique. The data were collected using interviews, questionnaires, and documentation of student grades. In the study, it was found that students' learning problems are affected by their interest (88.56 %), intelligence (81.22 %), and health (78.29 %); by social influences at school (78.02 %); and by the way they learn (77.45 % with practicums and 73.93 % with instruments). Learning difficulties faced by students who are in the puberty stage need attention so that the improvement of students' abilities, skills, and talents at school can be explored optimally.*

**Keywords:** *Learning Difficulties; Animal-Plant Reproduction; Junior High School; Student*


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## INTRODUCTION

High-quality human resources can be formed and developed through education (Halean et al., 2021). By implementing established learning, educational activities can help develop students' social and individual abilities optimally (Harefa et al., 2023). Efforts to create conducive learning conditions and environments involve 4 learning components, including learning objectives, materials, methods, and evaluation

(Adisel et al., 2022). Student learning outcomes are basically tests that measure different parts of learning, such as cognitive, affective, and psychomotor skills (Magdalena et al., 2021; Mahananingtyas, 2017; Nduru, 2022; Suprihatien et al., 2024; Ulfah & Arifudin, 2021; Zainudin & Ubabuddin, 2015). Assessment in the form of learning achievements can be an indicator of difficulties in the learning process experienced by students.

We cannot separate the learning process from the obstacles students themselves experience. According to Ndruru (2023) categorizes learning difficulties as a condition when students fail to meet the set learning evaluation standards. When students experience learning difficulties, the learning process will not run effectively because there are obstacles that interfere with the student's focus. Widayanti et al., (2012) Non-intelligence factors can also cause learning difficulties. In line with Fatah et al., (2021); Muhaiba et al., (2013) Learning difficulties can be influenced by certain factors, such as internal factors, external factors, and learning approach factors. Djarwo (2020); Parni (2017); Sitinjak & Kadu (2016) confirm that Interest, motivation, attitude, and physical and mental health are internal factors in students' learning difficulties, while external factors can be the influence of family and community environmental conditions. And Sobari et al., (2022); Winanda & Kurniawan (2020) declare that other supporting factors include learning approaches in the form of facilities and infrastructure, teaching methods, teacher and student relations, and school management.

Animal and plant reproduction material is part of Natural Science (IPA) in SMP/MTs equivalent material; this material provides various learning experiences to understand the concepts and skills of the science process. Science process skills include skills including observing, using tools and materials properly and correctly while always considering work safety and security, submitting statements, classifying and interpreting data, and communicating findings verbally or in writing; exploring and sorting relevant factual information to test ideas or solve everyday problems (Angelia et al., 2022; Chairunnissa et al., 2019; Darmayanti & Setiawati, 2022; Elvanisi et al., 2018; Fauziah, 2018; Fitriana et al., 2019; Lepiyanto, 2017; Mahmudah et al., 2019). By definition, animal and plant reproduction material is an essential topic for understanding the life cycle of living things and the biological processes that affect the survival of species. This material is closely related to other basic biological concepts, such as ecology, genetics, and evolution. Students who understand this material will find it easier to understand more complex biological material at the next level of education.

When learning science, students frequently encounter abstract concepts, numerous foreign terms, and scientific names, particularly in the material on animal and plant reproduction. This is a challenge and difficulty for students in the process of learning science material (Darmastuti & Desstya, 2024; Samiha et al., 2017). Teachers as material providers are responsible for understanding students' learning obstacles and difficulties. By knowing the patterns and factors of learning difficulties experienced by students, it will help find solutions in handling them according to the type of difficulty.

Student learning outcomes also provide insight into learning challenges. Several literature reviews related to research that have examined students' learning difficulties in general science materials include Fitrayanti et al., (2021) on learning

difficulties in the material on the composition of objects and living things, Amaliyah et al., (2021) on learning difficulties and factors causing science learning difficulties, Salim et al., (2023) on learning difficulties in the material on animals and plants, Lestari (2024) on learning difficulties and factors causing students' learning difficulties in junior high school science lessons, Jannah et al., (2022); Yunarti (2021); and Haqiqi (2018) on difficulties in learning science in junior high school students; Ummah (2024) on the analysis of factors causing scientific learning difficulties in MTs students. Specifically, Ndruru (2023) and Nafisah (2011) identified learning difficulties in the science-biology material for junior high school students. Hikmah (2015) focused on learning difficulties in the material on the human reproductive system, while Loviaswari et al., (2016) analyzed learning difficulties in the material on inheritance of traits.

From the first observations, we know that the learning outcomes for science material at MTs Raudlatul 'Uluum Aek Nabara are pretty low—an average of 65, compared to the standard of minimum completeness of mastery learning for senior high schools in Indonesia of 75. This could be due to a number of internal and external factors, which makes students less interested in learning. Based on this condition, it is necessary to describe the factors causing learning difficulties experienced by third grade (IX Class) in science learning on animal and plant reproduction material at MTs Raudlatul 'Uluum Aek Nabara. We used a qualitative approach to identify these problems, directly involving and interacting with students. So that the results of the study are expected to provide suggestions for improving the learning process to be more optimal, students' interest in learning, especially in science subjects, will increase. This will undoubtedly influence student activities and learning outcomes, enabling them to meet the established learning objectives.

## METHOD

This study used a qualitative descriptive method approach. This study was conducted at a junior high school equivalent at MTs Raudlatul 'Uluum Aek Nabara, Aek Nabara, Labuhan Batu Regency, odd semester 2024/2025. The subjects of this study were teachers and students. Quantitative descriptive research gathered data from respondents in the form of descriptive information and numerical values. The data collection technique in this study used the survey method from various sources available at the school.

### Sample Population

Table 1 presents the total number of third grade (IX-Class)at MTs Raudlatul 'Uluum Aek Nabara for the 2024/2025 academic year. In selecting the sample, this study used the total sampling method due to the limited sample conditions, so by involving all samples, it was hoped that maximum results can be obtained.

**Table 1.** Amount of Third grade (IX-Class) of MTs Raudlatul 'Uluum Aek Nabara for the 2024/2025 Academic Year

| No. | Class group | Students (people) |
|---|---|---|
| 1 | IX A | 33 |
| 2 | IX B | 39 |
| Total respondent | | 72 |

**Research Procedures**

This study used interview data, test sheets, questionnaires, and documentation. In this study, the samples used were biology teachers and 72 person of third grade (IX-Class). The data analysis method in this study used a questionnaire with a Likert scale model. This model used five levels, namely strongly agree (SA), agree (A), doubtful (DF), disagree (DA), and strongly disagree (SDA). The Likert scale was used to measure learning difficulty factors with 3 main factors, namely internal factors (attitudes, individual perceptions), external factors (environmental conditions/social phenomena), and learning approach methods.

The tools were observation sheets, tests with 20 multiple-choice questions, and questionnaires with 40 statements from 3 main areas of learning difficulties in science and biology regarding animal and plant reproduction in Table 2 for the questionnaire grid). The procedure for the research instrument testing stage referred to Jannah et al., (2022) and Manullang (2022) used instrument validity testing with expert judgment, including content validity, instrument construct, and reliability testing. We used descriptive statistics and percentages from Haqiqi (2018); Purwanti (2023) to look at the data from all the instruments.

**Table 2.** Science Learning Difficulty Factors Questionnaire Grid Material Animal and Plant Reproduction

| No | Indicator | Question Item No. | Total (%) |
|---|---|---|---|
| 1 | Internal | 1 to 15 | 37,50 |
| 2 | External | 16 to 32 | 40,00 |
| 3 | Learning Approach | 33 to 40 | 22,50 |
| | Total | 40 | 100 |

## RESULT AND DISCUSSION

### MTs Raudlatul 'Uluum Aek Nabara Junior High School Profile

MTs Raudlatul 'Uluum Aek Nabara junior high school is located at Jl. Kota pinang, Gg. Raudhlah No. 6 Aek Nabara with private school status. The school's vision is to create students with character, intelligence, skills, independence, and global insight. So this school makes maximum efforts in instilling character education based on religion, culture, and the environment; optimizing the learning and guidance process; and developing the interests, talents, and potential of students in science and technology. The relationship between the school's vision and the obstacles of learning

difficulties, specifically those faced by students, does not imply that these students cannot achieve their goals. However, external factors can interfere, leading to less than optimal learning outcomes.

Classification of Student Learning Difficulties based on observations at MTs Raudlatul 'Uluum Aek Nabara junior high school, it is known that in general, third grade (IX-Class) have difficulty in understanding science materials, especially Animal and Plant Reproduction, caused by multiple factors, including interest and motivation to learn which are still classified as lacking, and the learning process carried out is still predominantly using conventional patterns. This study presents the results of its analysis in three categories: internal factors, external factors, and learning approaches.

**Internal Factor Analysis**

Graph 1 presents the findings from the analysis of the internal factors contributing to the learning difficulties of third grade (IX-Class) at MTs Raudlatul 'Uluum Aek Nabara. Based on the results of the analysis, it is known that the intelligence and interest factors of students obtained the highest scores of 81.22 % and 88.56 %, respectively. This can be interpreted to mean that students' learning difficulties in understanding the material on animal and plant reproduction are related to intelligence and learning interests.

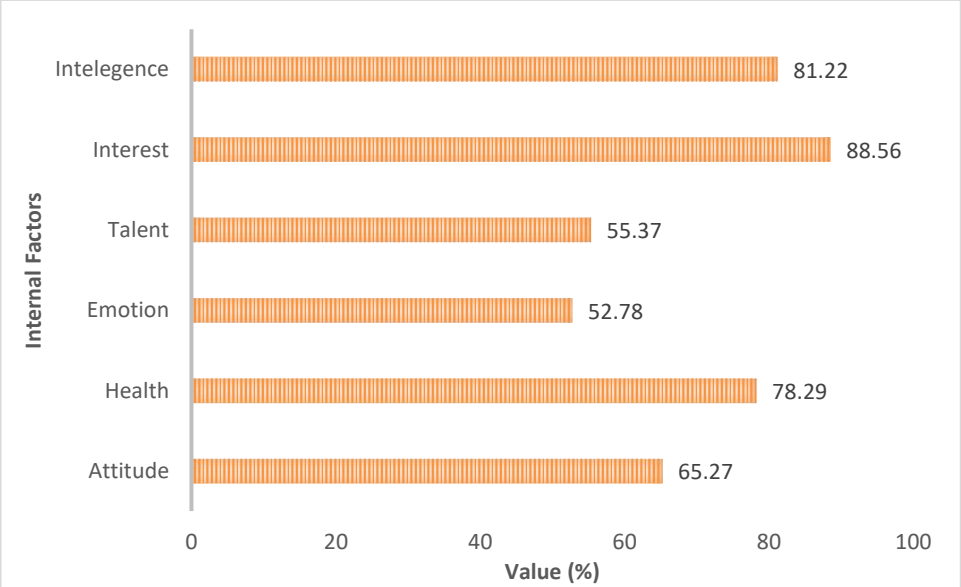


**Figure 1.** Internal Factor Analysis Graph of Learning Difficulties of Third Grade MTs Raudlatul 'Uluum Aek Nabara Students

Intelligence is an individual's cognitive ability—skill to act in a directed manner, think well, and interact with the environment efficiently. This ability supports students' actualization in solving problems in the learning process or daily life. Huwaida et al., (2020) emphasized that learning achievement correlates in the same direction as intelligence level; the higher a person's intelligence level, the higher their learning achievement. Every child has a different level of intelligence; this will give a

different color to the class. This is in line with Parni (2017) that the attitude of individual students in the learning process can affect their success. Attitude is a form of expression of internal thought patterns that have an affective dimension in the form of a tendency to respond positively or negatively in a constant way. In learning science material, students often have difficulty understanding abstract concepts such as sexual and asexual reproduction if they only use textbooks in learning. The use of complex technical terms and scientific terminology also hinders students' understanding, especially for those who have difficulty remembering many terms from foreign/scientific languages.

Students' attitudes when the lesson on animal and plant reproduction material took place showed a dominant negative response by ignoring learning moments with other activities such as whispering with friends and doing assignments on other subjects. The analysis also reveals that internal factors such as attitude, talent, and emotion received the lowest scores, with percentages of 65.27 %, 55.37 %, and 52.78 %, respectively. Students' attitudes in the perception of self-confidence greatly determine students' abilities when absorbing lessons. Students who have low self-confidence in their abilities tend to give up quickly when facing learning challenges, so that difficulties arise in understanding and remembering complex concepts such as those in the topic of animal and plant reproduction.

The observation results are also in line with the analysis results, where students tend to appear less enthusiastic when learning. The perception that the material is difficult is also categorized as a negative attitude, so that students' interest in learning decreases and they are less motivated to explore science concepts in depth. Desriandi & Suhaili (2021) explain that positive perceptions in learning are characterized by an attitude of enthusiasm and a desire to understand the material; this can increase active participation and student involvement when learning is carried out. Azizah & Alberida (2021) added that cognitive intelligence factors and lack of motivation to learn and critical thinking practice are the main causes of individual student learning difficulties.

Health factors also rank 3$^{rd}$ in the analysis of learning difficulties of third grade (IX-Class) at MTs Raudlatul 'Uluum Aek Nabara school with a percentage value of 78.29 %. Individual health plays an important role in determining the effectiveness of learning. Optimal health conditions, both physically and mentally, greatly support students' ability to concentrate, remember, and apply learning materials. Physical health disorders are found from observations; students are known to experience several symptoms, such as anemia, nose and throat infections (coughs and flu), and vision problems (myopia), which hinder students from participating in the learning process when animal and plant reproduction material is taught. Nurmaela et al., (2023) inform that even though educational facilities and infrastructure have been met, when students' physical health is disturbed, it also affects concentration and overcoming difficulties when learning.

**External Factor Analysis**

Based on the analysis of external factors contributing to students' learning difficulties at MTs Raudlatul 'Uluum Aek Nabara, it was found that the school environment's social factors received the highest score, 78.02 %. It can be concluded that social activities such as high teacher-student interaction, dynamics between students, class climate, and a culture of helping each other play a significant role in determining the success of students' learning process in science subjects. A conducive class climate, such as minimal bullying, mutual respect, and openness to discussion, will create a comfortable learning atmosphere so that it has a positive impact on the optimal learning process. Referring to Fariz et al., (2023); Nirwana (2024); Zahra et al., (2024), it is informed that bullying behavior significantly affects students' learning motivation; students who experience bullying tend to show lower levels of motivation, lose interest in learning, and lack confidence in their academic abilities. Efforts to improve the quality of the school's social environment through supportive policies, as well as the formation of a positive class climate, are needed to minimize the learning difficulties faced by students.

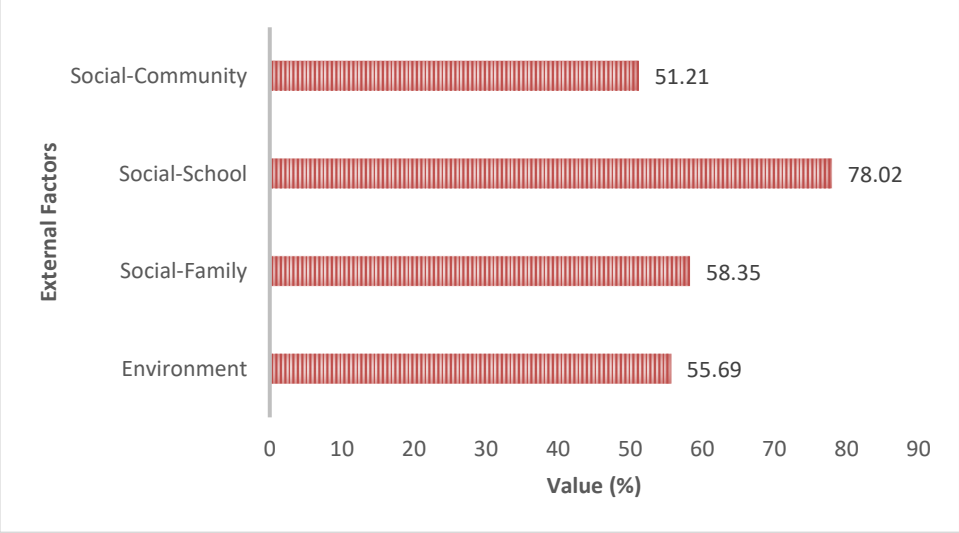


**Figure 2.** External Factor Analysis Graph of Learning Difficulties of Third grade of MTs Raudlatul 'Uluum Aek Nabara

A supportive social environment can influence students' behavior, motivation, and even learning achievement in various ways. Khairunnisa & Rigianti (2023) stated that changes in behavior resulting from the learning process can affect changes in the affective aspect, including changes in the emotional aspect of students. Hawla et al., (2022) Mood greatly influences student behavior; students with outside-of-school problems tend to focus less on learning. According to Manurung et al., (2022), the significant influence of the social environment is positively correlated with student learning outcomes.

The results of the analysis of Figure 2 illustrate that social family factors are one of the causes of students' learning difficulties, with a value of 58.35 %; this is in line with the results of interviews with teachers. It was concluded that parents give full

trust in the education process only to schools, while at home the students' parents rarely pay attention to the conditions/learning outcomes of students. Hasan et al., (2024) found that the family environment is a child's social environment that greatly influences children's learning activities; students' learning outcomes can be caused by a lack of attention and family support.

There are many reasons why parental support is also limited in paying attention to the conditions and learning difficulties of their children, one of which is economic factors. Several family environmental factors that determine students' learning motivation according to Hasan et al., (2024) are economic conditions, parental education patterns, parent-child bonding, and a harmonious home atmosphere. Parents often prioritize meeting household needs, which unfortunately can lead to the neglect of their children's needs for attention and affection. Affection, attention, or appreciation for children will create a healthy mentality for their children.

Mental health also affects the ability of individual students to undergo the learning process. Children with poor mental health are at risk of experiencing obstacles in the education and learning process at school. Nurhasanah (2024) mentions that children with poor mental health often struggle with focus, memory and concentration issues, adaptive problem behavior, and low academic achievement. According to Setiawati et al., (2023), the form of mental health disorders experienced by students is characterized by low self-esteem, excessive anxiety, and feeling tired for no known reason. The results of the interview also stated that grade IX MTs Raudlatul 'Uluum Aek Nabara students were indicated to have difficulty concentrating when studying, especially science lessons, and often had difficulty sleeping at night. Difficulty concentrating and difficulty sleeping at night are both indications of mental health disorders. According to Nurmaela et al., (2023), symptoms of mental health disorders can include appetite disorders, changes in sleep patterns, fatigue, hopelessness, fatigue, lethargy, hot-cold, and decreased memory or decreased concentration. Laia et al., (2024) identify individuals who have low or poor mental health or have no motivation at all to realize optimal academic achievement. Juniarti et al., (2022) inform the behavior of students who have weak mental health, such as lack of empathy, difficulty in relating well, not being open, difficulty controlling emotions, difficulty in expressing opinions, and behaving impolitely and according to their emotions. Hawla et al., (2022) found that the more external problems students face, the more they affect their mentality, which in turn affects the effectiveness of their learning.

**Analysis of Learning Approach Factors**

The role of media and curriculum used in science lessons as a reference for learning also contributes to improving students' understanding (Azizah & Alberida, 2021). The curriculum implemented at MTs Raudlatul 'Uluum Aek Nabara is the Merdeka curriculum, and the textbooks used are standard K-13 curriculum. It is possible that the material presented in this textbook is not in sync with the approach expected in the Merdeka Curriculum, so that students have difficulty understanding concepts in a more applicable and contextual way.

Some of the possible reasons for factors that cause students' learning difficulties are differences in learning approaches, where the K-13 curriculum is more based on material and content that is oriented towards fulfilling basic competencies and test-based assessments, students are more directed to memorize concepts, and learning is structured according to textbooks. Meanwhile, the independent curriculum, according to Nadiyah & Pujiastuti (2023), focuses more on a project assignment-based approach and contextual exploration of concepts. Ariani (2023) emphasized that the Independent Curriculum fosters students' active critical thinking and direct experimentation to enhance their understanding of the material. The independent curriculum has a more flexible material structure and adapts to students' cognitive development with more inquiry-based approaches.

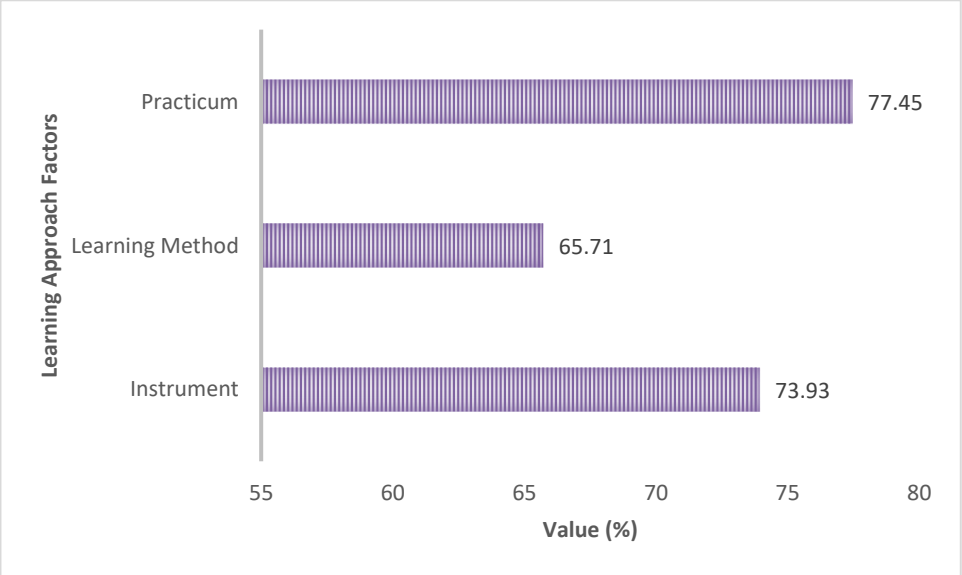


**Figure 3.** Graph of Analysis of Learning Approach Factors on Learning Difficulties of Third grade of MTs Raudlatul 'Uluum Aek Nabara

Rosidah & Sabtiawan (2024) added that science learning with the Merdeka curriculum emphasizes cognitive (formative and summative) and non-cognitive diagnostic assessments. The Merdeka Curriculum emphasizes the freedom to choose learning resources and is not fixated on just one reading source so that there is an opportunity to gain a richer learning experience, for example, through digital media, direct experiments, or observation-based projects. Materials such as animal and plant reproduction, which should be able to be learned through direct observation (for example, plant cultivation, germination experiments, or invertebrate/vertebrate animal life cycle studies). Students may feel less interested and have difficulty understanding animal and plant reproduction materials, especially if learning still focuses on memorizing concepts (referring only to textbooks) without real exploratory experiences.

The study of learning difficulty factors for grade 9 students at MTs Raudlatul 'Uluum Aek Nabara shows that instruments and practicum got the best scores, with 77.45 % and 73.93 %, respectively (Figure 3). These results can be interpreted to mean that students consider practice and the use of instruments to be still difficult in learning

animal and plant reproduction material. In fact, rather than increasing understanding of the material, the opposite is observed. Siswanti et al., (2022) If practical activities are only guided by instructions from the teacher and there is minimal student involvement in the science learning process, it will increase student learning difficulties and reduce students' opportunities to practice science process skills.

The learning difficulties of students at MTs Raudlatul 'Uluum Aek Nabara are also thought to be caused by the lack of students' understanding of the procedural steps when the practicum is carried out. This may be a reconsideration to ensure that students understand and remember the procedural instructions before the practicum is carried out; at the end of the practicum, students are given a reflection session. The importance of implementing reflection is useful for providing students with the opportunity to respond by responding to the meaning of learning, asking questions, and assessing during teaching and learning activities. Rukajat (2020) explains that reflection is part of the *contextual teaching and learning* concept that helps teachers link the material taught to students' real-world situations and encourages students to make connections between the knowledge they have and its application in everyday life.

The minimal use of instruments and practical activities in this school has its own reasons; the preparation of tools and materials in the practical process is also a challenge for teachers as the main implementers of science learning. Based on interviews, samples of gymnosperm and angiosperm plants were used to look at reproductive organs. However, the availability of samples limited the study; when students were charged to prepare samples, the samples they got often did not meet the teacher's standards. Consequently, experiments involving animal and plant reproduction materials frequently employ two-dimensional image mediums for demonstration. This is still one of the reasons why students have difficulty understanding this material.

Based on the results of teacher interviews, the delivery of sexual and asexual reproduction concepts often involves the use of complex scientific terms and terminology. This is one of the obstacles to student understanding when learning, so teachers often take the initiative to give memorization assignments and correct them in 1 to 2 meetings. The reproduction material is delivered theoretically using a textbook but with minimal support from audiovisual learning resources. Learning material with audio-visuals displaying many diagrams, videos, or interactive models will increase student enthusiasm. Instructors can use visual media and multimedia to explain abstract concepts, or they can use videos to demonstrate the pollination process in plants or the metamorphosis in animals. Using diagrams or infographics to explain the differences between vegetative and generative plant reproduction.

Some learning that may be used in learning animal and plant reproduction material is with several approaches, including the contextual approach (*Contextual Teaching and Learning-CTL*), which connects the material with everyday life, for example, in chicken reproduction from eggs to hatching observed in the form of student project assignments. Khuryati & Kartika (2014) the *Contextual teaching and learning* method includes the main ideas of constructivism, such as finding/inquiry, asking, group learning, modeling, reflection, and authentic assessment. It also includes ideas that are relevant to the environment and new technologies that connect classroom content to real-life situations.

Inquiry-based learning: With this learning, students are invited to find out and investigate the concept of reproduction through simple questions and spark curiosity, for example, the reproduction of invertebrate animals such as how hermaphrodite worms can lay eggs. According to Suwardani et al., (2021) guided inquiry learning (scientific inquiry) can improve the science process skills of junior high school students in the aspects of observing/conducting observations, collecting data, and looking for relevant references to solve a problem. Nasar & Ika (2022) added that inquiry learning is more student-oriented and student-centered than teacher-oriented and teacher-centered, enabling students to master scientific methods, develop analytical thinking skills, and directly tackle problems they encounter.

Project-Based Learning Approach: This learning involves students in assignments to complete real projects related to the material; for example, making a presentation about the life cycle of a particular animal (for example, a butterfly or a frog). Shofatun et al., (2016) *Project-Based Learning* is effective in training junior high school students' academic and social skills and improving learning outcomes in integrated science subjects. According to Lestari & Khotimah (2020), students must undergo an educational process to fully explore their potential. With the era of globalization of thinking skills and challenges in shaping students' character, teachers at school also play a role in providing structured direction. Students who are in puberty have difficulty understanding the material due to lack of focus and concentration in learning; this can be overcome by making several policies such as "mandatory provisions" from home to maintain optimal student health. Routinely providing a "room to vent" can be a concern. The difficulty factor in the learning approach found in this school is an evaluation that can be improved; for example, the application of interactive media such as augmented reality media and the like.

## CONCLUSION

The study shown that students of grade 9 in MTs Raudlatul ‘Uluum Aek Nabara have trouble learning because of three things: internal factors, such as interest (88.56 %), intelligence (81.22 %), and health (78.29 %); external factors, such as social influence at school (78.02 %); and learning method factors, such as practicums (77.45 %) and instruments (73.93 %). The study found that students' learning difficulties in the material on animal and plant reproduction need to be overcome with further studies related to the application of interactive media to help improve students' understanding of science material in the future.

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