Mitigation of Learning Loss and Teacher Awareness: Qualitative Study in Science Practicum

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Abstract: This study aimed to determine teacher awareness in mitigating learning loss in science practice learning in elementary schools. The research method used was qualitative research with case studies. Data collection techniques used include interviews, observation, and documentation. The research was conducted in elementary schools in Ambon City, consisting of three public and three private schools, with the respondents being high school teachers. In this study, the validity of the triangulation data was used. The results showed that teachers' awareness of mitigating learning loss in science practice in elementary schools was good. However, both public and private schools experienced learning loss in science practice. For this reason, each teacher gives their best effort to mitigate learning loss events by taking actions such as home visits, communicating with parents, utilizing existing media in the environment around students for science practice, and approaching students to mitigate learning loss events in students' science practice in elementary school.

Keywords: Awareness; Learning loss; Elementary science practice

Introduction

The COVID-19 pandemic period in 2020 was a grievous disaster for the world, including Indonesia. All aspects of life are affected without exception in the world of education. During the pandemic, the Ministry of education, culture, research, and technology made various learning adjustments to break the Covid-19 chain, one of which was applying distance learning or online learning. Shifting the face-to-face learning process to online learning in terms of health is effective, but from an educational perspective, only some agencies can implement it (Mishra et al., 2020). Moreover, online learning cannot provide the desired results for most students who cannot access the internet due to technical and economic problems (Dhawan, 2020).

Teachers and students experience difficulties in online learning activities, especially in science learning. Science is a learning concept about natural phenomena that has a relationship with human life and a broad study object, which consists of a collection of concepts, principles, laws, and theories that are formed through scientific attitudes and discovery process skills. (Darling-hammond et al., 2019).

Through science learning, students gain hands-on experience to explore and apply the concepts they have learned thoroughly in everyday life. The reason for the importance of science practicum activities is that practicums generate motivation to learn science. Second, practicum develops basic skills in carrying out experiments. Third, practicum becomes a vehicle for learning materials for scientific approaches. Fourth, practicum supports understanding the subject matter (Shepardson & Britsch, 2001). Finally, learning science is the best way to learn science by doing practical activities in science. Teachers feel guilty if students learning science do not practice activities from the lessons (Glynn & Winter, 2004; Curran & Kitchin, 2019).

During the Covid-19 pandemic, practicum learning activities were almost impossible to carry out because there were no facilities for conducting practicums plus the problem of the distance between students' homes which did not allow teachers to visit as well as problems with lack of technology use among students and

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teachers, and limited time in online learning. This incident can lead to learning loss in science practice in elementary schools. Learning loss is an event in which children experience decreased learning abilities, disturbed emotional and psychological development, dropout ranges, and have the potential to find it challenging to get a decent job due to reduced competence. Learning loss is a condition in which students experience a loss of learning experience and the loss of opportunities for students to gain knowledge due to the COVID-19 pandemic (Travis et al., 2019)

Students who do not have automatic learning facilities cannot carry out learning well and effectively. They need help understanding theoretical materials, especially concepts which demand direct practice. It can be an early symptom of learning loss, especially in learning science practice in elementary schools. In order to avoid the occurrence of student learning loss, it is necessary to take action for both teachers and students. This action is called learning loss mitigation or reducing learning loss, in other words. Mitigation is an action to prevent and reduce a disaster (Simal et al., 2022). The problem in this research is that the leading solution is to implement learning loss mitigation of science practice which is an action to overcome or reduce the incidence of learning loss or loss of practical learning in science learning in elementary schools. This effort is made to prevent adverse impacts on children, society, and the nation.

One of the factors that can prevent or reduce the incidence of learning loss in science practice in elementary schools is individual internal factors such as self-awareness. Self-awareness is being able to understand, accept and manage all the potential for the development of life in the future (Silvia, 2002). Positive self-awareness encourages a person to accept the reality of life because he can recognize all potential strengths and weaknesses within himself (Scaffidi Abbate et al., 2016).

The teacher is the main subject of self-awareness to mitigate student learning loss. Where the role of the teacher in the learning process, among others, is as an informer/communicator, organizer, conductor, motivator, director and mentor, originator of ideas, wide spreader, facilitator, evaluator, and educator. The teacher's role is to provide educational services, creating effective and fun learning (Mourlam et al., 2019). The teacher as a mentor provides understanding and direction and an understanding of oneself (Resch & Schrittesser, 2021). The awareness within the teacher about the occurrence of learning loss in students is a form of an image of the sense and responsibility of a professional teacher, namely paying attention to the situation and changing and developing learning activities. (Feize & Faver, 2019).

Teachers must be professional and effective in their respective classes when carrying out the teaching and learning process because teachers are guides and mentors for students. Furthermore, teachers have a lot of experience and knowledge, so awareness appears early about the existence of students' learning loss in science in elementary schools. From the description of the problems above, the purpose of this study was to determine how the level of teacher awareness in mitigating learning loss in science practice learning in elementary schools during the covid-19 pandemic.

Method

Research type

This qualitative research instills four qualitative competencies: communicative competence, empathic competence, competence in making qualitative notes, and competence in analyzing data. The data collection procedure was by conducting a literature review, determining the participants to be interviewed, determining what activities were observed, determining what documents must be obtained, conducting data collection, determining data analysis, planning to check the validity of the data, conducting final analysis, making data interpretations, making research conclusions, and the last was to make a final research report.

Population and Sample

The subjects in this study were teachers who taught in high and low classes, as many as 100 teachers. This study involved 20 elementary schools in Ambon City consisting of public and private elementary schools. The research focus of this study was teachers' awareness of mitigating learning loss in science practice in elementary schools during online learning during the covid-19 pandemic. The factors behind the research were that science learning is essential for aspects of knowledge and skills for students in elementary schools. Therefore, if it is associated with the many obstacles in the application of online learning, it will not be easy to apply science practice learning in elementary schools.

Research instrument

The instrument in this study was the researcher, using observation, interview, and documentation guidelines. The source of the data collected by the researcher was following the problem being studied, namely, high-and-low-grade teachers of elementary school science subjects. Data collection techniques in this study had three stages in data collection, namely: observation, interviews, documentation, and literature study. Validity was based on some criteria: the degree of trustworthiness, transferability, dependence, and certainty. Therefore, to find the data validity, the

researcher compared the observed data with the results of interviews, the opinions of respondents with one another, and the interview results with the document contents. The determination of the validity of the data in this study used triangulation techniques as a data-checking technique.

Data analysis technique

Data Analysis Techniques systematically arranged data from interviews, field notes, and documentation. The existing data was then analyzed with the stages, namely, data reduction, data presentation, verification, or data inference.

Result and Discussion

Teacher awareness about learning loss in science practice
1. Knowledge

Knowledge in teachers as respondents focused on questions about teacher knowledge about science learning, its application, and how the online learning situation was during the COVID-19 pandemic.

From the interview results, it can be concluded that the respondent's knowledge of science lessons in elementary school is not a thing that is in doubt, especially in high grades. On the contrary, the respondents stated that applying science practice learning in elementary schools is very important. Science practice learning is significant, especially for elementary school students, because they understand the material faster when it is practiced directly. In addition, this method can also develop student skills.

The situation of learning science practice in elementary schools was that some schools were still implementing it, and some still needed to implement science practice learning during online learning. In the fourth grade, practice science learning was still carried out, but in practice, it is not effortless in online learning. Meanwhile, in fifth grade, the science practice was still carried out because most of the learning material was a theory, and the practice material could still be adapted to conditions in learning. In contrast to the situation in the previous grade, the application of practice learning in the sixth grade was balanced. Some respondents did, and some did not.

Knowledge is one indicator of measuring self-awareness. Knowing the respondent's understanding of the conditions and situations will undoubtedly affect the respondents' level of awareness. Respondents stated that applying science practice learning in elementary schools is very important. Respondents knew that science practice learning is vital for elementary school levels, especially for elementary school students, because elementary school students understand the material faster when it is practiced directly. In addition to developing knowledge, this method can also develop students' skills.

Elementary school students' cognitive stage is at the concrete operational stage. Students are mature enough to use logical thinking at this stage but can only apply logic to physical objects. In other words, even though students can show their conversational skills or logically solve problems, they cannot think abstractly or hypothetically (Ojose, 2008). For this reason, in student learning in elementary schools, teachers need to develop a concept of learning to use objects so that students can more easily understand and relate it to everyday life, especially for learning science in elementary schools. The stage of cognitive development has yet to be able to understand if only based on theory, but they need guidance and direction from adults.

If so far, most parents have entirely entrusted their children's education to school; parents must go directly to provide learning guidance and direction for children in this online learning situation. It is mainly for elementary school-age children to ensure students are not affected by learning loss, especially Learning Gap. (Dong et al., 2020).

2. Information retrieval

Online learning for applying science practice learning is challenging to implement. Even though it is implemented, its application is not as consistent as face-to-face or offline learning. Learning science practice certainly takes a long time. However, using applications for online learning has a limited time configuration, so teachers need help implementing them. It is in line with the research results (Patricia Aguilera-Hermida, 2020) that the duration of time in online learning is limited, so teachers cannot fully explain the material being taught, so absorption of learning material is low.

The details of the allocation of learning time during the pandemic are significantly different compared to the allocation of learning time at regular times. In standard times, students' study for 5-6 hours of lessons per day. During face-to-face learning during the pandemic, the allocation of study time is 2 hours of lessons. Meanwhile, when studying at home (teachers visit the students' houses), learning activities are only for 30 minutes for one visit (Maulyda et al., 2021). There are many complaints from educators, students, and parents regarding the implementation of distance learning. Some educators complain about the limited ability to operate online learning media and limited internet network access (Shim & Lee, 2020).

With several obstacles in learning online, some teachers need help applying practical science learning and choose not to carry out practical science learning. According to Dhawan (2020), the obstacles faced in the implementation of distance learning, among others, relate to the readiness of human resources, the lack of clear directions from the local government, the absence

of an appropriate curriculum, and limited facilities and infrastructure, especially technology support and internet networks. The readiness of human resources, including educators, students, and parental support, is essential to implementing online learning.

Starting from signal limitations and the unavailability of devices for each student, only some students come from wealthy families, and some parents even consider them a burden (Gobena, 2018). According to Gobena (2018), the problems that hinder the implementation of the effectiveness of online learning methods include the limited mastery of information technology by teachers and students, inadequate facilities and infrastructure, limited internet access, and unprepared budget provision. Online learning does have advantages and disadvantages in its application, but the comparison of advantages and disadvantages is different.

3. Knowledge activity

There were symptoms of learning loss in science practice in elementary schools because the situation of learning science practice in elementary schools ran unstable during online learning. Every teacher had thoughts in planning learning, but it depended on the situations and conditions experienced by respondents. Some teachers had plans but needed help to implement them.

During the emergency period of the spread of COVID-19, learning management in improving the effectiveness of the teaching and learning process has a very urgent position because learning activities are required to continue to provide excellent and best service according to educational standards and must also follow the health protocols that have been agreed upon by the four Ministers. In the emergency period of the COVID-19 spread, the role of teachers in processing learning in increasing the effectiveness of the teaching and learning process is very significant.

4. Focus

This indicator focuses on how teachers view online learning conditions for science subjects in elementary schools, how teachers compare the effectiveness of online and offline learning on science subjects in elementary schools, and how students learning outcomes during online learning during the COVID-19 pandemic.

Some respondents were aware of the need for a lesson plan, and some needed to think about a plan due to online learning constraints and conditions. The fifth grade also had the same situation where some respondents stated that they had or needed a learning plan during the online learning period. Meanwhile, the sixth grade also experienced a similar situation. Respondents were aware of learning loss in science

practice in elementary schools. They are losing cognitive aspects, and affective aspects and social interactions are also disturbed.

Respondents stated that online learning could have been more effective for learning science practice even though they had prepared creative learning media. However, only some students can learn optimally because of the obstacles in online learning. They just watched the video. However, there must be direct direction, especially for students with low cognitive basis.

From the interviews, researchers know that the symptoms of learning loss in online learning also affected student learning outcomes. The differences in learning outcomes are also one of the problems in learning online because respondents assume that only some student learning outcomes, assignments, and student tests are the students' results. It is because respondents could not directly assess students as in face-to-face school, so respondents state that online learning assessment is ineffective because they do not directly know students' cognitive level.

Attention is the concentration of all individual activities aimed at something or a group of objects (Oberauer, 2019). Thus, what is noticed will be truly realized by the individual and will be very clear to the individual concerned. Therefore, attention and awareness will have a positive correlation.

The incidence of learning loss Science practice in elementary schools not only loses its cognitive aspects but also disrupts its affective aspects and social interactions. The teachers' attention revealed that online learning is ineffective for learning science practice. Even though they have prepared creative learning media, only some students can learn optimally because of the obstacles in online learning. Online learning loss events in science practice prove that science practices cannot just watch videos. However, there must be direct direction, especially for students with low cognitive ability.

Students who usually interact directly with teachers and others have no social interaction during online learning. In addition, according to several respondents, the learning loss of science practice in elementary schools also affected student learning outcomes, where many students found erratic learning outcomes.

Symptoms of learning loss in online learning also affect student learning outcomes. Therefore, differences in learning outcomes are also one of the problems in learning online. Teachers assumed that only some student learning outcomes, assignments, and student tests were the students' results because respondents can not directly assess students in face-to-face school. Hence, online learning assessment is ineffective because it does not directly recognize students' cognitive level (Kim, 2020).

In general, not only science practice learning in elementary schools, but all subjects experience differences in learning outcomes during online learning. With ineffective online learning conditions, student learning outcomes are not optimal (Barrot et al., 2021). For example, during the pandemic, student achievement tends to experience a drastic decline. It is due to insufficient study time and an unfavorable learning climate (Almendingen et al., 2021).

In assessing student learning outcomes, several aspects are assessed, including cognitive or knowledge aspects, affective or attitude aspects, and psychomotor aspects or skills. The respondents considered these aspects in assessing the level of student achievement. If one of them is implemented, the results will be good. In addition to students' knowledge, attitudes and skills also need to be recognized by respondents so that they can easily give scores. However, the respondents cannot directly supervise and recognize students during online learning, so the assessments taken are only considered partially reliable. The problems experienced by teachers are due to the difficulty of students in capturing or understanding each of the indicators presented during online learning. It makes it difficult for the teacher to know whether the student has understood what is being conveyed to achieve the minimum completeness criteria. (Bawa, 2016).

5. Emotive

The indicator focuses on how the teacher responds to the situation of students during online learning and the teacher's views in thinking about changes with awareness of the environment during learning during the COVID-19 pandemic.

Some respondents took action by thinking about changing the concept of learning, and some did not. Each respondent had his reasons in his consciousness. For example, some respondents hope that face-to-face learning will soon be reinstated.

Each respondent has the same emotion of wanting to take more action to help students understand the material presented. However, it cannot be more than forming small groups to make home visits, communicate with parents, approach students, or reaffirm the material learned through sending material in the WhatsApp group. In addition, to fulfill the achievement in learning science practice in elementary schools, some respondents have specific actions that do not violate health protocols.

One's consciousness will certainly involve feelings in it. Teachers take action by thinking about changing the concept of learning and have their reasons in their consciousness. Thoughts on changing the concept of a teacher do exist. However, to take more action, teachers must first consider the impact on students, teachers, and schools because they comply with health protocols and cannot provide additional time for teaching.

Every teacher has the same emotion of wanting to take more action. However, they cannot do more than make home visits, communicate with parents, approach students, or reaffirm the material learned by sending material to the WhatsApp group. To fulfill the achievement in learning science practice in elementary schools, some respondents have specific actions that do not violate health protocols. Some considerations, such as the occurrence of learning loss in science practice in elementary schools, various obstacles in online learning, teacher difficulties in assessing students, and interference from people who are not teachers, encourage respondents to carry out home visit learning activities.

Teachers face many problems as educators, which are divided into several indicators, including the process of delivering learning materials, the process of interaction with students in the learning process, the quality of empowering facilities and elements in learning, managing teaching materials to be delivered in the learning process, and the preparation of curriculum devices that are following current conditions.

Mitigation of learning loss in science practice

Mitigation is an action taken by the respondent in the form of his awareness to prevent or overcome learning loss in science practice in elementary schools. In this discussion, the researchers deliberately used indicators in awareness because these indicators can answer the problem in this study.

1. Awareness

This indicator explores how prepared teachers are to deal with the COVID-19 pandemic for online learning. From the interviews, it can be concluded that all teachers can only adjust in determining objects for learning to determine natural objects for students learning online. Some used application media to support learning by showing pictures or making learning videos to show the object. However, in the implementation of online learning, everything ran inequally. Limitations in online learning paralyze the enthusiasm of students and teachers in learning and teaching, especially for learning science practices in elementary schools. The respondents could only adjust practice learning to the situation. Even some did not carry out science practice learning during online learning and were waiting for a decision to learn face-to-face or offline as before.

The respondents did their best to make the learning run well even though it could have been more effective. Even the respondents could not force the presence of students. Therefore, if there were students who were not present or did not have time to enter the zoom room, the respondents always gave warnings or communicated with their parents. They approached students by making

home visits to find out about problems or obstacles experienced by students. To measure the level of student achievement, respondents could only do it online by sending assignments or tests in the form of links or pictures in the class WhatsApp group. Some used learning applications.

Someone with awareness will take action to prevent, improve or reduce an adverse event. The problem in this study is the learning loss of science practice in elementary schools. Based on the research on respondents' awareness, respondents are aware of learning loss symptoms during online learning, so researchers need to answer the idea of mitigating learning loss in science practice.

Learning science practice requires a real object as a sample in learning, so researchers need to know how prepared teachers are in learning science practice in online learning. Unfortunately, in the implementation of online learning, everything ran inequally. Limitations in online learning seem to paralyze the enthusiasm of students and teachers in learning and teaching, especially for learning science practices in elementary schools. The teachers could only adjust to the situation, even though some did not practice science learning during online learning and were only waiting for a decision to study face-to-face or offline as before.

Education experts have told us that the most effective way of learning is through experience. Students were free to choose and develop the desired concept of knowledge. If viewed from the point of view of technology in online learning, each student is more likely to get cognitive fulfillment, while they get stagnation in affective and psychomotor experience.

One of the obstacles in online learning is that students need to have online learning facilities (mobile phones and internet credit). In addition to teachers' readiness for learning, teachers must also be aware of students absent in online learning. The teachers should do various ways to make learning run well even though it could be more effective for student attendance. The teacher cannot force the student's situation, so if there are students who are not present or do not have time to enter the zoom room, teachers always give warnings or communicate with parents and approach students by making home visits to find out problems or obstacles experienced by students.

During the pandemic, the presence of students in learning is significant. Therefore, communication between teachers and parents is very influential in supporting student success during online learning. During the pandemic, teachers are required to adjust their working hours so that they can communicate regularly with students and parents. Teachers must be good at processing classes to create a conducive learning atmosphere, motivate students, and even have to build more communication with parents of students regarding

the development of students while at home.

Difficulties in learning in addition to the completeness of online learning, another obstacle is that teachers and students cannot interact directly, so in measuring the level of student achievement, teachers can only do it online by sending assignments or tests in the form of links or pictures on the internet in class WhatsApp groups. Some take advantage of learning applications. In online learning, the perception of teacher activity is influenced by several things, such as the amount of time needed to prepare teaching materials and conduct assessments to be able to determine the level of student achievement.

2. Action

In this indicator, the teacher explores the actions taken and how the implementation and development of science practice are learning in elementary schools while dealing with online learning during the COVID-19 pandemic.

From the statement's results, the respondents did not have a particular application for practice science learning because the respondents only used learning videos as an active medium during practice learning. On the other hand, most respondents used the Zoom and WhatsApp applications and supporting applications to create learning materials such as capcut, powerpoint, kinemaster, and google. All respondents responded that it was essential to find a suitable media and learning model. However, for online learning, the media was limited, and the learning model could not be done optimally because of the constraints of online learning.

The respondents tried to take as much action as possible to overcome various obstacles in online learning so that their students did not experience learning loss symptoms of science practice in elementary school. However, all efforts depended on the student's condition. Obstacles in this learning were each individual, both teachers, and students. Most respondents admitted that online learning was more detrimental, although online learning was perfect for health. In addition, respondents also admitted that they could increase their knowledge of technology (IT). However, on the other hand, online learning was also detrimental because of the obstacles to online learning or non-fulfillment of tools in online learning, which can lead students to learn loss events. For example, in science learning, not all respondents carried out science practice learning in elementary schools due to limited time to learning.

Action is one of the indicators to measure self-awareness. Researchers used this indicator to measure elementary school science teachers' mitigation level of learning loss. One of the actions in achieving learning in online learning is to depend on the teacher's creativity in choosing learning media. Although teachers only use

learning videos as active media, most respondents use Zoom and WhatsApp applications and supporting applications to create learning materials such as Capcut, PowerPoint, kinemaster, and google.

In addition, the application of learning with creative models and media in learning is undoubtedly carried out by respondents because the respondents have prepared an online learning plan (RRP online/COVID-19) before learning. However, for online learning, the media is limited, and the learning model cannot be done optimally because of the constraints in online learning. Various obstacles occur in online learning, so the learning process can be more effective. The teachers tried to take as much action as possible so that their students do not experience symptoms of learning loss in science practice in elementary schools. However, actions or methods taken by the respondents depend on the condition of the students. Obstacles in this learning are each individual, both teachers, and students.

There should be cooperation between the teachers and students, teachers in their creativity in delivery, and students who have to fight laziness. No matter how good the methods, models, and strategies are, learning will not progress, and the learning objectives will only be achieved after some time. In addition to the teacher's strenuous efforts, other factors that can affect student learning outcomes are also parents. If the teacher has tried as much as possible, but if the parents do not support it, it will not produce significant results.

The application of online learning is very flexible. On the other hand, the respondents obey the protocol rules in online learning and also try to maximize student learning achievement in terms of cognitive, affective, and psychomotor. However, the results achieved are less effective during online learning because the most important thing in online learning is the completeness of online learning facilities, namely teachers, students, parents, and learning tools (mobile phones, internet packages, networks, and others). Ndeot & Jaya (2021) suggested that the emergence of learning problems during learning from home was caused by the unpreparedness of parents, teachers, children, and the community to study outside of school because, previously, the school was the only place for children to learn. Studying at home without proper preparation due to the COVID-19 pandemic can cause students to experience learning loss.

Most teachers admit that online learning is more detrimental, but online learning is indeed perfect for health. In addition, respondents also claim that they can increase their knowledge of technology (IT). However, on the other hand, online learning is also detrimental because of the obstacles to online learning or the non-fulfillment of tools in online learning, which can lead students to learn loss events. For example, in science learning, only some respondents carry out practical science learning in elementary schools due to limited time in learning.

This pandemic demands that social distancing is required to break the chain of the spread of the COVID-19 virus. This appeal ultimately impacts face-to-face learning, which must turn into online learning. In general, the advantages of online learning are good for health and increasing knowledge about technology for teachers, students, and parents. However, in addition, many disadvantages are felt. This significant change causes learning difficulties experienced by students, teachers, and related policymakers.

Although agreed upon, this study caused controversy. In addition, the technological and economic abilities of each student are different. Only some students have facilities that support online learning activities. Inadequate internet connection, unsupported devices, and expensive internet packages are barriers to online learning. However, learning must continue.

According to Edwards et al. (2018), Internet access is a critical factor in the success of online distance learning. Considering that the entire online learning process is internet-based if areas have problems with the internet network aspect, it will certainly make the learning process not optimal (Kovach & Montgomery, 2010). The learning process that is not optimal will result in the results of the information obtained by students and student learning outcomes that are also not optimal.

Another disadvantage is that only some parents and children have internet and cell phone facilities. Some parents do not understand the technology children use in online learning, and children become stressed and bored (Ndeot & Jaya, 2021). Thus, learning loss will be able to have an impact on the quality of human resources that will be born in these years during the COVID-19 pandemic (Zakharova et al., 2021).

Teacher awareness and mitigation of learning loss in science practicums in elementary schools

Consciousness is an individual thing. Each individual has a different level of awareness according to the situation and the values that apply to him. This level of awareness can be seen from several actions, such as the ability to perceive, interact, communicate, place oneself in other people's situations, and have a high level of belief, hope, worry, and desire. Mitigation of learning loss in science practice is an action that occurs when there is a sense of self-awareness within the individual, so the measurement of respondent awareness needs some attitudes consideration from respondents in self-awareness indicators.

Conclusion

Based on the findings, it can be concluded that teacher awareness in mitigating learning loss in science practice in elementary schools is good. There is a learning loss in public and private schools in science practice. For this reason, each teacher acts as much as possible to mitigate learning loss events by taking actions such as home visits, communicating with parents, utilizing existing media in the environment around students for science practice, and approaching students to mitigate learning loss events in students' science practice in elementary school.

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