Lectura: Jurnal Pendidikan
Volume 15, Nomor 1, Februari 2024, Halaman 1-14
P-ISSN: 2086-4876
E-ISSN: 2549-063X
DOI: https://doi.org/10.31849/lectura.v15i1.16068
Link: https://journal.unilak.ac.id/index.php/lectura/article/view/16068

Student's Science Literacy in Science Learning at Elementary School

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Submitted: 08-09-2023 Accepted: 06-12-2023 Published: 03-02-2024

Abstract
Improving students' science literacy at the primary school level is a major focus in education. Science literacy proficiency is one of the important skills that primary school students need to have. The purpose of this study is to evaluate students' science literacy levels in primary schools and to identify factors that contribute to higher levels of science literacy. This research was a qualitative research. This research was conducted at *Sekolah Dasar Negeri* (SDN) 1 Karangsari located in Karangsari Village, Rowosari District, Kendal Regency, Central Java with the zip code 51354 which was currently implementing the *Kurikulum Merdeka* with A accreditation. The data was collected through interview. The data sources used in this research were primary and secondary data sources. The data was analyzed by using data reduction, data presentation, and conclusion drawing. The results showed that science literacy in science learning at SDN 1 Karangsari has been instilled and refers to the indicators of identifying and explaining valid scientific phenomena, evaluating and designing investigations, interpreting data and conclusions based on scientific evidence, marked by the occurrence of rainbow activities. This can be seen from students who are able to analyze, interpret data and draw conclusions according to clear evidence of the occurrence of rainbows. The results of the study can be used to improve science learning methods in elementary schools.

Keywords: scientific literacy, science learning, elementary students

INTRODUCTION

Education is very important for everyone; education can develop one's talents and interests. Education can achieve happiness and desire both in one's individual life and in the life of society (Safitri & Sukartono, 2023). In science learning in elementary school, one of them emphasizes Science Literacy. In science learning in elementary school, one

of them emphasizes Science Literacy. The most decisive factor in determining the level of Science Literacy ability a person acquires is learning. Because science is a science that helps solve problems in everyday life, science literacy is an important life skill. In line with the NRC's view, the first determining factor in determining the level of Science Literacy skills a person acquires is learning. Since science is a science that helps solve problems in everyday life, science literacy is an important life skill. In line with the NRC view (Toharudin et al., 2011), Scientific literacy is the application of scientific knowledge to find solutions to a problem. Every high school in Rhode Island is required to use student-centered, collaborative, and inquiry-based learning methods, as stipulated in Permendiknas No. 41 (2007). In addition, students' unique skills, interests, and stages of physical and mental growth are taken into account as they progress through the curriculum (Yuliati, 2017).

In order to improve oneself and realize one's full potential, humans have an insatiable desire to learn. The importance of education in enhancing, maintaining, and passing on information from one generation to the next is incalculable. Human capital must increase in knowledge, potential, culture, and decency, and these qualities must be fostered through education. (Purnomo, 2017). The goal of education is to equip students with the knowledge and skills they need to function effectively in modern society. This includes developing a constructive worldview, building strong personal qualities, and making healthy life choices (Listiani, 2018).

The complexity of the skills and knowledge that today's students need to succeed requires a shift in emphasis from traditional teaching paradigms to new learning paradigms. Therefore, the teacher's role shifts from being the sole source of knowledge to being a facilitator as the focus of education shifts from teacher to student. In contrast, the learning paradigm that is more in line with the vision of the 21st century emphasizes critical thinking skills, obtaining information that can be applied logically and rationally, developing problem-solving abilities, and acquiring the skills needed to be independent. life. Character development and learning to get along with others are important parts of a comprehensive education in the twenty-first century (Yuliati, 2017).

The exponential growth of science and technology, especially in the field of information and communication, has an impact on almost every aspect of human existence in the 21st century. This expression alludes to the increasing pressure on the world's education system to produce the human capital needed to address the challenges of the future. In the 21st century there has been a shift from the teaching paradigm to the learning paradigm due to the sophistication of the skills and knowledge expected from students. As a result, the teacher's role has shifted from being an exclusive source of knowledge to being a guide and facilitator in the learning process, shifting the focus of education from the instructor to the student. The core of the vision of 21st century education is learning to think, guided by logic and rational knowledge; learn to act, guided by problem solving; self-study learning, guided by character building; learning to live together, guided by tolerance and the four pillars of the 21st century educational paradigm are as follows: (1) learning to think guided by logical and rational knowledge; (2) learning to act guided by problem solving; and (3) study. to live together, treat others with tolerance, and have a cooperative attitude (Wahyuningsih et al., 2019)

Natural sciences, also known as science, play an important role in the primary school curriculum as they can equip students to face the challenges of living in a globalized world. Therefore, an educational approach is needed that can help students develop skills such as science and technology literacy; the ability to think rationally,

critically, creatively, and argue effectively; effective communication and collaboration; etc. Having a positive outlook and sensitivity to oneself and one's environment and making judgments based on scientific considerations correlates with scientific literacy, which can be said to be the ability to understand science, convey science (oral and written), and apply science abilities. Scientists in the field of interdisciplinary personality analysis (*Ilmu Pengetahuan Alam/IPA*) believe that the scientific attitude formed by the process of obtaining a product has a significant impact on the development of one's personality and character (Desstya, 2015b).

IPA refers to a collection of information that has been gathered through scientific investigations and experiments. IPA is a mentality and a way of life. Since scientific literacy supports technological literacy, it makes sense to introduce it to young students as early as possible. It is hoped that by introducing a science curriculum to primary schools, the country will eventually become a technologically dominant country (Desstya et al., 2017). Data from the Program for International Student Assessment (PISA) shows that the scientific literacy level of Indonesian students is still much lower than the global average (Toharudin et al., 2011).

It is believed that the lack of opportunities for students to build critical reasoning skills in the science learning process contributes to the low science learning outcomes. The following research shows that teachers still have a long way to go before they can effectively implement pedagogical practices and classroom activities that reflect the scientific method. The transfer of knowledge as a product (facts, rules, and ideas) that must be memorized continues to dominate science education, but the process and attitude of knowledge are more often ignored (Istyadji, 2007). Science process skills are abilities needed to learn and use scientific ideas, rules, and hypotheses (Desstya, 2015a)

According to PISA, measuring scientific literacy involves more than simply testing students' knowledge of a particular topic; it also takes into account students' familiarity with their larger scientific and social context, as well as their beliefs and values. In this situation, the instructor plays an important role in determining student outcomes. Therefore, teachers must be competent in pedagogical theory and practice. Implementing scientific education, which places equal emphasis on conceptual understanding and practical application, is one approach to tackling this problem. Literacy and knowledge are components of scientific literacy, or literatus and scientia, respectively. The Organization for Economic Cooperation and Development (OECD) defines scientific literacy as "the capacity to apply scientific knowledge, identify questions, and draw evidence-based conclusions to understand nature and the changes that occur in nature as a result of human activities".

Having a solid understanding of scientific principles is essential in today's world. Problems in life are much easier to deal with if you have a solid understanding of the basics of science and technology. But that doesn't mean that everyone has to become a scientist. Humans can play a role in shaping their own lives by learning and using the basics of science.

Scientific literacy according to PISA is defined as "the capacity to use scientific knowledge, to identify questions and to draw evidence-based conclusions in order to understand and help make decisions about the natural world and the changes made to it through human activity" (Budiarti & Tanta, 2021). Based on this concept, scientific literacy can be seen as the ability to understand and act responsibly in responding to issues related to nature. According to Wulandari (2016), scientific literacy refers to an individual's ability to recognize difficulties, learn new information, explain scientific

phenomena, and produce judgments supported by evidence in the context of scientific challenges.

Individuals and society in general can benefit from a broader understanding of science. Problems can be solved more effectively by those who are scientifically literate (Bagasta et al., 2018; Rahmadani et al., 2018). In the eyes of the public, scientific literacy is directly related to a country's economic growth. Experts, scientists, engineers, and educators who are trusted by the community and whose work contributes to the nation's prosperity can be found in an objective society, processes information properly, and has access to quality scientific resources (Windyariani, 2017).

The four most important human resource skills in the twenty-first century are literacy, creative thinking, strong interpersonal skills, and high output (Bagasta et al., 2018). The findings of the World Economic Forum (2016) show that 21st century children need to develop 16 skills including three major aspects such as foundational literacies, competence, and character qualities.

First, the ability to understand and apply scientific concepts is mentioned as one of the 16 skills. To be scientifically literate, a person must be able to recognize scientific phenomena, ask and answer questions about them, and draw conclusions about them, as well as understand how science and technology shape the physical, intellectual, and cultural environment and be willing to participate in them. Knowledge and enthusiasm for science (OECD, 2017). Second, the National Research Council (2012) states the idea of science is an ensemble of social and epistemic practices shared by all science, which frames all competencies as actions, and which is reflected in a set of scientific competencies required in scientific literacy. The main objective of efforts to increase elementary school students' scientific literacy is to make them interested in learning and to make school enjoyable for them. Learning science requires using one's intuition to understand unfamiliar concepts, meanings, and correlations before arriving at a conclusion. Learning about science involves activities such as categorizing data, taking measurements, making predictions, testing hypotheses, and drawing conclusions.

Third, increasing one’s scientific literacy can help decision-making on a personal and social scale. Therefore, in today's fast-paced and ever-changing world, it is very important for the general public to have a solid understanding of basic scientific concepts. (Ilsadiati et al., 2017). Fourth, science content, scientific procedures, and science application environment are the three pillars on which scientific literacy depends. To begin with, science content is defined as “fundamental scientific ideas that support our understanding of natural phenomena and natural changes resulting from human activities” (Pratiwi et al., 2019). Some parts of the physical world may become clearer in this light. The questions cover a wide range of scientific topics, from chemistry and physics to biology and earth sciences to space exploration. The second meaning "in the process of science" comes from "in the context of answering questions raised by new problems " (Rustaman, 2011).

Fifth, the skills assessed in the scientific method are as follows: 1) “Recognizing scientific problems; 2) Identify evidence; 3) Draw conclusions; 4) Communicating conclusions; 5) Understanding scientific concepts (Kusuma, 2016). Sixth, there are three different levels of competence in science. A person’s functional literacy is measured by their proficiency with everyday life ideas, especially those related to survival issues such as food, health, and safety. Second, scientific and technological citizenship literacy, which is defined as the capacity to engage constructively in public debate on this topic.

Science and the belief that it is the main intellectual pursuit is the third component of a comprehensive education (Rustaman, 2011).

Seventh, the scientific literacy test should not discriminate between educated and uneducated individuals and must be sequential. In contrast to other types of questions, literacy assessment can be carried out in the form of questions with the following characteristics: 1) "The questions are not only related to the concept of the course so that they cover broader concepts; 2) The questions must contain information or data in the form of data presentation for students to answer the questions to be processed; 3) Literacy questions must enable students to process the information in the problem; 4) Questions can be changed to multiple choice questions, fill in the blanks; 5) Questions must include application background" (Kusuma, 2016). Eight, Toharudin et al. (2011) defines scientific and technological literacy as "the ability to solve problems using scientific concepts obtained in education at a person's level; familiarity with technology products encountered every day and their impact; skills in the use and maintenance of these products; and creativity in producing technological results that are simplified in such a way that students are able to make decisions based on societal values."

Ninth, students in Indonesia still have a low level of scientific literacy. According to the findings of a 2015 PISA study, with a score of 403 out of a possible 600, the United States places 62 out of 70 countries for scientific literacy, losing out to regional rivals Thailand (421), Vietnam (525), and Singapore (556) (Bagasta et al., 2018). According to the 2018 PISA results, Indonesia ranks 70th out of 78 countries in terms of development, especially scientific literacy (OECD, 2015). Tenth, developing students' scientific literacy is a difficult task at all levels of education, including elementary schools. Seventy percent of fifth graders in one elementary school reported lacking basic scientific literacy skills in a previous study (RW et al., 2018)

Eleven is curiosity. Curiosity is the innate desire to learn, explore, and understand the world around oneself. This intrinsic motivation propels individuals to seek new knowledge, ask questions, and engage in lifelong learning. It plays a crucial role in fostering critical thinking and problem-solving abilities, driving intellectual growth. Twelve is initiative. Initiative involves taking proactive steps without external prompting to achieve goals or solve problems. This quality showcases a proactive approach to challenges, independence, and a willingness to take risks. Initiative is instrumental for personal and professional development, demonstrating a self-driven attitude and a capacity for problem-solving.

Thirteen is persistence. Persistence, also known as grit, refers to the ability to persevere and maintain effort in the face of challenges and setbacks. This quality is vital for achieving long-term goals, as it enables individuals to overcome obstacles, learn from failures, and build resilience. Grit is a key factor in personal and professional success. Fourteen is adaptability. Adaptability is the capacity to adjust to new conditions, changes, and challenges. In a rapidly changing world, adaptability is crucial for success. It allows individuals to navigate uncertainties, embrace change, and thrive in diverse environments. Those who are adaptable can effectively respond to evolving circumstances and seize new opportunities.

Fifteen is leadership. Leadership is the ability to guide, inspire, and influence others toward a common goal. Leadership skills are essential in various aspects of life, from team projects to community involvement. Effective communication, decision-making, and the ability to motivate and empower others are key components of strong leadership. Sixteen is social and cultural. Social and cultural awareness involves understanding and

respecting diverse cultures, perspectives, and social contexts. In a globalized world, this awareness promotes empathy, effective communication, and collaboration across diverse communities. It equips individuals with the skills to navigate and contribute positively to multicultural settings, fostering a more inclusive and interconnected society.

Hearing this justification, it is difficult not to conclude that the scientific literacy of Indonesian students is at the start of the PISA assessment process and is much lower than the average scores of students worldwide. Students' lack of critical reasoning skills may be due to the fact that the science education system has not provided sufficient opportunities for students to acquire these skills. This shows that teachers still lack the ability to carry out learning processes and activities that are in line with scientific literacy. The transfer of science as a product (facts, rules and ideas) that must be remembered still dominates science education, but the process and mindset of science are more neglected. So, it is necessary to do research to analyze the level of scientific literacy of students in science learning in elementary schools in Kendal district.

METHOD

Qualitative research was employed in this research with the aim of providing or describing an event or phenomenon that occurs today through the application of scientific methods. This article focuses on a phenomenon related to science learning in elementary schools, namely the lack of science literacy. The first step taken by the researcher was to collect data regarding science literacy. The data was collected through interview with relevant stakeholders, and the collection of relevant written, photo and video documentation. This research was conducted at SD N 1 Karangsari located in Karangsari Village, Rowosari District, Kendal Regency, Central Java with a zip code of 51354 which is currently implementing the *Kurikulum Merdeka* with A accreditation. The data sources used in this research are primary and secondary data sources. In this context, "primary data" is data obtained from the original source itself. The primary data source in this study is the fifth grade teacher, a woman named Mrs. Riyatik, S.Pd. The population of this study was 28 fifth grade students aged around 10-11 years old. The sampling technique in this study was random sampling. Secondary data sources obtained in this study were taken from important documents used in learning, photographs of learning implementation, other important data and relevant previous research. "Interviews, field notes, and other forms of documentation were used to collect information." The data that has been collected was then analyzed by data reduction, data presentation and conclusion drawing.

FINDINGS AND DISCUSSION

The achievement of science education competencies in elementary schools is highly dependent on scientific literacy. Of course, there must also be a learning process that is interesting, inspiring and fun, preventing and encouraging students to be fully involved in the educational process. Learning that aims to gain the application of scientific literacy is in line with natural learning which is not only focused on knowledge but also on processes, integration of theory and practice, and the attainment of a scientific mindset. As a result, to develop critical thinking skills, the application of science in literacy must be balanced with scientific inquiry learning. Based on observations that were reinforced by interviews with fifth grade teachers at SD Negeri Karangsari, using different approaches, models, techniques, or media and scientific literacy. As for how the scientific approach, contextual approach, and learning models are used to apply scientific

literacy, one of them is the problem-based learning paradigm.

The results of interviews and observations showed that students' science literacy reached 93% (121 students) of the total 130 students, but there were problems in the literacy process. The problem that often arises during science learning is the activity of converting data from one representation to another. An example of an activity in this representation is that students still do not understand the activity of converting data from one representation to another. students are only able to read data in the form of numbers, but students have not been able to explain every meaning of the data presented. To overcome these problems, several ways of identification in science literacy activities are needed. Based on the results of the literature review, each indicator of student science literacy includes:

1. Identify and explain valid science phenomena

The first indicator is identifying and explaining valid scientific phenomena that have emerged which are marked by students having learned about blood circulation material. This can be seen from students who are able to remember and apply existing knowledge in science learning related to daily life activities in the environment around students.

Based on the results of observations made in class, the teacher starts class by reading a prayer and giving apperception to students, as well as writing science learning objectives for that day. Observations made: when the teacher gave this circulatory material, the teacher explained to students about the circulatory system in humans. The teacher asks a question in the form of "*What is the function of blood*?" then students are instructed to formulate a hypothesis that reads and repeats the answer from the teacher, *"Blood is a fluid that functions to deliver nutrients and oxygen throughout our bodies*. When we breathe, we inhale oxygen. Oxygen is carried by the blood from the lungs to the heart, then throughout the body. With enthusiasm, students imitate the teacher who explains in front of the class.

Based on the results of a document review taken from the RPP, the blood circulation material in it discusses blood, blood groups, blood vessels, and the heart. Students have an excellent understanding of the organs of the circulatory system. There are many types of cells in the blood, including erythrocytes, leukocytes, and platelets, which number in the billions. A, B, AB, and O are the four categories used to classify blood groups. The blood vessels of the human body can be categorized into three major groups: arteries, veins, and capillaries. There are four chambers in the heart as well, including the right and left atria and two ventricles. The students explained that the job of the heart is to circulate blood throughout the body. There are two types of circulatory systems in the body that transport blood throughout the body. Based on the results of interviews with three students in the class, the following results were obtained.

Student 1

I like science lessons, especially when it comes to learning about blood, because I want to be a doctor tomorrow. The teacher explains well; in IPA there are pictures, so it's easier and easier to understand.

Student 2

I can understand today's lesson because the teacher explained it clearly. If I don't understand, I can ask the teacher. First of all, I don't understand because it's hard to understand, but the teacher explains it again so I can understand.

Student 3
I like today's lesson because the teacher uses the tools in front of the class to teach. Earlier, we also showed a picture of the blood circulation apparatus.

Based on the results interviews above, it can be concluded that students can accept explanations from the teacher well. When nothing is understood, students ask their teacher to explain the material again or explain parts of the material that the students have not understood. As much as possible the teacher will provide good learning to his students in class so that his students are not left behind by the others.

Hasasiyah et al. (2020) agree that students need to hone their skills by expanding their understanding of scientific concepts that have been integrated with phenomena and symptoms in nature and everyday life, especially in terms of the circulatory system. This is in accordance with the first indicator put forward by Wulandari (2016), which states that although students can explain scientific phenomena, their potential is not fully realized due to the influence of various factors.

Several problems in this study prevented students from adequately describing blood circulation, particularly the role of the heart and blood vessels. This factor is the use of the lecture method applied by the teacher without any media or visual aids. Thus, students still find it difficult to capture something whose material nature is still abstract. The heart and blood vessels exist in the human body and are concrete in nature, but when it comes to expressing it it is still difficult because there is no picture display. In this case students are expected to be able to analyze and predict a case for this competency. The capacity to apply deep scientific knowledge to a situation, characterize phenomena, predict change, and be able to select appropriate descriptions, explanations, and predictions must be taken into account. From the description given above, it is clear that students have demonstrated their ability to solve problems based on scientific phenomena and have made reasonable connections between scientific concepts and scientific applications. The easiest problem for students to understand is how to explain something scientifically. these questions require students to recall relevant subject knowledge for a particular situation and apply it to interpret and explain the phenomena of interest. According to research, it will be easy to explain phenomena scientifically because we meet scientific incidents regularly. As a result, students have no difficulty in solving questions on this indicator this statement can be presented in Figure 1 and Figure 2.

Figure 1. Explaining the Blood Circulation

Figure 2. Lecturing Method

2. Evaluating and designing investigations,

The second indicator is evaluating and designing an investigation characterized by student experiments on the properties of light. It can be seen that students are starting to be able to evaluate and design material investigations about the properties of light and are quite capable of exploring the surrounding environment. When learning about the properties of light, students can evaluate what tools and materials will be used and they can design and prepare these tools.

The properties of light matter include the fact that it travels in straight lines, can pass through transparent media, can be reflected, and can be refracted. Students can identify each question to be explored and distinguish questions that are scientifically investigated, but students are still confused in distinguishing questions scientifically, so the need for assistance from the teacher during the learning process.

In the observations made in class, it can be seen that when the teacher instructs students to learn about the properties of light, they already have an idea of the tools and materials to be used. The teacher and the students gave a statement that "The nature of light that propagates straight is used in flashlights and motorized vehicle lights. The ability of light to penetrate clear objects is demonstrated by observing clear glass and then shining a flashlight on it. The flashlight can penetrate the glass. It is a transparent object because light can penetrate it. The nature of reflected light can be seen when reflecting in a flat mirror. People can see their own reflection as big as the original because the light is reflected by the mirror.

During the learning process, it was seen that students were given examples of how light can penetrate clear objects by the teacher, after which students were asked to explain the nature of the light that had been observed. The teacher gives instructions to the students. Then, students are asked to evaluate and explore the question, "Observe while walking in the sun. *Wherever you walk, your own shadow will always follow you. Big Tree, how did your body image form?"* From these questions, students can clearly answer what has happened. Students give answers to their teacher about the previous question: "*Shadows are formed because light cannot penetrate an object. When light hits an object, it cannot penetrate the object, so a shadow is formed*.

This was reinforced by interviews conducted by three students to answer the questions given.

Student 4.
I prefer science subjects about light explained by the teacher with direct descriptions; this makes me understand it better.

Student 5.
Today's science lesson was fun because they were invited to observe the pictures that the teacher had pasted in front of them. So I understand it better.

Student 6.
The teacher explains the light material clearly; if I can't, ask the teacher directly.

Based on the results of interviews conducted by students, it was stated that students have been able to evaluate and design investigations about the properties of light. Sari et al. (2017) show that students can recognize questions that can be investigated scientifically and construct their questions in a way that can be followed scientifically. It is true that some students still lack the ability to recognize problems or distinguish between problems with clear scientific causes and those that are more nebulous. This is

because the participants do not fully understand the question scientifically referred to. Therefore, the teacher's role here is needed so that learning goes according to its nature, namely science as a product, process and attitude. Learning science by designing investigations has shown that the nature of science as a process has been implemented. In accordance with the process of being one's own, this gives students the opportunity to strengthen their thinking skills through the practice of critical analysis, problem solving, and decision making (Mutlu & Temiz, 2013), which states that process/investigation-based science learning will condition students to think critically and able to evaluate scientific questions related to the material presented. Process -based science learning also provides more experience, students remember the material better. So, learning science does not have to be through lectures so that students' memories are not easily lost, this investigative process can condition students by learning to do. It is evident from the description given above that students have demonstrated their ability to solve problems based on scientific phenomena and that they have connected scientific ideas with scientific applications. The concept that is easiest for students to understand is how to provide a scientific explanation of a phenomenon. These questions require students to recall subject-related information for a given situation and use it to interpret and explain the phenomenon of interest. According to research, it will be easier to provide scientific explanations for this phenomenon because we often encounter scientific incidents. As a result, students have no difficulty solving problems on this indicator.This can be presented in Figure 3 and Figure 4.

Figure 3 . Nature of Light PPT

Figure 4. Investigation Process

3. Interpret data and conclusions based on scientific evidence,

The third indicator is interpreting data and drawing conclusions based on scientific evidence, which is indicated by the occurrence of rainbow activity. In this process, it can be seen that the teacher explains the process of the rainbow to the students. In this process, students are expected to be able to analyze, interpret data, and draw conclusions based on real evidence. Students analyze questions to be identified, such as "Have you ever seen a rainbow? What colors does the rainbow consist of? Then the students gave answers from the analysis, namely, "We have seen a rainbow. If sunlight penetrates the raindrops, they will be deflected and broken into seven colors. The seven colors are red, orange, yellow, green, blue, indigo, and purple. A rainbow may look like an arc, but it's actually a circle.

During the learning process, it was seen that the students were very enthusiastic about hearing the explanation from the teacher; they listened carefully. They were interested in some of the teacher's explanations, in one of which they found something new, namely the existence of rainbow colors other than the rainbow colors that have been in the rainbow songs. In this learning process, the teacher explains clearly using a

description of the process of rainbow formation. This statement was reinforced by interviews that had been conducted with three different students.

Student 7
Today's lesson was fun because I just found out that there are many rainbow colors, not just red, yellow, and green. There are other colors. I now know the process of the rainbow.

Student 8
The teacher explains the lesson clearly, and I understand more about the process of how the rainbow happens.

Student 9
Today's lesson about rainbows was really fun. I came to know that there are lots of colors in rainbows.

Based on the results of observations, interviews, and documentation that has been carried out, it can be determined that Students can understand that a rainbow is formed when light from the sun is refracted by water droplets in the air when it passes through rain. When sunlight is refracted, colors spread out and become more vivid because there are many wavelengths and different angles. Sunlight can be reflected or refracted. When it rains, the sun is again refracted as it passes through the water. British physicist Isaac Newton communicated this idea that rainbows are light. Drops glisten in the sun. Tiny prisms, water droplets refract sunlight laterally and separate it into color components. The human visual spectrum consists of the wavelengths corresponding to various colors. A rainbow has at least seven hues, all of which are visible to the human eye. Isaac Newton (1642-1727) discovered in the 17th century that the white light we see from the sun is a spectrum made up of many different colors. The colors red, orange, yellow, green, blue, indigo, and purple make up what we call the mejikuhibiniu color spectrum. The term visible light refers to the spectrum of colors that make up white light.

This is also supported by the research of (Fadilah et al., 2020), which states that some students realize that truth in Scientific Literacy really needs to be believed if there is valid evidence. This is in accordance with the recommendations of (Hasasiyah et al., 2020), which states that students must have access to various research materials that they can practice their understanding of to increase literacy and understanding of relevant subject matter.

In the learning process in class, the teacher provides learning about the rainbow occurrence to students. The teacher displays a ppt about a rainbow image on the projector screen, after which the teacher gives an explanation using the lecture method about "How is the process of forming a rainbow?" Light is refracted by raindrops, creating a beautiful rainbow. When light (sunlight) is refracted, its original path is changed as it moves from one medium (air) to another (water). Light is refracted as it passes through water droplets, creating the effect of chromatic dispersion. The beautiful hues of a rainbow are created by light refracting at different angles. The rainbow hues will be bent in different directions. Purple goes first, followed by blue, green, yellow, orange and finally red. Colors like red, orange, yellow, green, blue, indigo, and purple (known as mejikuhibiniu) will be revealed later. There are certain vantage points from which one can see the rainbow. You have to be out in the rain and sunshine if you want to see a rainbow. "When the sun is behind the observer, the line joining the sun, observer, and the rainbow arc will be straight."

If students still have questions after being given many opportunities to ask, the instructor will be more than happy to answer them. A student's ability to analyze and interpret data and draw correct conclusions about the appearance of rainbows depends on his or her familiarity with the process of rainbow formation. In class, we discussed the scientific theory, evidence, and reasoning behind the rainbow ingredients, and students identified each one. Students can distinguish arguments based on scientific evidence, theory and other considerations. From scientific evidence that is based on British scientist Isaac Newton.

This shows how well students are able to assess data and scientific evidence or draw conclusions from the information provided in the challenge. In other words, students are able to explain the proper and logical relationship between facts and judgments or decisions. This competency requires the ability to evaluate scientific findings or use scientific findings as evidence to make decisions. They are able to recognize supporting details and articulate arguments for their judgments. The development of literacy skills on indicators that use scientific evidence is demonstrated by students' ability to analyze data from various tables and figures on the instruments used in this scientific literacy test and make conclusionsThis can be presented in Figure 5 and Figure 6.

Figure 5 . Rainbow PPT

Figure 6 . Process Draw conclusions

CONCLUSION

The results and discussion of this study conclude that science literacy in learning Natural Sciences (*Ilmu Pengetahuan Alam/IPA*) at SDN 1 Karangsari has been successfully implemented. This can be seen from the achievement of indicators that have been compiled, including students' ability to identify and explain valid scientific phenomena, for example in understanding material about blood circulation, which includes the topics of blood, blood classification, blood vessels, and heart. Students are also able to recognize the organs involved in blood circulation in detail. In addition, students can also evaluate and plan investigations on the nature of light, and are able to explore the surrounding environment. Then, students can also interpret data and make conclusions based on existing scientific evidence, as seen in the observation of the occurrence of rainbows in nature. This shows that students can analyze, interpret data, and make conclusions based on clear evidence of the existence of the rainbow phenomenon.

This research is limited to public elementary school 1 Karangsari located in Karangsari Village, Rowosari Subdistrict, Kendal Regency, Central Java with postal code 51354 within a certain geographical area. In addition, there are time constraints and limited resources that become obstacles in conducting more in-depth and comprehensive research. Suggestions for future research that examines similar research are: (1)

longitudinal research: Conduct long-term research to see the development of students' science literacy from elementary to advanced levels. (2) Influence of other learning methods: comparing different methods of teaching science to determine which method is most effective in improving science literacy. (3) Focus on specific variables: focus on the influence of specific variables such as the influence of home environment or participation in extracurricular activities on students' science literacy. (4) Comparative study between regions: compare the science literacy of students from different regions to find out if there are significant differences and what causes them.

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