Improving Student's Science Literacy Capabilities Through Utilizing the Natural Environment

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Abstract: In the learning process, the teaching method becomes a determining factor for the achievement of learning objectives. Basically, every student learning must play an active role in identifying problems, digging information thoroughly, and being able to provide information. The purpose of this research is to see whether the method of utilizing the natural environment can improve students' scientific literacy skills. This study uses Classroom Action Research which was carried out in 2 cycles involving 25 fifth grade students of SD PAB 22 Kelambir Lima. Data collection in this study used student activity observation sheets and student science literacy tests. Quantitative data were analyzed using descriptive statistics to see the average results obtained on the student's scientific literacy ability test. The results of this study indicate that there is an increase in students' learning activities classically which obtained the active category from the first cycle which reached 60.25% and the second cycle to 90.5%.

Keywords: Learning methods; Natural environment; Science literacy ability; Utilization of the surrounding

Introduction

Education has an important role in the sustainability of human life processes. Given the importance of education for human development, Islam as a religion that prioritizes education gives serious attention to the development of education for human survival (Rochanah, 2018; Suherman et al., 2019). Education is a person's conscious effort to receive, give and inform knowledge, from those who know to do not know, those who do not understand to understand more. In line with that Fatmawati (2019) and Saripudin et al. (2021) explains that basically education is functioned as a tool for forming a person to achieve a new life. The educational process is formed based on several factors, both internal and external. Assume that education can be obtained through the environment in which they live, both family and neighbors. There are several stages that must be developed in the world of education including cognitive, affective, psychomotor aspects. In this stage of development, the teacher has an important role in this stage (Yusrizal & Fatmawati, 2020; Fatmawati & Yusrizal, 2020).

National Literacy Movement (GLN) is a program to improve literacy skills as expected in the Regulation of the Minister of Education and Culture Number 23 of 2015 concerning the Growth of Character and Character. The Minister of Education and Culture in Jakarta, Saturday, April 13, 2019, in directing the 2019 National Level Literacy Instructor Technical Guidance activities, hopes that a minimum of six literacy skills must be mastered by a person, namely: literacy, numeracy, science, digital, financial, and culture and citizenship.

According to Wati et al. (2019) explaining that basically literacy in the traditional view is considered as a person's ability to read and write. People who are said to be literate in this view are people who are able to read and write or are free from illiteracy (Kharizmi, 2015; Wahyuningsih & Mustadi, 2016). Understanding literacy then develops into the ability to read, write, speak, and listen. Literacy learning is currently the most important issue for the development of the education

system in Indonesia today (Abidin et al., 2017; Shabalina & Bykov, 2021). Indonesia being a country that has low reading interest, this is in line with Jhon et al. (2021) which says that there has been no improvement over the last 20 years and poor management of Indonesian students' reading interest and low literacy skills of Indonesian language students. Literacy is the most important thing in improving student learning outcomes, various kinds of literacy including scientific literacy are also very influential on improving student learning outcomes.

Scientific literacy can be defined as scientific knowledge and skills to be able to identify questions, acquire new knowledge, explain scientific phenomena, and draw conclusions based on facts, understand the characteristics of science, awareness of how science and technology shape the natural, intellectual and cultural environment, and willingness to be involved and care about science-related issues. Assumes that basically scientific literacy skills should increase along with advances in science and technology in order to respond to the effects and consequences such as environmental problems (Kirana et al., 2022).

Explained that scientific literacy is a goal that must be achieved by science-centered subjects, one of which is biology (Nofiana & Julianto, 2018; Liestari & Muhardis, 2020). The competency standards of graduates in the 2006 curriculum IPA (science) subject group state that science is a scientific field that seeks to find out about nature systematically, so that science is not only mastering a collection of knowledge in the form of facts, concepts, or principles but also the process of scientific discovery (Yusrizal & Fatmawati, 2020). The rapid development of science in the 21st century requires humans to work hard to adapt to all aspects of life. One of the keys to success in responding to 21st century obstacles is "science literacy" because science literate individuals must take advantage of the scientific information they have to overcome anxiety in everyday life and produce useful scientific products (Kirana et al., 2022). Science education has an important role in preparing individuals to enter the modern world (Alfia et al., 2020; Romano et al., 2021).

Scientific literacy interprets the ability of individuals to interpret and apply their scientific knowledge to provide solutions to problems that occur in everyday life as well as problems related to the environment faced by modern society that is highly dependent and influenced by the development of science and technology. Environmental problems are problems that have a fairly high level of risk that occurs in daily life, including practical activities in laboratories that are dangerous and not environmentally friendly (Fauziah et al., 2019).

Based on this, it is necessary to have a suitable method to improve students' scientific literacy skills. The method that is in accordance with scientific literacy is the method of utilizing the surrounding natural environment. According to Irmeilyana et al. (2020) explaining that the use of the surrounding natural environment as a source of learning and learning media for students is an alternative to formal teaching methods but can still meet learning outcomes and goals. Learning with practice in the surrounding environment and the use of teaching aids whose manufacturing and supply processes involve students directly are conducive activities in education (Yulianti, 2016).

The surrounding natural environment can be a science park that can be used in learning outside the classroom (outdoor education) (Lamasai et al., 2017). This can be done by observing the school garden and its surroundings. With the school garden, as well as the area around the school, students are able to apply all subject matter along with teaching aids directly from nature as a medium of learning (Adipratama et al., 2018). In utilizing the natural environment as a learning resource, it can be achieved by carrying out activities by bringing students into the environment, such as observation and field practice. Even recently, learning activities have developed with what is called out-bond, which is basically a learning process using the open nature (Iswanto et al., 2018). Utilizing the surrounding natural environment as a learning resource benefits students in doing learning, with new media for students and familiar in everyday life for students, it will give students a sense of activity in the learning process.

Based on this, it can be concluded that the use of the method of utilizing the natural environment is able to increase students' scientific literacy skills.

Method

This research is classroom action research (CAR). According to Borg & Gall, classroom action research is research that applies practice, quality and impact as the main objectives of research. Through CAR, looking back with the aim of improving and improving their performance when teaching so that the learning process can be carried out well and cause the learning outcomes of students to increase. This research procedure is designed with 2 cycles from each stage in the cycle which includes the planning stage, implementation stage, observation stage and reflection stage. The meeting in the cycle was carried out through two meetings, where at the end of each cycle there would be questions about the evaluation of learning outcomes. Research The research was conducted at SD 22 Kelambir Lima. The subject of this research.

Result and Discussion

The results of this study are presented based on data that has been collected by researchers through research, then tabulated according to the needs of data analysis listed in the research design which aims to show an overview of the distribution or distribution of data. This research is an experimental classroom action research using the method of utilizing the natural environment to improve students' scientific literacy skills. Based on the analysis design, the frequency distribution of the data presented is as follows: (1) Science literacy pre-test of students in cycle 1; (2) Post-test of students' science literacy cycle 1; (3) Pre-test of students' science literacy cycle 2; (4) Post-test of students' science literacy cycle 2.

Pre-test of Students' Science Literacy Cycle 1

Before carrying out the treatment by applying the method of utilizing the natural environment, the researcher first conducted a pre-test on students' scientific literacy. The goal is to see students' scientific literacy before being given treatment. The following is the data for the first cycle of students' scientific literacy pre-test data.

Table 1. Pre-test of Students' Science Literacy Cycle 1

Interval	Frequency	Percentage
50-55	4	15%
56-61	5	19%
62-67	8	30%
68-73	4	15%
74-79	5	19%
80-85	1	4%
Amount	27	100%

Based on the table, it is found that the lowest score obtained by students is 50 and the highest score is 85 with the average obtained is 66; the median is 65; and the mode is 65; standard deviation of 7.93; and a variance of 62.89. Furthermore, the frequency distribution data above can be described in the following histogram form.
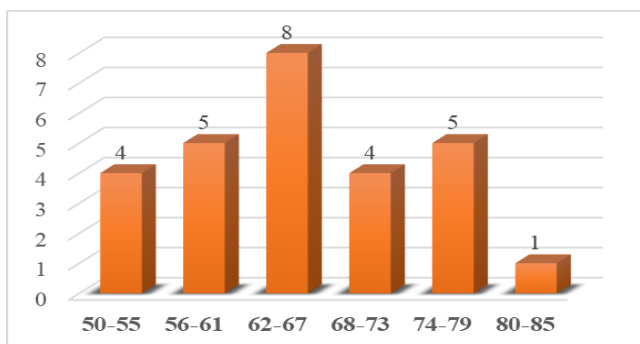

Figure 1. Histogram of student science literacy pre-test cycle 1

Based on the figure, it can be seen that the results of the pre-test group A with the highest number of frequencies are in the interval class 62-67, while the lowest number of frequencies is in the 80-85 interval class.

Post-test of Student Science Literacy Cycle 1

Based on the data obtained and the results of statistical calculations, it is known that the scientific literacy of students who are taught using the natural environment utilization method gets the lowest score, namely 60, and the highest score is 96, with an average of 84; mode of 84; the median is 84; variance of 83.60 and standard deviation of 9.14. The frequency distribution of the scientific literacy scores of students who are taught using the natural environment utilization method is presented in the following table.

Table 2. Distribution of Science Literacy Frequency of Students Taught Using the Method of Utilizing the Natural Environment Around Cycle 1

Interval	Frequency	Percentage
60-66	1	4%
67-73	1	4%
74-80	8	30%
81-87	7	26%
88-94	4	15%
95-101	6	22%
Amount	27	100%

The frequency distribution of the scientific literacy scores of students who are taught using the natural environment utilization method is visually shown in the following histogram image.
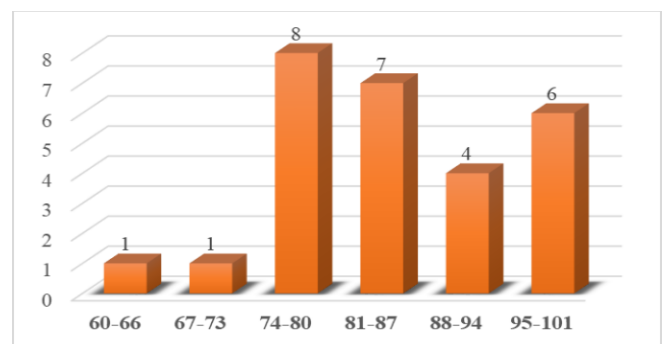

Figure 2. Histogram post-test science literacy students cycle 1

Based on Figure 2, it is clear that the scientific literacy of students who are taught using the natural environment utilization method has the highest frequency in the class interval 74-80.

Student Science Literacy Pre-Test Cycle 2

Before controlling in cycle 2, namely by using the surrounding natural environment, the researcher first

conducted a pre-test on the students' scientific literacy. The goal is the same, namely to see scientific literacy in cycle 2. The following is the data for the pre-test of students' scientific literacy in cycle 2.

Table 3. Pre-Test Student Science Literacy Cycle 2

Interval	Frequency	Percentage
50-56	3	11%
57-63	5	19%
64-70	8	30%
71-77	8	30%
78-84	2	7%
85-91	1	4%
Amount	27	100%

Based on the table, it is found that the lowest score obtained by students is 50 and the highest score is 90 with the average obtained is 68; the median is 65; and the mode is 75; standard deviation of 9.53; and a variance of 90.88. Furthermore, the frequency distribution data above can be described in the following histogram form.
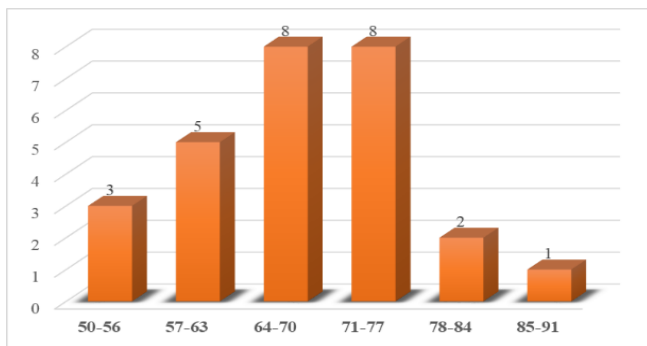

Figure 3. Histogram pre-test science literacy cycle students 2

Based on the figure, it can be seen that the scientific literacy of students in Cycle 2 with the highest number of frequencies is in the interval class 64-70 and 71-77, while the least frequency is in the interval class 85-91.

Post-test of Student Science Literacy Cycle 2

From the data obtained and the results of statistical calculations, it is known that the scientific literacy of students who are taught using the natural environment utilization method gets the lowest score, namely 60, and the highest score is 96, with an average of 79; mode of 72; median of 80; variance of 80.87 and standard deviation of 8.99. The frequency distribution of students' scientific literacy values taught using the environmental utilization method is presented in Table 4.

The frequency distribution of the scientific literacy scores of students who are taught using the natural environment utilization method is visually shown in the following histogram image:

Table 4. Post-test Cycle 2

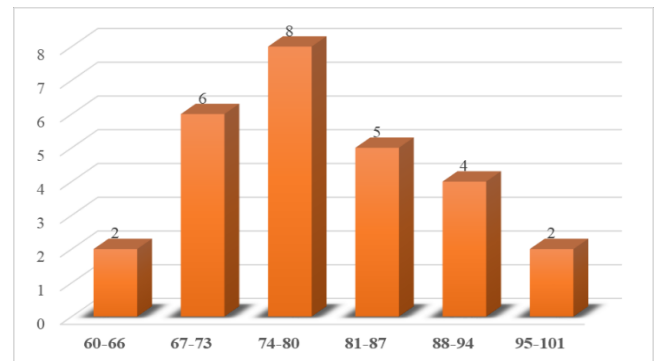| Interval	Frequency	Percentage
60-66	2	7%
67-73	6	22%
74-80	8	30%
81-87	5	19%
88-94	4	15%
95-101	2	7%
Amount	27	100%

Figure 4. Histogram of cycle student science literacy 2

From Figure 4, it is clear that the scientific literacy of students who are taught using the online learning media Zoom Meeting has the highest frequency in the interval class 74-80, while the lowest frequency is in the interval class 95-101.

Based on the research above, it can be seen that the utilization of the surrounding natural environment has a positive impact on improving students' abilities. The surrounding natural environment can be a science park that can be used in learning outside the classroom (outdoor education) (Lamasai et al., 2017; Wahyuni & Novitasari, 2022). This can be done by observing the school garden and its surroundings. With the school garden, as well as the area around the school, students are able to apply all subject matter along with teaching aids directly from nature as a medium of learning. In utilizing the natural environment as a learning resource, it can be achieved by carrying out activities by bringing students into the environment, such as observation and field practice. Even recently, learning activities have developed with what is called out-bond, which is basically a learning process using the open nature. Utilizing the surrounding natural environment as a learning resource benefits students in doing learning, with new media for students and familiar in everyday life for students, it will give students a sense of activity in the learning process.

Not only that, the use of the surrounding natural environment also greatly influences student literacy. Understanding literacy then develops into the ability to read, write, speak, and listen (Abidin et al., 2017; Knobel et al., 2015). Literacy learning is currently the most important issue for the development of the education

system in Indonesia today. Indonesia being a country that has low reading interest, this is in line with Jhon et al. (2021), Iskandar et al. (2022) and Romano et al. (2021) which says that there has been no improvement over the last 20 years and poor management of Indonesian students' reading interest and low literacy skills of Indonesian language students. Literacy is the most important thing in improving student learning outcomes, various kinds of literacy including scientific literacy are also very influential on improving student learning outcomes.

Conclusion

Based on the results of the research that has been described previously, several conclusions can be drawn including the following: The scientific literacy of students who are taught by using the natural environment utilization method increases with an average score of 79 students in cycle 1 and 84 in cycle II. This shows that the method of utilizing the natural environment is able to improve students' scientific literacy skills.

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