



Analysis of Science Literacy Skills Students of Class V Elementary School and Factors That Background IT

Rukoyah¹, M. Agustin², Wahyu Sopandi³, A. Sujana⁴

^{1,2,3,4} Department of Basic Education, Postgraduate School, Universitas Pendidikan Indonesia

✉ ¹rukoyah@upi.edu, ²mubiar@upi.edu, ³wsopandi@upi.edu, ⁴atepsujana@upi.edu

Abstract. This study aims to describe the scientific literacy ability of elementary school students in class V and the factors form of the background of the ability of scientific literacy in elementary school students. One way to improve the quality of education in Indonesia is through increase scientific literacy learning. Learning scientific literacy is very important for students to understand what is learned. The instruments used were tests and interviews. The test given to students in the form of questions about the description of scientific literacy on ecosystem material. The study sample consisted of 42 students in class V SDN 1 Tangkil with 25 female students, 17 male students, Susukan District Cirebon District in 2018/2019 school year. From the results of tests on students' scientific literacy abilities, and interviews conducted with students, shows that elementary students' scientific literacy skills are still low.

Keywords: Science literacy, students, elementary school

INTRODUCTION ~ The scientific literacy of junior high, high school students and students based on research is still low. Whether the low level of scientific literacy ability of junior high, high school, and student students is also influenced by the low scientific literacy ability of elementary school students, which is still low. Based on that, the researcher intends to examine the scientific literacy that describes the scientific literacy abilities of elementary school students. The facts from the PISA survey from 2000 to 2018 place Indonesia as one of the countries with low scientific literacy ratings. The results of PISA for Indonesian students in 2015 alone are still below the average science value of the OECD countries. The average science score for the domain of scientific literacy in the OECD countries is 493, while Indonesia has only reached a score of 403. This shows that there are gaps in treating science education. This was confirmed by Syarifah, et al (2018) that the latest PISA results in 2015 Indonesian students scored 403 and

ranked 64 out of 72 participating countries (OECD, 2016). The scientific literacy scores obtained by Indonesian students indicate that Indonesian students' scientific literacy is still relatively low. The scientific literacy scores obtained by Indonesian students indicate that Indonesian students' scientific literacy is still relatively low. The low scientific literacy of students can be caused by the lack of trained students in solving critical thinking problems such as the problems contained in PISA, the low attitude of students towards science and the low ability of students to think integrally. The increase in scientific literacy can actually be improved through reading and practicing working on critical thinking questions such as those contained in PISA. (Syarifah, et al, page 2). There are various types of literacy, one of which is currently often developed in accordance with the demands of the 2013 curriculum is scientific literacy. The Program for International Student assessment or PISA (OECD, 2017) defines scientific literacy as



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the application of scientific processes in daily life. (Muhlas, et al, 2019)

In the research of Erni Zuhara, et al (2019) that ... "one of the keys to successfully facing the challenges of the 21st century is" literacy "of science (science literacy). Science literate individuals are expected to use the scientific information they have to overcome problems in their daily lives and produce useful scientific products ...

This is in line with Utami Dian. P (2018) that scientific literacy must be fostered as early as possible in its application.

Science education is still lacking in learning in this country. The quality of education, especially science education in Indonesia is still low when compared to other developing countries. Weak education in Indonesia, especially science education is shown by the low level of achievement scientific literacy in PISA (Program for International Student Assessment).) (Ani Rusilowati 2016) Student Assessment (PISA) in 2000, showed that Indonesia ranked 38 out of 41 countries participating in science literacy skills, in 2003 Indonesia ranked 38 out of 40 countries, while PISA 2006 in Indonesia ranked 50 out of 57 countries, and in 2009 Indonesia was ranked 60 out of 65 countries. Indonesian students gained scientific knowledge of literacy scores in 2000, 2003, 2006, 2009, 2012, they were 393, 395, 393, 383, 382 with the average score of all participating countries is 500. Scientific literacy is considered as a benchmark of high quality and low science education in a country.

Science literacy must be a priority educational goal because it plays an important role in the development of everyday human life, both individually and in groups. Educational experts in developed countries agree that scientific literacy is very important to be developed early on in educational institutions. (Wahab, 2016)

The ability of scientific literacy must be taught to all students, regardless of whether students will become scientists or not. This is so students have the habit of applying literacy patterns. Elementary school is an appropriate level of education for the introduction and development of scientific literacy because at this stage, students have a concrete mindset and move to an abstract level. Students are said to have scientific literacy when able to apply concepts or facts obtained in school with natural phenomena that occur in daily life.

This is in line with Sujana, A, et al (2017) that learning science in elementary schools must be built from the context of the surrounding environment, so that learning can be interpreted by students.

Agree with Nataria, W.S and Arya, S.N (2018) that the lack of information about science literacy and misconceptions experienced by elementary school teachers resulted in students contracting misconceptions and Indonesian students' scientific literacy tests in PISA showed unsatisfactory results. The role of elementary school teachers is very



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strategic to confirm student misconceptions and teach science literacy in elementary schools. E-portfolio media are worth testing and can be developed and can improve the ability of scientific literacy of elementary school teacher candidates (Wijayanti: 2016)

Research in SMP in Kudus about scientific literacy skills shows that scientific literacy is still below 50% for all categories.

Research conducted by Ar-dianto & Rubini (2015) that examines the applications of guided and problem-based learning models in the process of learning science about the scientific environment of middle school students' enthusiastic abilities. The results show that guided findings and problem based learning models can improve students' scientific literacy skills but the improvement is in the moderate category (41%).

n another study in seventh grade Islamic junior high school, Sukabumi about Project Based Learning (PPA) integrated with science, technology, neering, and mathematics (STEM) to improve student scientific literacy shows that STEM-based learning based on projects can significantly increase student scientific literacy on pollution material.

As the world experiences rapid industrialization and globalization, environmental pollution and other ecological problems are increasing rapidly. As a result, the importance of increasing the level of individual

environmental literacy. "STEM literacy is the ability to identify, apply, and integrate concepts from science, technology, engineering, and mathematics to understand complex problems and innovate to solve them.

Using the reverse class approach in English teaching lectures and concluding that using the reverse class approach has a positive effect on academic achievement, attitudes and levels of student learning participation. If students learn concepts in active learning conditions by relating them to the real world, their learning is more effective and consistent.

In line with Aweke Shishigu argaw's research (2017) the results of this study indicate that PBL can be more effective at problem solving skills than conventional teaching methods.

In the research conducted on new students majoring in biology, State University of Malang, which aims to determine the effect of learning strategies, academic knowledge and their interaction with scientific literacy that the issue based discussion model of socioscientific learning has the potential to improve students' scientific literacy abilities, previous students' academic abilities also affect the ability of students' scientific literacy, High ability students apparently can improve their scientific literacy abilities higher than low ability students (Rahmasiwi, 2018). Correspondingly, the research conducted on PGSD students and elementary school teachers showed



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that the low chemical literacy of elementary school teachers and PGSD students greatly affected the learning of science in elementary schools. If the chemical literacy of PGSD teachers and students is low, it is feared that the learning of science carried out in elementary schools is not good.

Furthermore, it is emphasized that by utilizing the real life conditions of students, they can improve their abilities related to scientific literacy abilities. Using local potential based learning in junior high schools can improve their learning achievement and scientific literacy skills with relevant material.

METHOD

The research method used was descriptive qualitative research. This study aims to describe the ability of scientific literacy of elementary school students. The subjects of this study were the fifth grade students of SDN 1 Tangkil, totaling 42 students, with 25 female students, 17 male students, Susukan District Cirebon District in the 2018/2019 school year. The instruments used were tests and interviews. The test is in the form of a brief description of the material of the ecosystem to determine the ability of students' scientific literacy, and interviews conducted with students about science learning.

RESULT AND DISCUSSION

Definition of science literacy

Science literacy is a person's ability to understand science, communicate science (oral and written), and apply scientific knowledge to solve problems so that they have a high attitude and personality towards themselves and their environment in making decisions based on scientific considerations.

PISA defines scientific literacy as the capacity to use scientific knowledge and abilities, identify questions and draw conclusions based on available evidence and data in order to understand and help researchers make decisions about the natural world and human interaction with nature.

According to PISA, scientific literacy 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 changes made to it through human activity" from the exposure, scientific literacy is defined as ability - the ability to use scientific knowledge, identify questions, and draw conclusions based on evidence, in order to understand and make decisions regarding nature and changes made to nature through human activities (Harlen, 2004).

More and more problems in the world related to science and technology more and more and every member of the community is required to be able to actively participate in discussions and be involved in the decision making process to solve problems. Problems faced in daily life



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are actually contextual problems that can be raised as stimulants to teach science literacy to students.

Elementary School students are in the development task category. The development task competency is a potential that can be fostered so that scientific literacy is mastered by students between the ages of 6 and 12 years. In giving assignments to students to solve problems by utilizing knowledge components that have been known or learned before, this is called the top down conception.

In line with that, Jufri Wahab (2016) that if a student has good scientific literacy then he will be able to understand well the six basic elements of science, namely: (1) science as inquiry, (2) basic science material, (3) science and technology, (4) science in personal and social perspectives, (5) history and nature of science, (6) unity of concepts and processes of science. Important indicators of scientific literacy to be developed through science lessons in schools include high-level thinking skills, understanding scientific inquiry, and concern for social issues related to science. Students who are literate in science will be able to apply knowledge about the concept of the science process to assess and filter issues and problems in the surrounding environment and be able to make science decisions for overcome problems in everyday life.

In line with that Permanasari (2010) describes the stages of science learning

based on the development of science literacy, which is based on the learning stages based on Chemie in context according to Netwig et al, in accordance with the criteria of learning based on scientific literacy developed by Holbrook (1998) as follows:

1. Contact phase

At this stage students are given an introduction to the concept or material to be studied. Introduction can be done by giving initial assignments, asking questions, discussions, demonstrations, and or exploring issues or events in the community that are sourced from articles or news.

2. Curriculum stage

At this stage students are given questions - questions that can arouse curiosity (curiosity).

3. The stage of concept formation

At this stage, students explore, form and consolidate concepts by a variety of methods such as practicum and discussion.

4. Decision making stage

At this stage students make decisions of the problems that arise at the stage of curiosity. Students are directed to make decisions according to the essence of the material, so that the resolution of problems that are raised is really understood by students.

5. The concept development stage

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6. Evaluation stage

At this stage students are given an assessment (test) to assess the success of their learning. The assessment carried out not only measures the ability of aspects of knowledge or content, but also aspects of the process, application context, and scientific attitude.

Based on the results of tests that measure the scientific literacy ability of elementary

school students, the results of the assessment results obtained are only 4.52% of students who scored 90, and 52.38% of students scored 70-80, and 42.86% of students who scored below 60. This shows that the scientific literacy ability of fifth grade elementary school students is still low.

Based on the results of interviews conducted with students, that students still find it difficult to answer the questions presented in the form of scientific problems. It can be concluded that the literacy ability of elementary students is still low.

CONCLUSION

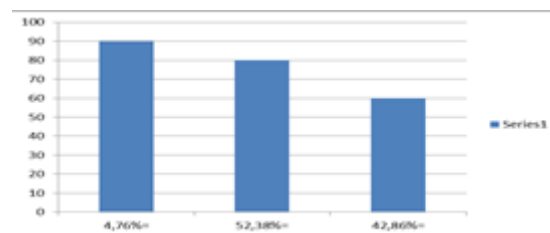


Figure 1 Diagram of the results of the test of scientific literacy

Based on the results of interviews and tests, students tend not to understand how to solve science questions based on problems, so it can be concluded that students' scientific literacy skills are still low. Factors underlying the low level of scientific literacy skills of elementary students include students not practicing critical thinking questions, such as the questions contained in PISA, the low attitudes of students towards science learning, and the curiosity of students' attitudes toward science learning materials that are lacking, as well as the

lack of understanding and ability of teachers towards scientific literacy.

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