Profile of Students' Scientific Literacy through Science Learning Based on the Pacu Jalur Kuantan Singingi

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Abstract: This study aims to determine the scientific literacy ability profile of students through science learning based on the Pacu Jalur Kuantan Singingi. This type of research is a quantitative descriptive research. The subjects of this study were students of class VIII SMP Negeri 3 Depok, Yogyakarta. The data collection technique used scientific literacy questions in the form of multiple choices totaling 5 items. The results showed that 67% of the indicators identified scientific facts or information were in the high category, the indicators analyzed data were 84% in the very high category, the indicators identified 100% of the scientific aspects in the very high category, the indicators justified the data 72% were in the medium category and the indicators provided arguments in a logical manner. scientific 94% with very high category.

Keywords: Pacu Jalur Kuantan Singingi; Science learning; Science literacy

Introduction

Science or commonly known as Natural Sciences is derived from the word natural science, natural means natural related to nature and science means knowledge. Science is knowledge that studies nature or knowledge that comes from phenomena that occur in nature (Gacheri et al., 2014). Science education is useful in real world situations (Laslo et al., 2021). In essence, science is a theory and concept that exists in aspects of human life (Kelly, 2014). Science education as an aid to students in developing reasoning skills (Marty et al., 2018). Science learning is learning that can provide direct experience or contextual learning to students by connecting content with real life situations, so that it can help students receive, store, and apply the concepts they have learned (Primayana et al., 2019).

Contextual learning can be done in science lessons, one of which is by integrating local wisdom so that students can relate science concepts to everyday life. Local wisdom or local culture has the potential to be developed in science learning. The natural and socio-cultural environment has a lot of potential that can be integrated into a teaching material that can be used as a complement to more contextual knowledge. The physical environment is very potential because of the diversity of flora and fauna and the application of simple technology used by the community (Parmin et al., 2015). Thus, learning that is integrated with local culture or wisdom is an effort to create a learning environment that links local culture to be part of the learning process.

Indonesia is also known as an archipelagic country because it has islands stretching from Sabang to Merauke that is why it is called Nusantara. Indonesia has a diversity identity in terms of various cultures, languages, customs and traditions. Each region in Indonesia has local wisdom or culture with its own characteristics.

One of the cultures that has continued to develop until now is in Riau Province. Riau has a cultural wisdom that is still sustainable, one of which is the racing activity. Pacu jalan is one of the traditional sports activities originating from the Kuantan Singingi area, Riau Province. The tradition of Pacu jalan or traditional rowing competitions is so well known that it has become a national event and is held once a year. Of course, this cultural wisdom must be protected and preserved (Tiaraputri et al., 2020).

The results of the analysis of science content in the culture of spur lanes include the concepts of matter, simple machines, work and energy, and several other concepts. The science concept can be integrated into science learning tools. The material for work, energy and simple machines is a physics lesson which is a field of science from Natural Sciences, physics is a subject that is difficult for most students to understand (Khumaidi et al., 2018). Science is often seen as abstract and far from everyday life (Altun et al., 2021). Physics lessons seem difficult for students because the concepts they have are abstract concepts. This is a challenge for educators to be creative in creating or developing an innovation that can keep students motivated and that physics lessons can be easily understood by students (Malina et al., 2021). Incorporating examples of physical phenomena that are familiar to students is one way that can help students, thereby providing a valuable connection between science and everyday life (Baquete et al., 2016).

Based on the 2018 PISA results, it shows that Indonesia obtained a science ability score of 396. Based on this score, Indonesia's performance appears to have decreased when compared to the 2015 PISA report (Fortus et al., 2022). The decline in scientific literacy skills should be carried out innovatively with the achievement of new innovations in scientific literacy by making science learning tools that are integrated with local wisdom. Innovation of integrating local wisdom into learning tools can train students' scientific literacy skills (Kriswanti et al., 2020). Efforts to integrate local culture or local wisdom into learning are important because it can help students to understand material concepts and it can also foster the character of students to be proud of their culture and preserve it (Juhaeri'ah et al., 2021). Scientific literacy is the ability to use knowledge, identify questions, scientific issues, scientific ideas in drawing conclusions (Kalkan et al., 2020). Scientific literacy has a concept so that students have the ability to solve problems and make decisions based on the knowledge they have understood and related to the surrounding environment (Sya`ban et al., 2016).

Research on the use of ethnoscience-based science learning tools found that learning tools had an influence on increasing students' literacy test results (Kriswanti et al., 2020). Subsequent research on the implementation of learning using integrated ethnoscience materials has been shown to increase student literacy (Perwitasari et al., 2017).

Based on the results of interviews at SMPN 3 Depok, it was revealed that: (1) there was a lack of innovative teaching materials, so that learning took place in a monotonous manner and became less interesting; (2) science learning presented in teaching materials so far is sometimes less contextual with the lives of students, so it becomes less relevant; (3) the

teaching materials used so far are usually sourced from those provided by the Ministry of Education; (4) science learning applied in schools has not integrated culture or local wisdom. Based on the problems found, a study was conducted on the scientific literacy profile of students through science learning based on the Pacu Jalur Kuantan Singingi Pathway, with the aim of knowing the scientific literacy abilities of students at SMPN 3 Depok, Sleman, Yogyakarta.

Method

The research method used in this research is a quantitative descriptive method. The focus in this study was to measure students' scientific literacy skills through science learning based on the Pacu Jalur Kuantan Singingi. The location in this research was conducted at SMPN 3 Depok, Sleman Yogyakarta. The research was conducted from 26 October to 10 November 2022. The sample selection was carried out using a simple random sampling technique with a total of 32 students. Students' scientific literacy abilities were measured using multiple choice test instruments in the form of pretest and posttest. The indicators of scientific literacy in the content aspect can be seen in Table 1.

Table 1. Content Aspect Science Literacy Indicators (O.E.C.D., 2019)

No. Question	Science Literacy Indicator
1	Identify the theories, ideas, facts, or scientific information provided
2	Analyze data
3	Identify scientific aspects
4	Justify data
5	Give scientific arguments

The research was carried out by providing an instrument consisting of five multiple-choice items based on indicators of scientific literacy in terms of content, the tests were carried out by students individually. Then, the data were analyzed using descriptive analysis. Calculation of the percentage of analysis using the following formula.

$$\text{Percentage} = \frac{\text{correct answer per indicator}}{\text{number of students}} \times 100\% \qquad (1)$$

The categorization of each component of scientific literacy can be seen in Table 2.

Table 2. Category Percentage of Scientific Literacy Ability (Bagasta et al., 2018)

Percentage (%)	Category
≤ 20	Very low
21 – 40	Low
41 - 60	Medium
61 – 80	High
81 - 100	Very high

Result and Discussion

The scientific literacy test was conducted at SMPN 3 Depok which was developed based on 5 indicators of scientific literacy with 5 questions. Test questions were given to 32 class VIII students. The test given consists of 5 contextual multiple choice questions based on real problems at the Pacu Jalur Kuantan Singingi. Based on the research conducted, the acquisition of post-test results can be seen in Table 3.

Table 3. Posttest Results of Students' Scientific Literacy Abilities

No. Indicator	Correct answer	Percentage (%)	Category
1	22	67	High
2	27	84	Very high
3	32	100	Very high
4	23	72	Medium
5	30	94	Very high

Based on the analysis can be seen in Table 1 the percentage of students' answers on each indicator. 1 (Identifying facts, or scientific information) obtained a percentage of 67% which is high. Next 2 (analyzing data) obtained a percentage of 84% classified as very high. Indicator 3 (identifying scientific aspects) the percentage of 100% is very high. Indicator 4 (justifying data) a percentage of 72% is classified as high and the percentage of students' answers on indicator 5 (providing arguments) a percentage of 94% is classified as very high.

Learning tools that are integrated with the local wisdom of Pacu Jalur are used to contextually discuss science concepts in the material of work, energy and simple machines. The science concept contained in the local wisdom of Pacu Jalur is presented sequentially in teaching materials in the form of handouts. The material on business, energy and simple planes in the handout can make it easier for students to understand the material because the material is presented contextually with the local wisdom of Pacu Jalur, so that it can help students practice scientific literacy skills in content aspects. The basis for selecting science content is because the integration is carried out only to find out the ability of students to understand the natural phenomena around them that are related to science lessons. Scientific literacy in the content aspect emphasizes the key concepts of science needed in understanding natural phenomena and a change that occurs in nature due to human interaction, so as to link the two things, a selection of knowledge is carried out that can understand and interpret experience in a personal, social context. and globally in the field of natural sciences (Khery et al., 2020).

Based on the results of the analysis that has been carried out, it is found that science learning uses integrated learning tools for Pacu Jalur local wisdom in each indicator, obtaining results that are in the vulnerable high to very high category, this is because students have been able to link knowledge with the phenomena around them and have been able make scientific conclusions. This is also due to the enthusiasm of students who are good at participating in learning so that they are able to influence students' understanding of material concepts (Kriswanti et al., 2020). The success of learning achievement also affects the level of success in learning, so the higher the learning achievement, the higher the success in learning (Maret et al., 2021). The same thing was also stated that the higher the achievement of students' science learning outcomes, the higher the students' literacy skills (Nugraha, 2022). Other research also suggests that a good response to learning also has a good influence on learning outcomes (Harahap et al., 2022).

Conclusion

Science learning uses science learning tools that are integrated with local wisdom Pacu Jalur to find out the literacy profile of students showing that SMPN 3 Depok students have good abilities with high to very high categories in scientific literacy in terms of content. This aspect of the content was chosen because the important point is how students are able to scientifically understand scientific phenomena related to everyday life. This achievement shows that the greater the student's response, the better the learning achievement and shows that students have been able to connect knowledge with phenomena in the surrounding environment. It is hoped that future research will make teaching materials that can be accessed via the internet or electronically in order to make it easier for students to access the material.

Acknowledgments

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