

Analysis of Junior High School students' data literacy in Ciamis with local potential kampung adat kuta

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Abstract. This study aims to analysis the profile of data literacy ability by utilizing the local potential in Kampung Adat Kuta for junior high school students in Ciamis. This study used quantitative descriptive study with the test method. Subjects were 235 junior high school students in the academic year of 2019/2020 determined using purposive sampling techniques. The description test instrument was used to measure data literacy with four indicators, namely: exploring data, selecting data, converting data and maintaining decisions or making new decisions; this instrument has been validated by several lecturers. Data analysis generated was quantitative percentage. From the results of this study, test instruments for data literacy in junior high schools in Ciamis showed that the highest indicator was exploring data (39.32%), while the poorest was maintaining or making new decisions from data (29.47%). The results of this study indicate that the data literacy ability of secondary school students in Ciamis falls into the category of poor, so we need attention from educators to overcome the poor data literacy ability by practicing data literacy ability.

Keywords: *data literacy, junior high school, local potential kampung adat kuta*

1. Introduction

Education is a conscious process of teaching and learning that does not only transfer the brain from the head of the educator to the students but also requires planning to realize active learning for students, so that they are able to develop their potentials [1], [2]. Education has an important role to prepare for community, nation and state life both domestically and globally [3], [4], so that Indonesian people are required to attend education. In Indonesia, there are regulations regarding education such as the Law No. 20/2003 Chapter IV in article 5 no. 1 stating that every Indonesian citizen has the same right to obtain quality education; and no. 5 stating that every citizen has the opportunity to improve lifelong education [5]. Many educators argue that all children must have the exact same education to the grade twelve [6]. This is related to the curriculum because each level has graduation requirements that have been set in the curriculum made by the government.

Currently, we are in industrial revolution era 4.0 which has experienced considerable changes in various fields [7], including education. This era requires humans who are always well-trained at all levels so that they can meet the ever-changing requirements of knowledge [8]. In the world of education, students are required to follow the development of the era so they must have the ability needed to live in this era. One of the new abilities that the students need to master is data literacy. Literacy is the ability to read and write which is very important to be developed in learning. Data literacy is related to the ability to read, analysis and make conclusions related to data or information obtained by students [9]. Data has a lot of information, which is structured in a complex manner



requiring the students' ability of proper observation to obtain information [10]. Data literacy is able to find quality data, data management, data accuracy, and data quotations [11].

Educators do not only focus on training the abilities that students must have, but also need to look at curriculum standards set by the government. Dealing with the curriculum, there is a regulation stipulated in the Law No. 20/2003 Chapter X which contains curriculum at various levels developed with regional potential or local contents [5]. Learning is expected to apply local potential integration that aims to introduce the surrounding area, learning from existing phenomena, understanding the surrounding environment by linking it to learning [12]. Ciamis has a variety of local potentials, however, they have not been well known by the community and have not made the Ciamis community itself interested. As a result, a lot of schools in Ciamis have outside school activities in other cities or commonly called study tourism. One of the local potentials found in Ciamis is Kampung Adat Kuta. It is one of the traditional villages in Ciamis, West Java, which runs sustainability for its environment [13]. It has rice fields, lakes, plantations, sacred forest, etc [14]. In addition, it has plantations such as wood trees, food plants, medicinal plants, ornamental plants planted by residents, and has a lot of animals in the garden. Rice fields in Kuta traditional village is rain-fed rice fields and there is a unique celebration carried out while harvesting the crops. Sacred forest in Kampung Adat Kuta is well-maintained even having strict regulations for those who want to enter this sacred forest; this forest has a lot of various plants and animals. There are also several lakes in the village where various creatures living there, one of which is fish. The fish comes from a government gift or the visitors who want to cultivate it.

Utilization of local potential can be linked to various fields of learning, one of which is science. Science is a group of knowledge that focuses on objects or natural phenomena that are the result of scientific thought or investigation [15]. Utilization of local potential in science is because science does not only increase the understanding of science itself, but also makes an understanding of its natural world, in the form of interactions with the overall order determined based on their views and values [16]. This research was conducted to answer the problem of how is the data literacy profile of secondary school students in Ciamis by utilizing the local potential in Kampung Adat Kuta?

2. Research method

This research was conducted on 235 students of grade 8 in academic year of 2019/2020 in science learning in the interaction of living things with their environment. There are various different high schools located in Ciamis. The school used for research is an A accredited school. The sample of the students had average ability and were at the same age. Analysis of data literacy profiles was obtained by examining the results of tests given to students. The test was essay developed by researchers and has been validated by the expert lecturers. The data literacy test instrument used four indicators consisting of 8 questions by utilizing the local potential in Kampung Kuta, Ciamis. The four indicators of data literacy were exploring data, selecting data, converting data and maintaining decisions or making new decisions.

This research was a descriptive study with a quantitative approach to obtain solutions to problems. Quantitative research provides openness to research results to be tested objectively. The test instrument results used the score range of 0-4 based on the assessment guidelines. Data analysis obtained from each test score was analyzed, while to see the percentage, conversion was used.

$$NP = \frac{R}{SM} \times 100\%$$

where NP = percentage score, R = score obtained, and SM = maximum score. Percentage of the results of the analysis on data literacy ability is converted into categories of grading levels. Categorizing the level of data literacy ability assessment can be presented in table 1[17].

Table 1. Category of assessment.

Percentage %	Category
80-100	Very Good
60-80	Good
40-60	Sufficient
20-40	Poor
0-20	Very Poor

3. Result and Discussion

This research was conducted to analyzed the initial profile of data literacy ability among high school students in Ciamis by utilizing the local potential in the Kampung Adat Kuta in science learning in the interaction of living things with their environment. There were four indicators of data literacy studied, namely: exploring data, selecting data, converting data, maintaining decisions or making new decisions. The indicators were modified referring to [11]-[19]. The test results were written in a description illustrating the level of data literacy as listed in Table 2.

Table 2. Percentage of data literacy indicators by utilizing the local potential of kampung adat kuta to students in Ciamis.

School (S)	Percentage of Data Literacy to Students (%)			
	Exploring data	Selecting Data	Converting Data	Maintaining decisions or making new decisions data
S1	41.02	41.58	28.17	28.63
S2	43.45	33.45	27.09	19.03
S3	30.34	39.73	35.68	36.28
S4	42.45	39.38	38.91	33.95
Total	39.32	38.53	32.46	29.47
Category	Poor	Poor	Poor	Poor

Notes: S1=School 1; S2= School 2; S3= School 3; S4= School 4;

Table 2. shows that the average achievement of data literacy ability of 235 students from various secondary schools in Ciamis was in the poor category of the four indicators in data literacy tested. The results of each data literacy indicator show that maintaining decisions or making new decisions from data was 29.47%, converting data was 32.46%, selecting data was 38.53%, and exploring data was 39.32%.

3.1. Exploring Data

Exploring the data in this study obtained an average score of 39.32% and fell into poor category. However, there were three schools feel into sufficient category, i.e. S1 of 41.02%, S2 of 43.45%, and S4 of 42.45%. Exploring data was indicated when students were able to answer or find information of data by studying and trying to understand it. The data was associated with scientific knowledge on the interaction of living things and the environment by utilizing the local potential found in the Kampung Adat Kuta. In this indicator, the question dealt with basic terms in science learning, but there were some students who did not know some basic terms in the material; so that it inhibited students in exploring data. Exploring data helped find an object that is sought from the data [20]. In the industrial revolution era 4.0, the educators expect students to have a desire to explore data so that it can encourage students to compete positively to achieve the best results [21].

3.2. *Selecting Data*

Selecting data in this study obtained the highest results compared with other indicators with an average of 38.53%. Although obtaining the highest results, it still fell into poor category. In this case, there was only one school that achieved sufficient category with a percentage of 41.58%.

In indicators of data selection, students were required to consciously collect and manage the data selected or generated appropriately and from the data must be interrelated to identify the data [22]. Students must be able to select a statement on the right data and students can separate the statements needed and not needed for the data. What made the students was in poor category was that students have not been able to select the exact statements needed and not needed related to data.

3.3. *Converting Data*

Data conversion in this study obtained the average results at four schools of 32.46% and fell into poor category. It indicated that students did not know the various types of diagrams or graphs. In addition, they had poor ability to explore and comprehend data in depth as seen from how students answered the questions.

Data conversion is the ability to create a type of data into a new form of data. Creating is the highest ability at bloom taxonomic level. The students needed to practice high-level ability to be able to change decisions and solve problems critically and creatively [23].

3.4. *Maintaining a Decision or Making a New Decision from The Data*

Maintaining a decision or making a new decision in this study obtained an average result at four schools of 29.47% and fell into poor category. There was one school that got 19.03% and fell into very poor category, i.e. School 2 (S2). The poor data literacy ability in indicator of maintaining a decision or making a new decision based on statements needed attention from educators in secondary schools. During the test, the students left the questions unanswered or put the wrong answers. This shows that students did not identify the data or did not identify the data correctly. Decision making should take logic and evidence [24]. Decision making requires a thought process to choose decisions through information gathering, weighing the good and bad decisions of various alternatives, analyzing them and finally choosing the best decision with rational reasons [25].

Data literacy by utilizing the local potential in Kampung Adat Kuta in Ciamis among junior high school students was still far from what has been expected. It was assumed that educators at schools merely focused on the understanding concepts and did not link local potential in learning processes. Educators in schools or colleges have not reflected the importance of data literacy in learning, though creating data in the community generally begins from the schools [26]. Data literacy is a new literacy type that must be mastered by students in the industrial revolution era 4.0 [27]. There are several ways to improve data literacy, one of which is by implementing the right approach. In general, the approach can provide a series of methods, resources and tools to teach data literacy [28]. Many various approaches in learning that can be used, there is one approach that is SETS in physics learning gives effective results in improving aspects of the new literacy into good categories [29]. Therefore, further research is needed to improve data literacy ability among students, by implementing the appropriate approach, learning tools, learning standards and learning models. The results of this study will be important for educators to make decisions in training data literacy skills for students in schools.

The Indonesian government has also adopted a curriculum to contain local potential in learning. Learning based on local potential can train and improve the ability or skills of students. It can be seen that learning based on local potential can improve skills, one of them is critical thinking because the learning system increases direct understanding and deep learning [30] and previous research revealed local potential can increase curiosity in students [31]. Local potential is very important if local potential is largely supportive and related to appropriate learning material. Local potential-based learning must use appropriate learning tools, so learning can get good results.

4. Conclusion

From the results and discussion above, it can be concluded that data literacy ability by utilizing the local potential in Kampung Adat Kuta was still in poor category. Educators should practice data literacy and utilize local potential in learning more often. That is because data literacy is one of the most important literacies mastered in the industrial revolution era 4.0 and it is required as stated in the education regulations.

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