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Relation between Ocean Literacy and Science Learning Outcomes of Class IX SMPN 04 Keruak, Lombok Timur 2022

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Article History

Received : January 12th, 2023 Revised : January 20th, 2023 Accepted : February 02th, 2023 Abstrak: Ocean has abundant resources which if we managed properly, can support the sustainability of life and ecosystems. Managing the ocean requires good ocean literacy. Ocean literacy is knowledge about the sea. Ocean literacy needs to be developed in a learning system to increase the next generation knowledge about the sea. In addition, science learning outcomes are important to know as a measure student's mastery of science to understand natural phenomena both land and sea, it is also important to see how the relationship between ocean literacy and science learning outcomes. This study aims to see how the level of student's ocean literacy, science learning outcomes, and how the relationship between ocean literacy and science learning outcomes at SMPN 4 Keruak. The results showed that the literacy level of class IX students at SMPN 04 Keruak was 24.49 then the results percentaged to 24% which was very low. Student learning outcomes obtained an average of 34.1 in the low category, no students had scores above the standart point so that value $P \le 59$. The relationship between ocean literacy and learning outcomes obtained a correlation significance value of 0.065 which is not correlated with a correlation coefficient of 0.240 which has a weak correlation. If viewed from the significance value, it is not correlated because the value obtained is greater than the rtable, but the difference is very small, it just 0.01 so that when viewed from the correlation coefficient it can be categorized as weakly correlated, not uncorrelated at all.

Keywords: Correlation, Ocean literacy, Science learning outcomes, SMPN 04 Keruak.

INTRODUCTION

Indonesia has the large potential for biological resources and non-biological resources to be utilized for the welfare of society (Susilawatia, 2020). The sea has many roles but is vulnerable to change. These changes are caused by two factor, natural factors and anthropogenic factors (Netty, 2016). Natural factors such as changes in sea water temperature, earthquakes, and others. Anthropogenic factors or those caused by humans can directly through exploitation of resources on a large scale, and indirectly come from a lack of knowledge and understanding of the sea (ocean literacy). (Lestari, 2013)

Ocean literacy is an understanding of the sea and how to manage the sea for human life, because the sea and humans cannot be separated (Cava, 2005). Indonesian ocean literacy is very concerning because it is almost zero, this is due to the lack of maritime issues in the curriculum taught in schools and quite a number of teachers who do not understand ocean issues (Prastianto, 2022). The national education curriculum does not contain maritime knowledge which results in a lack of knowledge, attitudes and positive awareness of students about the sea. There are no ocean subjects in the standard curriculum in Indonesia. Material and knowledge about the sea can be integrated into relevant subjects, especially biology by meeting ocean knowledge content standards that teachers can refer to when they develop their learning process.

(Irawan, 2018)

Scientific literacy and ocean literacy are needed in life to meet human needs to solve problems related to the land and sea environment. Based on the results of research by Ha (Haristy, 2013) that scientific literacy-based learning has an influence on improving student learning outcomes, this shows scientific literacy can improve student learning achievement. Ocean literacy is quite urgent if it is look at the current factual conditions.

The results of research by (Utami F.P., 2021) entitled Identification of Ocean Literacy Capabilities of Junior High School Students (SMP) in the Mandalika Special Economic Zone (KEK), Central Lombok shows that the level of ocean literacy of students in that location is in the low category. Besides that, science learning outcomes are important to know as a reference to the students' mastery of science learning to understand natural phenomena both land and sea (Yuliati, 2017). This condition is one of the important backgrounds for the author to conduct the same research but by looking at the relationship between ocean literacy abilities and students' natural science learning outcomes in different locations. The word literacy is synonymous with learning outcomes (Utami N.P, 2022). Good science learning outcomes are obtained through high scientific literacy skills to find out natural phenomena both land and sea, but in reality, science learning does not contain literacy related to the sea, so author are interested in researching about relationship between ocean literacy and science learning outcomes in SMPN 04 Keruak as a coastal school.

METHOD

This type of research is correlational quantitative research which aims to see whether or not there is a relationship between ocean literacy and student learning outcomes. The population in this study were all 9th grade students of Keruak 04 Junior High School (SMP)

with a total of 60 students divided into 2 classes. The sample selection in this study used a census sampling technique, which is all members of the population were used as samples. The data collection technique used to measure students' maritime literacy skills is a test instrument or questionnaire in the form of multiplechoice questions totaling 40 items referring to the 7 principles of ocean literacy by (Greely, 2008). Ocean literacy and reasoning about ocean issues: The influence of content, experience and morality taken from previous research by (Utami F.P., 2021). The data collection technique used to measure learning outcomes is a test instrument or questionnaire in the form of multiplechoice questions totaling 30 questions developed from KD IPA K-13 from an ocean literacy questionnaire containing 7 ocean principle.

RESULT AND DISCUSSION

Ocean Literacy Level Analysis

Percentage of ocean literacy result average value is calculated using the formula $S = R/N \times 100$. An average value of 24.49 is obtained, which is percentaged to 24% so that based on the ocean literacy level criteria table, the ocean literacy level of class IX students at SMPN 4 Keruak is categorized as very low, namely ≤ 54 %. For the average of the 7 essential principles of marine literacy, results are obtained as in the following figure.



Figure 1. Average 7 Essential Principles of Ocean Literacy

Based on Figure 1, the highest ocean literacy principle is the third principle with an

average of 21.67 and the lowest ocean principle is the fourth principle with an average of 10.5.

Ocean literacy can be interpreted as knowledge or skills related to the sea or activities in the sea area which includes the seabed and the land beneath it, water pools and the sea surface, including coastal areas and small islands (Indonesia, 2014). Ocean literacy is very important to instill in learning for elementary and secondary students (Santoro, 2017). Research has been conducted to see the ocean literacy level of SMPN 4 Keruak students. The research was carried out at SMPN 4 Keruak school in class IX, totaling 60 student samples using a questionnaire containing 40 multiple choice questions about the sea in order to obtain research results which were then processed and analyzed to produce data which resulted in an average ocean literacy score for class IX students at SMPN 4 Keruak of 24.49 which is then percentaged to 24%. In accordance with the ocean literacy level criteria according to (Purwanto, 2013), the percentage of ocean literacy level for class IX students of SMPN 4 Keruak is classified as very low because the average score is \leq 54%. The number of questions with the most correct answers is question number 22 classification of living things, while the number of questions with the fewest correct answers is question number 37 concerning the position of the Indonesian seas. Based on this, it can be seen that students have more mastery of basic ocean material and have more difficulty in answering questions that are not discussed or even not included in science lessons.

The ocean literacy level is also calculated on average for the 7 basic principles of ocean literacy to see the principles with the highest and lowest averages. The average literacy results on the 7 essential principles of ocean literacy obtained the highest ocean literacy principle, namely the third principle "The ocean is the main influence on weather and climate" with an average of 21.67 and the lowest ocean principle on the fourth principle "The ocean makes the earth habitable" with an average of 10,5. The cause of the highest average principle number 3 is due to principle number 3 which is directly related to the science material in the curriculum, for example about climate change. Ocean principle number 4 is the lowest because it is not covered in science lessons, but in general the 7 principles of ocean literacy based on the research results diagram do not have a very large difference between the principles of ocean literacy or it can be said that the average of 7

ocean principles at SMPN 04 Keruak has almost the same for all ocean literacy principles.

The low level of ocean literacy can be caused by several factors. One of the factors according to (Irawan, 2018) so far is that knowledge about the sea has not been the focus and has not received an adequate portion in the school education curriculum. There are no subjects specifically designed to address ocean knowledge. Small pieces of material that support ocean literacy are scattered in intersecting subjects, especially biology. In accordance with the facts on the ground, at SMPN 4 Keruak itself there is no special learning or local content specifically discussing the sea. Another factor is the negative impact of technology which causes students to be unable to get away from electronic devices and have less direct interaction with the surrounding sea. The next generation of the nation is expected to be literate in the sea so that they can build Indonesia as a world maritime axis and can contribute to protecting and protecting the sea in the future. (Fauville G, 2019)

Analysis of Science Learning Outcomes

Data analysis of student learning outcomes is calculated using the $E = \frac{n}{N} \times 100\%$. Obtained the calculation of learning outcomes as follows.

 Table 1. Student Learning Outcomes

Score	Respondent	Percentage
Pass (≥ 70)	-	0%
Not pass (≤ 70)	60	100%
Total	60	100%

Based on Table 1 above, student learning outcomes are categorized as low because the calculated value shows that no student has a score above the KKM so that a value of 0 is obtained where $P \le 59\%$.

Learning outcomes can be defined as changes in knowledge, skills, and attitudes of students obtained after carrying out the learning process which is measured using evaluation to obtain points. The results of learning science for class IX SMPN 4 Keruak were measured using a questionnaire containing 30 multiple choice questions obtained from KD IPA ocean literacy research by (Utami F.P., 2021). After calculating and analyzing the data, the science learning outcomes are obtained with an average value of 34.1 which is considered very small, categorized as low because the calculation value shows that there are no students who have a score above the

KKM so that a value of 0 is obtained where $P \le$ 59. Most number of 30 questions answered correctly in the questionnaire is number 24 which contains questions about tsunamis and the question with the fewest answers is question number 3 regarding taxonomic order. Based on this, it can be seen that students have more control over science material which is more generally discussed than natural science material which is more essential or specifically discussed in science learning.

Many factors can cause low student learning outcomes. The causes of low student learning outcomes come from external and internal factors (Aisyah, 2017), but most come from internal factors or from the students themselves. In line with this, according to research conducted (Zulfadewina, 2022) it was found that the highest factor causing the low student science learning outcomes was that the

factors from the students themselves were difficulties in learning science 58.33%, difficulty concentrating while at school 45.83%, difficulty understanding material delivered by the teacher 37.50%, and often delay assignments 37.50%, external factors concerned get ridicule at school 25.00%.

Correlation between Ocean Literacy and **Science Learning Outcomes**

Before the correlation test, first a normality test is conducted to know whether the data distribution is normal or not. The normality test in this study was carried out using the SPSS version 26 program, namely the Kolmogrov Smirnov test to determine the distribution of data from the ocean literacy questionnaire and science learning outcomes. The normality test was carried out via the menu Analyze->Regression->Linear->Nonparametric Test->1 sample K-S (Kolmogrov Smirnov). The results obtained are:

 Table 2. Normality Test

Table 2. Normanty Test				
		Unstandardized Residual		
N		60		
Normal Parameters ^{a,b}	Mean	.0000000		
	Std. Deviation	2.83663692		
Most Extreme Differences	Absolute	.098		
	Positive	.098		
	Negative	045		
Test Statistic		.098		
Asymp. Sig. (2-tailed)		.200 ^{c,d}		
		(Source: SPSS Version 26.0, 2022)		

Based on the results of data processing using SPSS version 26, a significance value (Asymp. Sig.) was obtained of 0.200 where the value was > 0.05, it can be said that the data is normally distributed and further parametric tests can be carried out.

After the normality test and the results of the distribution of data were normal, a correlation test was carried out. Analysis of the correlation between ocean literacy and science learning outcomes, using the SPSS version 26 program through the menu Analyze -> Correlate -> Bivariate with a significance value of <0.05 is said to be correlated and a significance value> 0.05 is said to be uncorrelated. The results are:

Table 3. Correlation test				
		OCEAN LITERACY	LEARNING OUTCOMES	
CEAN LITERACY Pearson	Pearson Correlation	1	.240	
	Sig. (2-tailed)		.065	
	N	60	60	
LEARNING OUTCOMES	Pearson Correlation	.240	1	
Sig. (2-ta N	Sig. (2-tailed)	.065		
	N	60	60	
			Source: SPSS Version 26.0, 2	

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(Source: SPSS Version 26.0, 2022)

Based on the results of data processing using SPSS version 26, a correlation significance value of 0.065 was obtained which was > 0.05, so that it can be said that ocean literacy and science learning outcomes are not correlated or have no relationship.

For more precision results test were continue with correlation coefficient

calculations. Tests were carried out using the SPSS version 26 program with guidelines for the degree of relationship. The correlation coefficient is determined by looking at the Pearson correlation value adjusted for the degree of correlation. The results are:

		OCEAN LITERACY	LEARNING OUTCOMES
OCEAN LITERACY	Pearson Correlation	1	.240
	Sig. (2-tailed)		.065
	N	60	60
LEARNING OUTCOMES	Pearson Correlation	.240	1
	Sig. (2-tailed)	.065	
	N	60	60
		(Sou	man SDSS Vancion 26 0 2022

 Table 4. Coefficient Correlation

Based on the results of data processing using SPSS version 26, the Pearson correlation value for ocean literacy and science learning outcomes is 0.240, which is based on guidelines for the degree of relationship between the Pearson correlation between 0.21 and 0.40, so it is said to be weakly correlated.

Correlational research of ocean literacy and science learning outcomes was conducted to establish a relationship between the two variables, "ocean literacy" and "science learning outcomes". Based on the results of research and data processing using SPSS version 26, a significant correlation value of 0.065 was obtained which was > 0.05, so that it can be said that ocean literacy and science learning outcomes are not correlated or have no relationship. For the correlation coefficient, the pearson correlation value for ocean literacy and science learning outcomes is 0.240, which is based on the guidelines for the degree of relationship between the Pearson correlation between 0.21 and 0.40, so it is said to have a weak correlation. If seen from the significance value, it is said that it is not correlated because the obtained value is greater than the rtable, but the difference is very small, namely 0.01 so that if seen from the correlation coefficient it can be categorized as weakly correlated, not not at all correlated.

The causes of the weak correlation or almost uncorrelated of ocean literacy and science learning outcomes, that is because in the science learning curriculum there is no special material about ocean literacy (Haristy, 2013). The science learning curriculum only discusses a little about (Source: SPSS Version 26.0, 2022)

the sea. In line with research conducted by (Hindrasti, 2018) states that explicitly, ocean and aquatic sciences are not found in the current school curriculum in Indonesia even though science subjects are closer to ocean than social, namely biology, then geography, physics then chemistry. Ocean literacy and science learning outcomes are weakly correlated with almost no relationship making these two variables unable to have a close relationship because science learning does not specifically contain ocean literacy and 7 maritime principles, and are only briefly discussed.

After conducting the research, it can be seen that the results prove that even though the students of SMPN 4 Keruak are students in the coastal area, their knowledge of the sea is very low, this is due to many factors. While in the field the researcher asked the area where the respondent lived, where only a few students actually lived on the beach, most of them lived in deeper areas in the countryside. Respondents stated that they played less on the coast. It was also found that the respondent whose father was a fisherman did not go to sea but instead worked as a construction worker. The results of the study show that the location of the school which is on the coast does not make students have high maritime literacy. Low learning outcomes are also influenced by many factors, one of which is because SMPN 4 Keruak is a school that has just developed from an open school where learning facilities and infrastructure support are inadequate. In line with research conducted by (Prasetyo, 2019) which states that the condition

of the school environment where learning is inadequate can lead to low student learning outcomes. The condition of the school is quite apprehensive because many classrooms are inadequate and there is a shortage of desks and chairs, forcing students to study in laboratories. Many students sit in threes of 2 chairs and have to share textbooks.

CONCLUSION

Based on the results of the study, it can be concluded that the percentage of the ocean literacy level for class IX students of SMPN 4 Keruak is classified as very low because the average score is \leq 54%. Student learning outcomes are categorized as low because the calculated value shows that no student has a score above the KKM so that $P \leq 59$ is obtained. Ocean literacy and science learning outcomes are not correlated or have no relationship. For the correlation coefficient, the Pearson correlation value obtained for ocean literacy and science learning outcomes is 0.240 to be weakly correlated. If seen from the significance value, it is said that it is not correlated because the obtained value is greater than the rtable, but the difference is very small, namely 0.01 so that if seen from the correlation coefficient it can be categorized as weakly correlated, not uncorrelated at all.

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