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Understanding Ocean Literacy and Nautical Love Among Students at Public Senior High School in Subang Regency

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ABSTRACT

This study discussed the level of understanding of ocean literacy which intended to identify the level of ocean literacy as an effort to foster nautical love in maintaining coastal and ocean preservation in Subang region. The research method used was descriptive with a simple regression test. The results of this study showed that the ocean literacy variable (66%) was in the high category and the nautical love variable was in the medium category (60%). In testing all variables using the T-test, the F test showed significant results, as well as the results of the simple linear regression test indicated that each variable largely influenced the other, with knowledge value (0.115), attitude value (0.468), and behavior value (0.144). The findings of this study revealed that most students have a good level of ocean literacy as well as in the aspect of knowledge and behavior in cultivating a sense of nautical love.

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1. INTRODUCTION

The development of ocean literacy in Indonesia has still not significantly developed as well as experiencing delays in the implementation of marine education (Maritime Education) if compared to countries such as Japan, Canada, England, etc. The majority of the population in coastal areas lacks a significant amount of nautical literacy which affects how the environment is managed (Utami F.P et al., 2021; Hindrasti, 2018).

The ocean aspect is related to everyday life, therefore it can be assumed that the integrated relationship between humans and the ocean is the main subject in the study of ocean literacy. The development of ocean literacy in Indonesia could be the key to Indonesia's success as a Maritime Axis country (Greely, 2008; Gadeng et al., 2020). While the majority of Indonesia's territory is the ocean, the growth pace in various fixed fields on the land is still the current main focus. Preferably, the developments in technology, resources, and so forth were also balanced in the ocean area to create a development synergy in various dimensions in Indonesia, including the ocean dimension.

Subang Regency is one of the regency cities located in the northern area of West Java Province with the northern part of the city directly adjacent to the Java Ocean.

This area has several advantages, especially in the maritime/nautical sector if it is managed wisely and supported by adequate human resources. But in reality, land conversion, mangrove ecosystem damage, trash pollution, etc. have been parts of environmental problems that occurred in the Pantura Subang region (Handiani et al., 2017).

The negative impacts resulting in ocean damage are a distinct issue that must also be methodically solved since it is a big responsibility for all elements of society, including policymakers and citizens, such as teachers and students (Runianto, 2019).

Based on the phenomenon above, ocean literacy needs to be of great concern to all components of society, including the Department of Education, with the specific goal of improving students' knowledge, attitudes, and behavior regarding maritime affairs to develop human resources capable of managing maritime affairs resources, it is essential to have a variety of marine-themed programs developed by the Ministry of Maritime Affairs and Fisheries (Runianto, 2019; AntaraNews, 2020).

The various facts and phenomena that have been described above serve as the basic objective as to why this research is needed, in the hope that the formulation of the research problem can find as follows: how the ocean literacy level of students of public senior high school in Subang Regency, how the behavior and understanding of students in fostering a sense of love for students in preserving the ocean in the northern coast of Subang Regency, as well as the contribution between ocean literacy and nautical love of students of public senior high school in Subang Regency.

If properly understood by the students, the concept of ocean literacy will be the foundation for developing a generation with a high social spirit that also has a marine environmental preservation behavior and can foster a sense of love for the motherland as well as the national unity, as one of them integrating the essential value of nautical love into the learning process of Geography. Ocean knowledge will encourage every individual to understand the importance of maintaining the ocean for the sake of human life (Baransano, 2011; Nurlaela, 2016).

1.1 Ocean Literacy

Ocean Literacy One's aptitude for studying and resolving marine issues for universal human objectives is known as ocean literacy. The history of ocean literacy was started in the twenty-

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first century, when researchers, activists, and academics initiated to promote ocean literacy starting from the level of formal education to university the higher education (Fauville, 2019).

Humans have a crucial role in environmental management and conservation efforts for marine environments (Jefferson et al., 2014). Payne and Marrero (2022) lists a number of core principles and ocean-related ideas that comprise the basic ocean literacy framework. Ocean literacy should begin to be implemented at the school at various stages, with the aim that each student can know intensely what marine science is as well as its influence on the development of life on earth.

Ocean literacy is organized into levels called K–12 that contain stages and sequences (Schoedinger et al., 2010). These scientific stages and sequences have rules that can be generalized to the students on an ongoing basis between academic content and expertise related to students in learning. Therefore, the scope of knowledge and the sequence of levels in Ocean literacy can provide facilities in guiding students for various related matters needed to understand each level and class, K-2 (ages 5-8), 3-5 (9-11), 6-8 (ages 12-14) and 9-12 (ages 15-18).

1.2 Ocean Literacy Indicators

Explicitly, attitudes, knowledge, and behavior are the three factors that can be used to study ocean literacy in order to determine a person's level of competency (Boubonari et al., 2013).

The seven principles of ocean literacy are as follows: (1) The earth has one large ocean with many features, consisting of five basic concepts (A-J), (2) Oceans and marine life form the features of the earth, consisting of five basic concepts (A-F), (3) Oceans are the determinants of weather and climate, consisting of five basic concepts (A-I), (4) Oceans make the earth livable, consisting of five basic concepts (A-J), (6) Oceans and humans are mutually dependent consisting of five concepts basic (A-J), and (7) The ocean is largely unexplored, consisting of five basic concepts (A-I) (Cava et al., 2005).

1.3 Marine Education

Marine education is a planned program aimed at changing behavior, developing individual personality, as well as increasing skills as the target object of scientific study is the maritime area of the Republic of Indonesia, to maintain the nation’s unity and integrity (OECD, 2013).

In marine education, several indicators can be implemented in the educational realm, namely (1) love for the maritime homeland, (2) maritime culture, (3) maritime history, (4) marine ecosystems, and (5) utilization of marine products (Indrawanto, 2013).

The values above can be instilled in stages in both formal and informal schools in Indonesia's coastal areas. Education about marine or maritime knowledge should be included in the school curriculum to fundamentally instill nautical love in the students. It is hoped that the students who have a great sense of nautical love will certainly inspire their enthusiasm to be proactive as well as their interest in maintaining the integrity of the Unitary State of the Republic of Indonesia and the preservation of the Indonesian oceans.

An interest in maritime means showing an indication of interest in maritime affairs. People who are interested in maritime affairs will pay attention to these issues since they are intrigued and want to learn more about them (Fuad and Musa, 2017; Agusta, 2017).

In Indonesia, it is appropriate to design a national education curriculum starting from elementary level education to higher level education, which must refer to the nation's needs for the next generation who understand the condition of the nation's resources, which one of them is the marine resources. However, up until now, the proportion of marine/maritime

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aspects in the curriculum of the national education system is still too limited, especially at the elementary to secondary level education. Hence the marine aspect is only found at the tertiary level with more varied options that the students can choose with the aim to make students become literate about Indonesia's natural wealth and have the pride of being Indonesia citizens as Indonesia is an archipelagic state (Pusat Kurikulum dan Perbukuan, 2017).

Marine science must be integrated into education, research, curriculum, textbooks, and assessments to create a generation that is literate about the oceans (Tran et al., 2010). If there are no specific subjects that study marine science, thus the solution that can be carried out is to link marine science with related subjects, such as Geography (Cudaback, 2008).

2. METHODS

This study aimed to identify the level of understanding of ocean literacy in Subang Regency in fostering a sense of nautical love by using a survey method with descriptive analysis. This study focuses on the knowledge, attitudes, and behavior of students using research instruments. The data collection technique has four variable measurements, namely: the level of knowledge, attitudes, behavior, and understanding of students' nautical love of preserving the ocean. A total of 240 social class XI students from six public high schools scattered in the Subang Regency area from South to North participated as the respondents from July to September to achieve the research objectives needed.

Table 1. Table of Research Respondents

No	School Name	Respondents
1.	SMA Negeri 1 Jalancagak	40
2.	SMA Negeri 1 Cisalak	40
3.	SMA Negeri 3 Subang	40
4.	SMA Negeri 1 Subang	40
5.	SMA Negeri 1 Pamanukan	40
6	SMA Negeri 1 Pusakanagara	40
	Total	240

Source: Research Data (2022)

The research instrument used in this study is an online questionnaire using Google Forms as the media. The questionnaires were used to measure the ocean literacy level of students. The variable of this study is Ocean literacy which consists of knowledge, attitudes, and behavior as well as students' understanding of nautical love.

The first questionnaire contained various kinds of questions related to the Ocean literacy knowledge variable with multiple choice options, while the second questionnaire consisted of questions used to measure the level of attitudes and behavior using a Likert scale (strongly agree, agree, disagree, disagree).

The analysis in this study used percentages to determine the level of ocean literacy and understanding of students' nautical love, then linear regression analysis was used with the aim of examining the influence of knowledge, attitudes, and behavior of students in fostering a love of the ocean. Through this regression analysis, it is possible to determine the contribution of the independent variables to the dependent variable.

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3. RESULTS AND DISCUSSION

3.1 Students' Ocean Literacy Level

Based on the results of samples taken from 240 students at public senior high schools in Subang Regency which were divided into three regions, which are the southern part of Subang with mountainous/high plain relief, the Subang City/city center area with relatively flat relief and the Subang in the northern part of the relief flat surface and nearby ocean.

The level of knowledge, attitudes, and behavior of ocean literacy can be interpreted in each region in **Tables 2, 3,** and **4**, while as a whole will be discussed in **Table 5** which discusses the total analysis of research results. As seen in **Tables 2, 3,** and **4**, the average shows that the respondents have a moderate level of ocean literacy, with the North Coast Region of Subang having a higher percentage of values than the Subang City and the South Region of Subang. The overall analysis shows that all ocean literacy variables are at a fairly good/moderate level, with a frequency of 160 (66%) students who have moderate literacy levels. It can be shown in **Figure 1** about map of ocean literacy levels based on the Subang region.

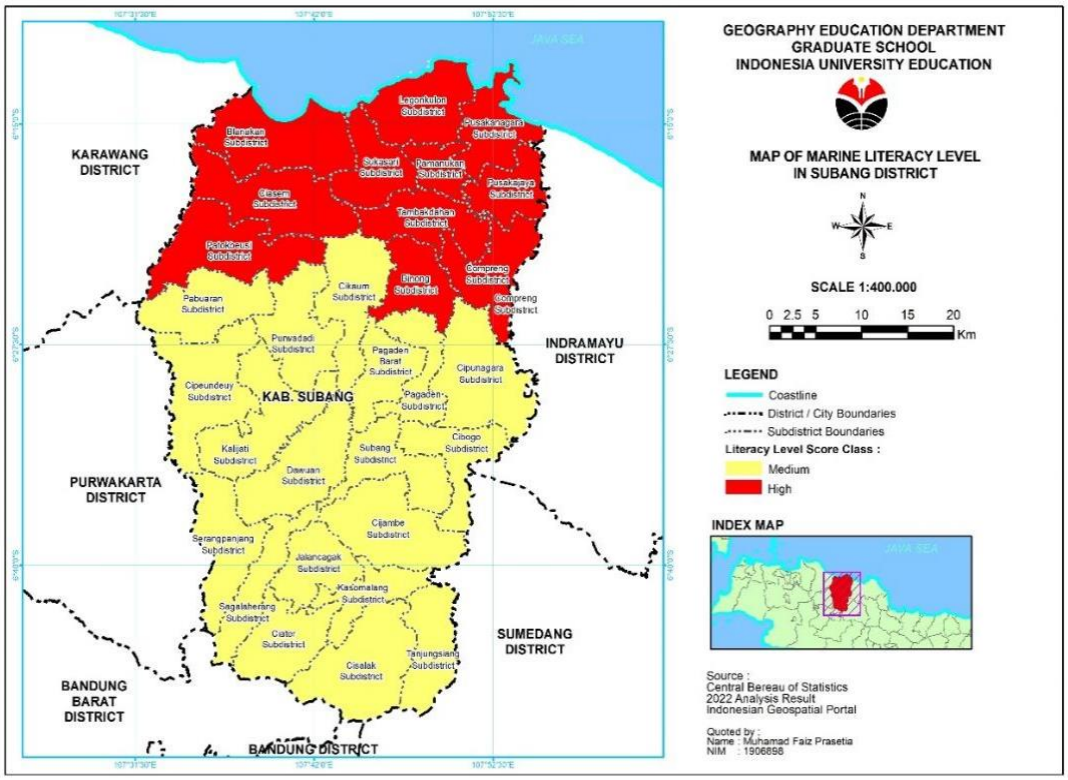

Figure 1. Map of Ocean Literacy Levels Based on The Subang Region

Table 2. Ocean Literacy Level of South Region of Subang

No	Score	Frequency	Percentage (%)
1	High (107-126)	9	11 %
2	Moderate (87-106)	38	47 %
3	Low (67-86)	33	41 %
Total of the Respondents		80	100

Source: Data Analysis (2022)

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Table 3. Ocean Literacy Level of Subang City

No	Score	Frequency	Percentage (%)
1	High (97-117)	8	10 %
2	Moderate (76-96)	64	80 %
3	Low (55-75)	8	10 %
Total of the Respondents		80	100

Source: Data Analysis (2022)

Table 4. Ocean Literacy Level of North Region of Subang/North Coast Region of Subang

No	Score	Frequency	Percentage (%)
1	High (95-108)	33	41 %
2	Moderate (81-94)	26	32 %
3	Low (67-80)	21	26 %
Total of the Respondents		80	100

Source: Data Analysis (2022)

Table 5. The Percentage Level of Ocean Literacy Variable

No	Score	Frequency	Percentage (%)
1	High (103-126)	26	11 %
2	Moderate (79-102)	160	67 %
3	Low (55-78)	54	22 %
Total		240	100

Source: Data Analysis (2022)

3.2 Student's Nautical Love

Table 6 displays behavioral and understanding data that can foster students' awareness of nautical love in Subang Regency with a total of 240 respondents. The results showed that 146 students (60%) have a high understanding of nautical love.

Table 6. Students' Nautical Love Behavior Level

No	Score	Frequency	Percentage (%)
1	High (34- 44)	146	60,8 %
2	Moderate (23-33)	87	36,2 %
3	Low (11- 22)	7	2,9 %
Total		240	100

Source: Data Analysis (2022)

3.3 The Contribution of Ocean Literacy in Enhancing Students' Nautical Love

Linear regression analysis was used as a data analysis tool for the third research objective, which was to examine the effect of ocean literacy in fostering nautical love. The regression analysis method was used because it examines the extent to which the influence of variables is described in the form of equations, known as the regression equation. Multiple regression

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analysis investigates the correlation between the dependent and independent variables. Therefore, this research hypothesis was based on the third research question, which was to what extent knowledge, skills, and behavior influence students' understanding and nautical love.

Based on **Table 7**, the results of the regression analysis between variables X and Y are shown. From these two variables, it can be concluded that the value of R^2 was 0.345. Students' nautical love was determined by the ocean literacy variable of 34.5%, while 66% was determined by other variables that were not explained in this study.

Table 7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.587[a]	.345	.336	4.03688

a. Predictors: (Constant), Ocean Literacy

Source: Data Analysis (2022)

Table 8. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2024.105	3	674.702	41.402	.000[b]
	Residual	3845.958	236	16.296		
	Total	5870.063	239			

a. Dependent Variable: Nautical_Love

b. Predictors: (Constant), Behavior, Knowledge, Attitude

Source: Data Analysis (2022)

Table 8 indicated that the p-value was 0.000 (F-test), which was less than 0.05. This figure showed that ocean literacy was proven to affect the nautical love variable. It was also concluded in **Table 9** about the unstandardization and standardization equations between X and Y variables by looking at the unstandardized coefficient and standardized coefficient columns. In addition, it revealed a value of 0.000 meaning that the existence of ocean literacy could influence the awareness of nautical love.

Table 9. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.301	1.895		1.742	.083
	Knowledge	.115	.057	.108	2.023	.044
	Behavior	.468	.051	.502	9.244	.000
	Attitude	.144	.035	.223	4.130	.000

a. Dependent Variable: Nautical_Love

Source: Data Analysis (2022)

Based on the explanation regarding the ocean literacy level above, it was found that each item studied had a fairly good percentage level. It can be concluded generally that the majority of respondents have a relatively good level of literacy with a percentage value of

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66%. This result indicated that students had good ocean literacy skills, starting from aspects of knowledge, attitudes, and behavior and as many as 26% of the respondents had a high ocean literacy level. However, based on the map of the ocean literacy level in Subang Regency, students in Northern Subang who were respondents to this study tended to have a higher literacy level compared to Subang City and Southern Subang.

The phenomenon above is inseparable from several factors, including students who have mastered knowledge about the ocean and its benefits to their lives, especially some of them who have been living in coastal areas. This is in line with the previous study's findings that an individual's knowledge, attitude, and behavior in controlling and utilizing marine potential might indicate whether or not they have a strong understanding of the ocean (Strang et al., 2007).

In the aspect of understanding and behavior of students' awareness of nautical love, seen from the data obtained, the implementation of nautical love reached a high category (60%). In other words, the respondents' understanding of nautical love and their behavior towards coastal environmental management was good. Moreover, 36% of the respondents reached a moderate level and the rest (3%) were at a low level.

The research findings above certainly could not be separated from several factors, starting from the knowledge they obtain from various media such as social media, counseling from agencies, and the environment where they live.

Meanwhile, the results of the linear regression analysis show the contribution between knowledge, attitudes, and skills in students' understanding of nautical love showing significant results for all variables. The knowledge aspect had a significance value of 0.044, the attitude variable had a significance value of 0.000, and the behavioral aspect had a significance value of 0.000 which means that all variables X can affect variable Y.

Variations in knowledge, attitudes, and skills play an important role in students' behavior and understanding of nautical love in managing and preserving the ocean. For ocean literacy to be intensified in the future, there is a need for more attention in socializing it to the implementation stage from all parties, including by instilling ocean literacy in the field of study or related subjects, one of which is the subject of Geography where in Basic Competence there are Hydrosphere Dynamics and Indonesia's Strategic Position as a World Maritime Axis. This opinion is supported by Siswanto's statement that marine science should be applied in several forms including subjects, extracurriculars/school culture, and integration in subject matters (Siswanto, 2018).

4. CONCLUSIONS

Based on the results of the previous explanation of the ocean literacy program, it is expected that students will begin to realize how important it is to protect or preserve the ocean because human activity cannot be separated from the ocean. Students are expected to have high knowledge, attitudes, and behavior as well as nautical love, including protecting marine ecosystems, being able to make good use of marine resources, knowing the maritime culture, and being able to delegate it to future generations.

5. RECOMMENDATIONS

This research still requires further study since the research on the theme of maritime affairs in Indonesia is still inadequate. Significantly, this research can be used as a reference for researchers, teachers, and policymakers in designing maritime policy. Based on the findings in this study, the researcher recommends the urgency for collaboration between related parties, including the Ministry of Education and Culture and the Ministry of Maritime

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Affairs and Fisheries to socialize the ocean literacy program so that Indonesian people can get to know more about the potential of Indonesia maritime and have a sense of nautical love.

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