



## Geo-Activity Learning: Apply Outdoor Study Based on an Ecological Approach to Environmental Literacy

Bram Rizaldi<sup>1\*</sup>, Pargito<sup>2</sup>, Risma Margaretha Sinaga<sup>3</sup>

University of Lampung

**Corresponding Author:** Bram Rizaldi [bramrizaldi2015@gmail.com](mailto:bramrizaldi2015@gmail.com)

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### ARTICLE INFO.

*Keywords:* Ecological Approach, Environmental Literacy, Outdoor Study, Geography

*Received :* 20, March

*Revised :* 25, April

*Accepted:* 29, May

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### ABSTRACT

The purpose of the study analyzes the effect of using outdoor study learning methods based on ecological approach on environmental literacy of students in high school. The method used in this study was an experiment with a posttest-only control group design. Meanwhile, the analysis technique used is in the form of inferential statistics using ANOVA and correlation analysis. The findings further conclude that the results of using outdoor study learning methods based on ecological approach have a significant influence on the level of environmental literacy which includes knowledge, cognitive skills and attitudes. However, it does not have a significant influence on the behavior of learners. This is very natural, because shaping individual behavior requires continuous and consistent treatment. The conclusion of the use of outdoor study learning methods based on ecological approach is proven to affect the level of environmental literacy of students.

## INTRODUCTION

Today's environmental problems can be caused by population increase, economic development and industrialization, pollution, urbanization, and global resource depletion (Barr & Gilg, 2006; Kollmuss & Agyeman, 2002; Loverioa et al. 2022). In line with Barnosky & Hadly (2016) stated that environmental problems such as air and water pollution, acidification of seawater, land degradation, and reduced biodiversity are environmental problems that often occur that cause environmental conditions around the world to deteriorate faster and worrying. Some address the basis of these ongoing problems largely related to people's lifestyles and their extensive activities that occur in the environment (Barr & Gilg, 2006; Kollmuss & Agyeman, 2002; Loverioa et al. 2022). Thus, building environmental literacy at the age of children and adolescents is very important in overcoming current environmental problems (Stevenson et al., 2013).

In response to this, contributions from the community are needed to be responsible in creating awareness, appreciation, and understanding of the importance of a healthy natural environment, which is realized through environmental literacy (Chu et al. 2007). However, this is not in line with the results of previous initial observations (Table 1).

Table 1. Results of the Preliminary Research Study

No.	Indicator	Average skor
1	Knowledge	72
2	Cognitive skills	69
3	Attitude	67
4	Behavior	65
	Amount	68,25

Source: Field Observation Data Results (2022)

Based on the preliminary studies that have been conducted above, it can be seen that in general the environmental literacy level of SMA Negeri 7 Bandar Lampung students still needs to be improved (average score of 68.25) with sufficient criteria. Environmental literacy indicators that have good criteria are only on knowledge indicators (average score 72), while other indicators namely cognitive skills, attitudes and pro-environment behavior only have sufficient criteria. This certainly illustrates that the environmental literacy level of SMA Negeri 7 Bandar Lampung students needs to be improved.

Seeing the condition of environmental literacy of SMA Negeri 7 Bandar Lampung students, a new breakthrough is needed in the teaching and learning process in the classroom, especially in geography subjects. Teachers must be able to find the right learning method and be able to improve the environmental literacy of students. One of the learning methods that is closely related to the environment is *the outdoor study* learning method based on *ecological approach*. Students are expected to be able to understand the material and be able to show real examples of the material. Through *the outdoor study* learning method based on *ecological approach*, the environment around the school can be used as a learning resource.

## **METHODOLOGY**

### **Research Design**

This research uses experimental research methods with a type of research in the form of Quasi experimental. *Quasi experimental design* is experimental research developed because of difficulties in obtaining a control group that can function fully in controlling outside variables that can affect experiments (Rukminingsih et al. 2020).

### **Subject Research**

The sampling technique in this study used *simple random sampling*. From five classes, one class was obtained to be given treatment (experimental class) and one class as a comparison (control class). At the time of sampling selection, all classes have the same opportunity, so the process is carried out by means of lottery numbers. Meanwhile, the research sample is presented in Table 2.

Table 2. Research Sample

No.	Class	Number of Learners	Deskripsi
1	XI Social 1	35	Experiment Class
2	XI Social 2	35	Control Class

### Research Instruments

Data collection techniques used in research are carried out with several techniques including tests, literature reviews, questionnaires or questionnaires and documentation studies. Meanwhile, the Research Questionnaire Instrument Grid in Table 3.

Table 3. Research Questionnaire Instrument Grid

No	Environmental Literacy Indicator	$\Sigma$ item
<i>Data Source Variable X</i>		
1	Penggunaan metode pembelajaran <i>outdoor study</i> berbasis <i>ecological approach</i>	20
<i>Data Source Variable Y</i>		
1	Knowledge	10
2	Cognitive skills	14
3	Attitude	12
4	Behavior	9
<b>Amount</b>		<b>65</b>

Source: (Hollweg et al., 2011; Szczytko et al. 2019)

### Hypothesis

The hypothesis in this study is as follows:

- Ha : The use of outdoor learning method based on ecological approach has an influence on the level of environmental literacy of students.
- H0 : The use of outdoor learning method based on ecological approach

has no effect on the level of environmental literacy of students.

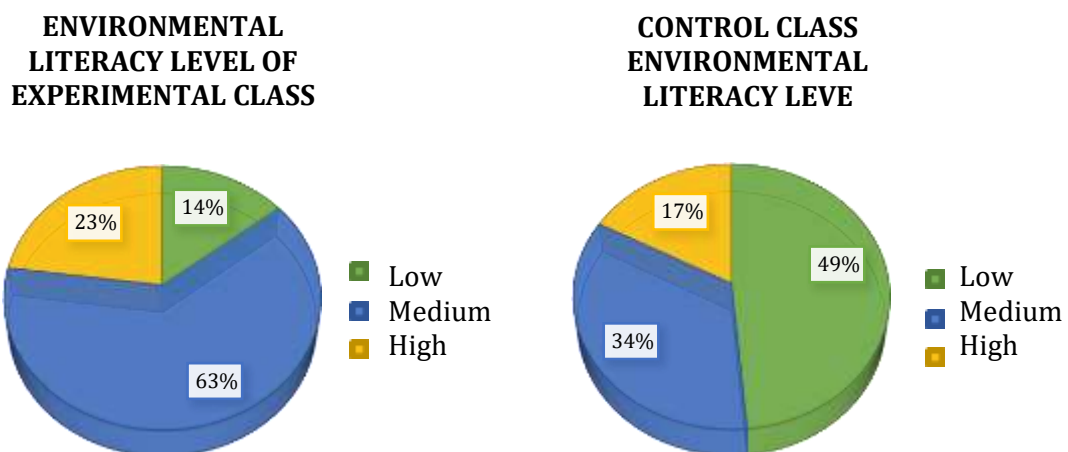
### Data Analysis Techniques

In this test was carried out to analyze the effect of using outdoor study learning methods based on *ecological approach* on environmental literacy, in this test two tests were carried out, namely non-inferential statistics and inferential statistics. Non-inferential statistics are used to analyze in general to determine the level of environmental literacy through descriptive measuring tools. While inferential statistical testing with measuring instruments used in the form of ANOVA Test through the help of SPSS. This test is to determine the effect between independent variables on the dependent variable. Meanwhile, the testing criteria are:

- If the significance value of the t-test  $> 0.05$  then  $H_0$  is accepted and  $H_a$  is rejected. This means that there is no influence between the independent variable and the dependent variable.
- If the significance value of the t-test  $< 0.05$  then  $H_0$  is rejected and  $H_a$  is variable and the dependent variable.

### RESEARCH RESULT

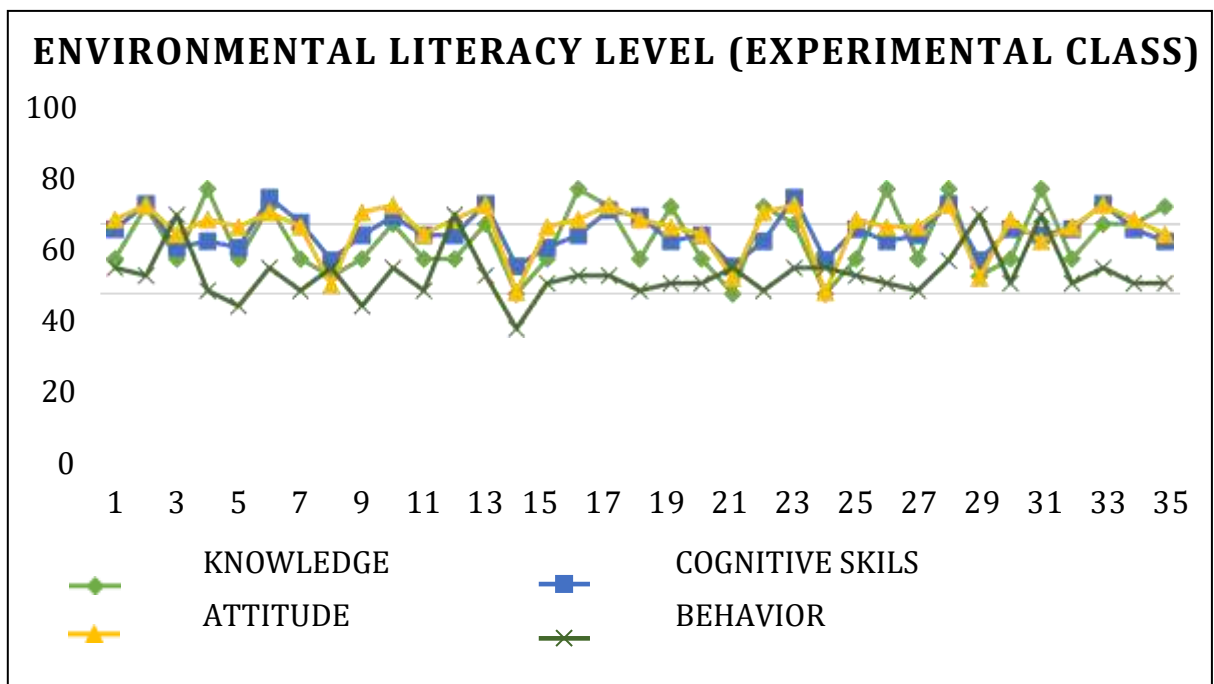
The use of the method of using the ecological approach-based outdoor study learning method is carried out to provide an overview with a descriptive statistical analysis approach through the help of SPSS in tracing the level of ecoliteracy of students in detail which has been described in Figure 1



**Figure 1.** Results of Comparison of Environmental Literacy Level of Experimental an control Classes

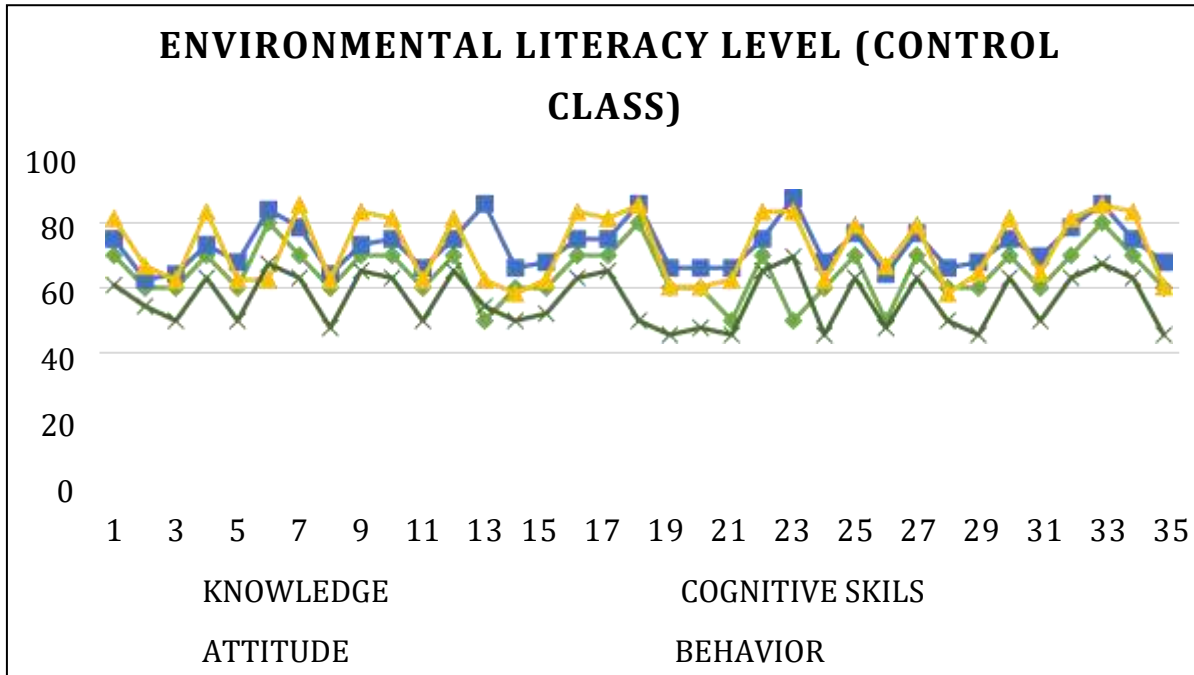
Source: Research Results (2024)

In the experimental review, several treatments were carried out based on the ecological approach with the outdoor study learning method, statistically it can be concluded if this method provides significant results, as interpreted in Table 4.2, if the level of environmental literacy of students is dominated by medium (62.86%) or as many as 22 students from the total total. This figure provides a category that cannot be concluded in a common thread of action in this study. Specifically, the level of environmental literacy based on indicators is presented in Figure 2.



**Figure 2.** Specification of Environmental Literacy Level of Students (Experimental Class) Source: Data Management Results (2024)

Based on Figure 2, it can be concluded that the average environmental literacy of students in the experimental class has a score of 74.82 with details of the average score of each indicator including knowledge (75.71), cognitive skills (77.88), attitudes (78.51) and behavior (65.65). Meanwhile, the level of environmental literacy in the control class is specifically described in Figure 3.



**Figure 3.** Specification of Student Environmental Literacy Level (Control Class)  
 Source: Data Management Results (2024)

Based on Figure 3, it can be concluded that the average environmental literacy of students in the control class has a score of 66.37 with details of the average score of each indicator including knowledge (64.57), cognitive skills (72.76), attitudes (72.14) and behavior (56.46). Meanwhile, statistical testing with ANOVA was carried out to analyze differences in environmental literacy levels from experimental classes as a group given treatment and control classes as a comparison group and or can measure the effect test of using outdoor study learning methods based on *ecological approach* has an influence on the level of environmental literacy of learners. This test is carried out with the help of SPSS, as the test results are described in Table 4.

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Knowledge	Between Groups	691.429	1	691.429	11.349	.001
	Within Groups	4142.857	68	60.924		
	Total	4834.286	69			
Cognitive	Between Groups	128.929	1	128.929	10.226	.002

Skills	Within Groups	857.371	68	12.608		
	Total	986.300	69			
Attitude	Between Groups	163.557	1	163.557	8.829	.004
	Within Groups	1259.714	68	18.525		
	Total	1423.271	69			

**ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
Behavior	Between Groups	78.229	1	78.229	7.668	.007
	Within Groups	693.714	68	10.202		
	Total	771.943	69			

Source: Data Management Results (2024)

Based on the test results in Table 4.6. it is interpreted if the ANOVA test is of 95% confidence significance. Starting from indicators of knowledge, cognitive skills, attitudes have a Sig. (2-tailed) value of < 0.05. Except behavioral indicators (Sig. (2-tailed) value < 0.05). This means that Ha is accepted and Ho is rejected. So it can be concluded that there is a difference in the average level of environmental literacy of students who are treated with *an outdoor study* learning method based on *ecological approach* with students as a comparison class. The significance of the average difference results can reflect the influence of the use of outdoor study learning methods based on *ecological approach* on the level of environmental literacy.

This correlation testing is before it is known if the use of *outdoor study learning methods* based on *ecological approach* can affect the environmental literacy of students with Sig. (2-tailed) < 0.05 values. To deepen the analysis in this study, the analysis was carried out by trying to test correlas (relationships), in order to know, identify and analyze how much influence the use obtained earlier. Meanwhile, this testing stage is carried out to use the help of SPSS which has been described in Table 5.

**Table 5.** Distribution of Environmental Literacy Level of Students

		35	
Outdoor Study	Pearson Correlation	60.924	Ekoliterasi
	Sig. (2-tailed)	Total	4834.286*
	Cognitive Skills	Between Groups	128.929

1	128.929	10.226*	.002
	Within Groups	857.371	
	12.608	35	35

\*. Correlation is significant at the 0.05 level (2-

tailed). Source: Data Management Results (2024)

Based on Table 5, it can be interpreted if the value of pearson correlation is at .370 or the use of *outdoor study* learning methods based on *ecological approach* has a relationship of 37% to the level of environmental literacy of students and 63% is another factor of students.

## DISCUSSION

Experimental research using treatment with outdoor study learning methods based on ecological approach. This experimental action contributes massively to the level of environmental literacy of students. In general first This analysis is the level of environmental literacy in the overall sample. The results of field acquisition with statistical descriptive analysis through frequency analysis illustrate that the level of environmental literacy has a dominance at a moderate level (52.86%) of the entire sample, while respectively the environmental literacy of students in the high and low clusters amounted to (15.71%) and (31.43%).

The results of this acquisition were studied in depth by analyzing the level of environmental literacy in the experimental class and the control class. In the experimental class, the level of environmental literacy obtained was dominated by medium (62.86%) or as many as 22 students, and respectively the high cluster was at the percentage (22.86%) and low level (14.29%). If we juxtapose the clustering of environmental literacy levels with the control class as a comparison class, it is known that the low literacy level dominates or is around (48.57%) compared to the middle level (34.29%) and high level (17.14%). So the interpretation of the acquisition data has a frequency of literacy levels far compared to the experimental class.

This in-depth study is not only proven in clustering analysis, but also used inferential statistics that synthesize if all environmental literacy indicators have Sig. (2-tailed) < 0.05 or successively indicators of knowledge (0.001 < 0.05), cognitive skills (0.002 < 0.05), attitudes (0.004 < 0.05) and behavior (0.007 < 0.05). Some experts in their research report that good knowledge and caring attitude are not necessarily followed

by good environmental behavior (VicenteMolina et al., 2013; Ergen et al., 2015; Aliman et al. 2019). Because, the process of shaping one's behavior in a pro environment is not an easy or instant thing with learning only a few times, it is necessary to do continuous learning in the long term as well.

So, the *core point* that can be concluded is that there are differences in the average level of environmental literacy of students which includes knowledge, cognitive skills and attitudes, except for the behavior of students who have been given special treatment with *outdoor study learning methods* based on *ecological approach* with learners as a comparison class. Following up on these findings, several researchers also released their findings as supporting relevance such as there are several efforts that can be made to optimize or improve environmental literacy in schools, one of which is by learning that provides direct experience supported by active learning using various methods and its implementation can be done outside the classroom (Environmental Literacy Task Force (ELTF), 2015; Derman et al., 2016; Castelli et al., 2015; Prasetyo, 2017; Ahmadi, 2022).

In addition, Andini (2018) in her research study said that learning using an approach outside the classroom is very supportive, because it has value to motivate student learning and as a classroom facility that has provided support for the learning process as a whole and added aspects of joy and pleasure for students in their learning. It is also believed that there is a relationship between the response and learning outcomes of students to the use of outdoor learning methods and the level of environmental literacy (Syamsiah et al. 2021).

Patrisiana et al. (2020) recommend that teachers (educators) can use *the outdoor study method* to strengthen environmental literacy. In the same study, there are also differences between experimental classes and control classes, which means that the learning approach "About, In, & For the Environment" with the PBL model can improve students' environmental literacy (Putri et al., 2024). This is also in line with Hipolito (2021), related to indoor and outdoor teaching to improve students' attitudes towards environmental literacy.

Basically, environmental literacy is knowledge of environmental concepts and the appropriate issues, dispositions, attitudes, motivations, cognitive abilities, skills,

self-confidence and behaviors to apply such knowledge to make effective decisions in a variety of environmental contexts (Igbokwe, 2016). Importantly, environmental literacy can foster student engagement to take pro-environmental actions while interacting with nature over time (López-Alcarria et al., 2021).

Building environmental literacy in children and adolescents is very important in addressing today's environmental problems (Stevenson et al., 2013). Air and water pollution, acidification of seawater, land degradation, and biodiversity reduction are environmental problems that often occur, causing environmental conditions around the world to deteriorate faster and alarmingly (Barnosky & Hadly, 2016). With environmental literacy, some of these problems are expected to be minimized and become the right strategy in overcoming the trend of environmental problems that exist today.

Outdoor study *activities* are a vehicle for sustainability education (Lugg, 2007). Meanwhile, environmental literacy in community elements is very necessary in order to maintain environmental sustainability (Hayati, 2020). Both premises have a correlation character that supports each other. That is, if the application or application of learning outside the classroom, the same is done in an applicative effort in the realization of environmental education. Remembering, environmental education is a process of introducing values and concepts with the aim of building the knowledge, skills and attitudes needed to understand and appreciate the relationship between culture and the bio-physical environment (Patrisiana et al. 2020).

Environmental education is one way to overcome environmental literacy. Environmental literacy is a major challenge in protecting ecosystems, educating about the importance of healthy ecosystems is essential for ecosystem protection (Bjorkland & Pringle, 2001). And it needs to be emphasized that environmental education can be effective if carried out outdoors or *outdoor learning* (Szczytko et al., 2018). This is supported by research results which state that one of the factors that affect students' environmental literacy ability is the learning process carried out by teachers in improving students' environmental literacy skills (Ayu & Sari, 2023).

## CONCLUSIONS

An experimental review found that there was a difference between the environmental literacy level of the experimental class and the control class. In general, both from the experimental class, the control class and the overall sample of students showed similarities if the level of environmental literacy was dominated at the middle or medium level. Specifically, if averaged the environmental literacy scores of students in the experimental class have a score of 74.82 with details of the average score of each indicator including knowledge (75.71), cognitive skills (77.88), attitudes (78.51) and behavior (65.65).

Meanwhile, if the average environmental literacy score of students in the control class has a score of 66.37 with details of the average score of each indicator including knowledge (64.57), cognitive skills (72.76), attitudes (72.14) and behavior (56.46). So there is a significant difference between the experimental class and the control class and when reviewing there is an increase in the environmental literacy of students from the previously proposed background from 68.25 to 74.82. That is, the use of integrated outdoor study learning methods based on *ecological approach* has an influence on the level of environmental literacy of students at SMA Negeri 7 Bandar Lampung.

The findings further conclude that the results of using the outdoor study learning method based on *ecological approach* have a significant influence on the level of literacy. The environment includes knowledge, cognitive skills and attitudes. However, it does not have a significant influence on the behavior of learners. This is very natural, because shaping individual behavior requires continuous and consistent treatment.

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