



## Environmental Literacy of Junior Secondary Students in Sri Lanka

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### Abstract

Human development without considering the impact on the environment has created numerous global issues, prompting policymakers to prioritize environmental protection. As environmental issues became pressing concerns, the importance of environmental literacy among citizens has gained recognition. Environmental literacy embodies a multifaceted understanding, awareness, and active engagement of addressing environmental challenges, encompassing knowledge, skills, attitudes, motivation, and responsibility towards fostering ecological balance, sustainable development, social justice, and nurturing environmentally conscious citizens and communities. A study was conducted to identify the environmental literacy skills of junior secondary students in Sri Lanka. A pragmatic, deductive, quantitative survey design was followed, and a sample of 816 students was selected using the stratified random sampling method. The Middle School Environmental Literacy Survey (MSELS) instrument was adopted for data collection. The study revealed that junior secondary students exhibit a low level of environmental literacy at 39.7%, with medium scores observed for ecological knowledge (61.5%) and issue identification (59.8%), and notably lower scores for other skills such as action planning (38%), verbal and actual commitment (37.6%), environmental sensitivity and feeling (25.2%), and problem-solving and prediction (15.3%). These findings highlight the imperative for Sri Lankan junior secondary curricula to prioritize environmental

literacy skills and adopt a more practical approach to teaching and learning. Modifications to pedagogical strategies are essential to enhance proficiency across all the areas of environmental literacy.

**Keywords:** environmental literacy; junior secondary students; environmental issues

### Introduction

Sri Lanka, despite its long history of environmental policy and laws, faces significant environmental challenges as a developing country undergoing rapid urbanization and the concentration of population in urban areas. The nation is vulnerable to a range of environmental issues, including deforestation, soil erosion, wildlife poaching, threats to wildlife habitats due to urbanization, coastal degradation resulting from mining activities, increased pollution levels, freshwater contamination from industrial waste and sewage runoff, improper waste disposal practices, air pollution, etc.

If environmental problems exist, then environmental protection at all levels of government and society is needed. As Grimmette, 2014 stated the rise in environmental issues had directed attention toward environmental education. When the world faces critical environmental problems, the education system must produce environmentally literate citizens who care about the environment and have sufficient knowledge about environmental issues to

behave responsibly (Tuncer et al.,2009).

The UN Sustainable Development Goals recognize the importance of environmental awareness under Goal 12, which deals with sustainable consumption, and production, and under Goal 13 which deals with climate change. Target 12.8 says “By 2030 ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature”. Target 13.3 says “improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning”.

The existing research on environmental literacy skills in Sri Lanka primarily targets senior secondary and university-level students (Kurupparachchi, 2023). Therefore, this study aims to assess the environmental literacy skills among the junior secondary students.

### Materials and Methods

The environmental literacy skills among the junior secondary students were assessed through the pragmatic, deductive, quantitative, cross-sectional survey design. The junior secondary grade is considered the “last best chance to avoid a diminished future and to develop the ability to think abstractly” (McBeth et al., 2008). Therefore, junior secondary

students were selected for this study. The research identified the following research questions: (1) What are the Environmental Literacy Skills scores of junior secondary students? and (2) Is there a difference in these scores among students from different provinces, school types, and grades?

A total of 816 student responses were collected through a questionnaire. Among these, 430 were female, while 386 were male. The distribution based on school types was as follows: 498 from 1AB, 202 from 1C, and 115 from Type 2 schools. Additionally, the breakdown by grade was as follows: 249 from grade 6, 164 from grade 7, 306 from grade 8, and 96 from grade 9. Notably, the sample represented all nine provinces in Sri Lanka.

The Middle School Environmental Literacy Survey (MSELS) instrument, which was developed by Marcinkowski *et al.*, 2008 was adapted to collect data from the sample. The instrument consisted of 7 sections. The first section covered general information about the respondents. Sections 2 through 7 each contained 5 questions pertaining to ecological knowledge, issue identification and analysis, action planning, verbal and actual commitment, environmental sensitivity and feeling, and problem-solving and prediction.

**Table 1.** Summary of instrument

Environmental Literacy skill	Parts of MSELS	Item Number	N Item	Score
Ecological knowledge	Part II: Ecological Foundations	5-9	5	20
Issue Identification and Analysis	Part VII A: Issue Identification Part VII B: Issue Analysis	10-14	5	20
Action Planning	Part VII C: Action Planning	15-19	5	20
Verbal and Actual Commitment	Part III: How You Think About the Environment	20-24	5	20
Environmental Sensitivity and feeling	Part V: You and Environmental Sensitivity Part VI: How You Feel About the Environment	25-29	5	20
Problem-Solving and Prediction	Part IV: What You do About the Environment	30-34	5	20

Mean, standard deviation, graphs were used to present and analyses the data.

## Results and Discussion

The average score of students is 39.7 which is considered as a failure score in the Sri Lankan education system and the students who only obtained pass marks on the ecological knowledge and issue identification and obtained a failed score for other skills.

**Table 2.** Average Environmental Literacy Score of Students %

Environmental Literacy skill	Average scores
Ecological Knowledge	61.5
Issue Identification and Analysis	59.8
Action Planning	38
Verbal and Actual Commitment	37.6
Environmental Sensitivity and Feeling	25.2
Problem-Solving and Prediction	15.3
Overall	39.7

The average scores for each environmental literacy skill are as follows: 61.5 for ecological knowledge, 59.8 for issue identification and analysis, 38 for action planning, 37.6 for verbal and actual commitment, 25.2 for environmental sensitivity and feeling, and 15.3 for problem-solving and prediction. Students tend to score higher in ecological knowledge, followed by issue identification and analysis, verbal and actual commitment, environmental sensitivity and feeling, and finally problem-solving and prediction.

Further the one-way ANOVA was conducted to test whether students' environmental literacy has an impact on province, school type, and grade.

## Impact of provinces on the student's environmental literacy

**Table 3.** Analysis of Variance (ANOVA) Table for the Effect of Province on Environmental Literacy Skills of students.

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Province	7	71.75	10.251	1.22	0.290
Error	807	6788.27	8.412		
Total	814	6860.03			

The results shows that p value >0.05, hence there is no significant difference among the provinces in the environmental literacy.

## Impact of school type on the student's environmental literacy

**Table 4.** Analysis of Variance (ANOVA) Table for the Effect of school type on Environmental Literacy Skills of students

Source	DF	Adj SS	Adj MS	F-Value	P-Value
School type	2	17.76	8.881	1.05	0.349
Error	812	6842.26	8.426		
Total	814	6860.03			

The results shows that p value >0.05, hence there is no significant difference among the school types in the environmental literacy.

## Impact of school grade on the student's environmental literacy

**Table 5.** Analysis of Variance (ANOVA) Table for the Effect of school grade on Environmental Literacy Skills of students

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Grade	3	672.1	224.046	29.36	0.000
Error	811	6187.9	7.630		
Total	814	6860.0			

The results shows that  $p$  value  $< 0.05$ , hence there is a significant difference among the grade of students in the environmental literacy. When the students' grade level increases, their environmental literacy also increases.

## Conclusion

Key environmental literacy skills include ecological knowledge, issue identification and analysis, action planning, verbal and actual commitment, environmental sensitivity, feeling, and problem-solving and prediction. Junior secondary students exhibit a low level of environmental literacy overall, with medium scores observed for ecological knowledge and issue identification and analysis, while notably lower scores were seen for other skills such as action planning, verbal and actual commitment, environmental sensitivity, feeling, and problem-solving and prediction. Agalya and Vinoharan (2024) further highlighted that Sri Lankan school syllabi places a greater emphasis on ecological knowledge and issue identification and analysis. Similarly, Weerasinghe (2023) pointed out that the Sri Lankan curriculum needs to prioritize improving students' skills and attitudes related to environmental literacy. This study also agrees that students are primarily mastering only these two skills.

## Recommendation

In the Sri Lankan context, studies related to environmental literacy in schools are limited. However, the school level is the ideal stage to cultivate positive attitudes among future citizens. Currently, in Sri Lanka, environmental literacy is indirectly incorporated into subjects such as Science and Geography, with a primary focus on developing knowledge rather than practical skills. These findings underscore the need for Sri Lankan junior secondary curricula to prioritize the explicit development of environmental literacy as a distinct subject, rather than simply embedding it within the existing syllabi. It is crucial to introduce and implement environmental literacy as a standalone subject to ensure

comprehensive skill development. Modifications to pedagogical strategies are essential to enhance proficiency across all aspects of environmental literacy and to better prepare students for real-world environmental challenges.

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