

Role of School Libraries in Conserving Sensitive Environments: A Case Study on the Bolgoda Ecosystem in Sri Lanka

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Abstract

Developing eco-sensitive citizens requires pro-environmental attitudes from childhood, with tailored educational strategies. This study examines how school libraries can facilitate environmental education on the Bolgoda ecosystem. A self-developed questionnaire was distributed to secondary-level students selected through stratified random sampling. Data from 841 respondents were analysed to assess environmental knowledge, information-seeking behaviours, and learning preferences. Results indicate minimal formal engagement with the ecosystem: while 74.3% of students had heard, only 28.1% had seen related media, 19% had visited, 5.5% had read, and merely 2.1% had formally studied. The average ecosystem knowledge score was notably low at 2.53 out of 10 (SD = 2.17, 95% CI [2.38, 2.68]), with 27.4% showing zero knowledge. Moreover, students' interests were strongly oriented toward recreational aspects (78.4%) rather than critical environmental interaction (8.2%). While 80% of students identified school libraries as potential venues for environmental education, only 60% visited them at least once a month, and a majority of 65.4% preferred practical learning through environmental excursions. Chi-square analysis indicated that active engagement methods, such as exposure to visual media ($P = 0.014$) and site visits ($P = 0.011$), were significantly associated with higher environmental knowledge levels than passive methods, including hearing ($P = 0.165$), reading ($P = 0.165$), and formal study ($P = 0.800$). This disparity highlights a fundamental mismatch between traditional information-sharing and learning preferences. Hence, it is recommended to revisit environmental education strategies by integrating practical learning approaches into school library programs to better align with students' learning preferences and enhance environmental knowledge.

Keywords: environmental education, school libraries, estuarine ecosystems

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Introduction

Ecosystems are essential to life on Earth, providing services that satisfy diverse needs. Climate change and biodiversity loss are two of the major twenty-first-century challenges that can irreversibly alter ecosystems and disrupt their services, ultimately affecting sustainable development (Förster, 2022). Effective conservation, management of the natural environment, and environmental education help sustain these services. According to UNESCO, environmental education aims to achieve three sustainable goals outlined in the Tbilisi Declaration (UNESCO & UNEP, 1977), and they are:

- To foster awareness and concern about economic, social, political, and ecological interdependence in urban and rural areas;
- To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment;
- To create new patterns of behaviour of individuals, groups, and society as a whole towards the environment.

Based on these three goals, environmental education can be defined as the process of helping individuals to enhance their knowledge, attitudes, and practices regarding the environment, and explore present and future environmental issues. Environmental education also enhances critical thinking, problem-solving, and effective decision-making skills in relation to the environment. The latest addition to Gardner's Theory of Multiple Intelligences (Davis et al., 2011) "Naturalistic Intelligence", described as vigilant about nature, can also be incorporated into environmental education. Further, Chapter 36 of Agenda 21, adopted in 1992 by the United Nations, calls for reorienting environmental education to achieve sustainable development from childhood (UN Department of Economic and Social Affairs, 1992). Millennium Development Goals in 2000 (Tariq et al., 2025) and the 2030 agenda for sustainable development emphasise the need to increase environmental awareness at all levels of society, providing access to information and knowledge across society, assisted by the availability of ICTs (UNESCO, 2020). Hence, environmental education is essential to cultivate environmentally literate and responsible citizens (Akinsemolu & Onyeaka, 2025).

The Millennium Development Goals and Sustainable Development Goals have recognised the role of libraries in developing environmentally literate citizens (Tariq et al., 2025). On the other hand, libraries have been positioned as enablers of development and partners with governments and development agencies by signing the Lyon Declaration on Access to Information and Development in 2014 (IFLA, 2014). In line with these, the Central Environmental Authority in Sri Lanka has developed environmental education and awareness programs to cater for preschool children to general public (Central Environmental Authority, 2024), and they can be listed as follows:

- Preschool Program
- Eco Club Program for primary school students
- National Environmental Pioneer Program (NEPP) for secondary school students
Environmental Pioneer Forums and Green Youth Club for school leavers
- Green Leader Program for student teachers at the National College of Education

The authority has also recognised the need to persuade children to utilise school libraries for environmental education and awareness (Central Environmental Authority, 2020). School libraries can serve as centres for environmental education by bridging the gap between formal curriculum requirements and local ecological knowledge (Elaturoti, 2018). Not limited to traditional classroom instruction, school libraries offer flexible learning surroundings where

students can engage with diverse information sources. In the context of local ecosystem conservation, school libraries can function as follows:

- as centres of local ecological know-how,
- as centres for raising awareness about threatened habitats,
- as facilitators of community-based conservation initiatives, and
- as promoters of environmental stewardship among school children.

Hence, this case study investigates the role of school libraries in enhancing environmental awareness and conserving the Bolgoda ecosystem through targeted information services and community engagement. The study examines the current library usage patterns, levels of environmental awareness, students' knowledge of the Bolgoda ecosystem, prior exposure to ecosystem-related information, information-seeking behaviours, and perceptions of how libraries might contribute to conservation education among school library users in the Bolgoda region. Specifically, this study addresses the following research questions:

- How frequently do school children visit school libraries, and for what purposes?
- What is their prior information engagement on the Bolgoda Ecosystem?
- What is the baseline level of environmental knowledge about the Bolgoda ecosystem?
- What are their preferred methods and topics for learning about this sensitive ecosystem?
- What role could libraries play in disseminating environmental information about local ecosystems?
- How can school libraries be strategically positioned to enhance environmental stewardship?

Literature Review

The ability of school libraries to develop environmental knowledge, attitudes and practices among younger generations is particularly influential for sensitive and threatened ecosystems. Also, raising awareness through school libraries directly contributes to several Sustainable Development Goals, highlighting a strategic avenue for ecosystem protection. The Bolgoda ecosystem, the largest natural freshwater lake in Sri Lanka, provides a compelling case for how library and information centres can foster environmental awareness. Located in the Colombo and Kalutara Districts of Sri Lanka's Western Province, Bolgoda supports rich biodiversity and provides essential ecological services, including flood regulation, water purification, fisheries, and recreation (Central Environmental Authority, 2013). However, it faces escalating threats from development, pollution, solid waste, mangrove destruction, and unsustainable fishing (Central Environmental Authority, 2025). Limited awareness, especially among local youth, further endangers the system (Seneviratne et al., 2024; Seneviratne, Darshani, et al., 2025; Seneviratne, Perera, et al., 2025).

Australia-Indonesia BRIDGE School Partnership Program between MAN Insan Cendekia Gowa and St. John's Grammar School is such an initiative (Inayah et al., 2025). It investigates how cross-cultural educational initiatives can enhance students' sustainability consciousness in Indonesia. Using a mixed-methods approach, a structured sustainability awareness questionnaire was administered to 96 students, and the results have been analysed using descriptive statistics and paired-samples *t*-tests. The findings indicate a statistically significant increase in students' sustainability awareness following their participation in the partnership's projects, including eco-brick making, virtual environmental discussions, and intercultural exchanges. Students demonstrated a greater sense of environmental responsibility and

demonstrated measurable changes in daily habits, such as reducing plastic use and promoting green practices.

Nurwindo et al. (2020) investigated the influence of the “Adiwiyata” eco-school program on environmental literacy. “Adiwiyata” was implemented by the Ministry of Environment in Indonesia to promote knowledge and awareness of environmental conservation among high school students in Malang, East Java. Surveying 275 students from four state high schools, data was collected through a questionnaire covering four aspects of environmental literacy (EL) defined as ecological knowledge, environmental effect, cognitive skills, and behaviour. The findings revealed that students' EL was significantly influenced by both school type and grade level. Students in Adiwiyata schools demonstrated higher levels of EL across most aspects, except environmental effect, where non-Adiwiyata students scored higher. Additionally, grade level was found to significantly influence cognitive skills, with higher grade students tending to demonstrate better overall EL. The study concludes that the Adiwiyata program positively impacts students' environmental literacy, suggesting that structured eco-school initiatives are effective in cultivating environmentally literate learners.

Public libraries have taken an active role in promoting environmental sustainability within their communities. Rajic (2024) highlights how the “Radislav Nikčević” public library in Jagodina, Serbia, designs and delivers a range of environmentally focused activities, including recycling workshops, environmental storytelling, arts and crafts, and community actions, particularly targeting preschool and primary school children. The study suggests that such programmes are effective in fostering a love of nature, stimulating creative thinking, and helping children develop a deeper understanding of environmental issues. Rajic has also emphasised the importance of evaluating these programmes through user experience surveys and participatory methods to ensure they remain relevant, effective, and responsive to the needs of young participants.

Donaldson (2024) examines the role of teacher-librarians in promoting eco-literacy and environmental learning in schools. She highlights the importance of collaboration between teacher-librarians, teachers, and students, as well as the value of experiential and outdoor learning in building students' connection to the environment. According to Donaldson, climate change education and eco-anxiety among young learners need to be integrated into the curriculum through initiatives such as Genius Hour projects and EcoSchools actions. Additionally, Donaldson discusses grants to support practical environmental projects, including composting and food-waste reduction, underscoring the role of library resources and programming in fostering environmental stewardship among students.

A survey was conducted among 206 public and 17 school libraries in Scotland to gather data on the various activities undertaken to achieve and promote sustainability, particularly Sustainable Development Goal 13 (SDG13) (climate change) (Chowdhury et al., 2025). It was revealed that 75% of the public libraries are running learning activities addressing climate change and sustainability. Seed libraries, lend-and-mend hubs, upcycling programmes, community garden projects, and sustainability-themed author events are some examples. On the other hand, 76% of school libraries provide a sustainability book collection and information for users; 41% also collaborate with teachers to educate students.

Previous studies have explored environmental education programmes, eco-school initiatives, and sustainability activities conducted by libraries. However, several gaps exist in the existing literature. Multiple research initiatives focus on structured environmental programmes, but

school libraries have received limited scholarly attention. Also, studies focus on environmental literacy outcomes rather than examining environmental information engagement. And most research addresses broad environmental issues such as climate change and sustainability, with relatively little emphasis on local ecosystems. However, lack of empirical evidence from the Sri Lankan context regarding the role of school libraries in fostering environmental awareness and stewardship has motivated this study to investigate on how school library user engagements with information related to the Bolgoda ecosystem. It explores the potential of school libraries in promoting awareness and actively contributing to environmental conservation.

Methodology

Study Area

The study was conducted within the Bolgoda ecosystem catchment area. It spans six Divisional Secretariat Divisions (DSDs) located in Colombo and Kalutara Districts of Western Province of Sri Lanka, namely Ratmalana, Moratuwa, and Kesbewa in Colombo District, and Panadura, Bandaragama, and Kalutara in Kalutara District.

Research Design

This study employed a quantitative research design, using a structured, self-administered questionnaire as the primary data collection tool. A quantitative approach was considered appropriate because it enables the systematic assessment of environmental awareness levels, information needs, and library usage patterns across a large and geographically dispersed student population (Ashley & Bill, 2006).

Population and Sample

The target population of this study involved school library users reading for the G.C.E. (Ordinary Level) and G.C.E. (Advanced Level) within the six DSDs of the Bolgoda region. The Table 1 indicates total population of school library users across the six DSDs, where required sample size was determined using Yamane's (1967) formula for finite populations (1):

$$n = N / (1 + Ne^2) \quad (1)$$

where n is the required sample size, N is the total population size, and e is the desired level of precision (set at 0.05, corresponding to a $\pm 5\%$ margin of error). Applying this formula to the total district-wise population yielded a minimum required sample size of 780 respondents, ensuring adequate representativeness.

Table 1
Study Population Eligible for the Survey

District	DSD	G.C.E. (Ordinary Level)	G.C.E. (Advanced Level)	Sub-Total	Total (N)
Colombo	Ratmalana	1939	916	2855	12173
	Moratuwa	3055	1408	4463	
	Kesbewa	3206	1649	4855	
Kalutara	Panadura	6190	4524	10714	22018
	Bandaragama	2231	1034	3265	
	Kalutara	4521	3518	8039	
				Total	34191

Source: Department of Census and Statistics (2024)

Proportionate stratified random sampling was then applied to allocate the sample across the six DSDs in proportion to the population size of each stratum, using the formula (2):

$$N_h = (N_h / N) \times n \quad (2)$$

where n_h is the sample size of the stratum, N_h is the population of the stratum, and N is the total population size. The resulting stratum sample sizes are presented in Table 2.

Table 2
Study Sample Allocation Among the 6 Divisional Secretariat Divisions

District	DSD	Population of Stratum (N_h)	Sample Size of Stratum	Total (N_h)
Colombo ($N = 12173$)	Ratmalana	2855	91	387
	Moratuwam	4463	142	
	Kesbewa	4855	154	
Kalutara ($N = 22018$)	Panadura	10714	191	393
	Bandaragama	3265	58	
	Kalutara	8039	144	
			Total	780

Data Collection Instrument

Survey data was collected using a self-developed, structured questionnaire comprising six sections. Section 1 collected demographic information, including age, gender, educational level, DSD, frequency of library visits, and primary purposes of library use. Section 2 assessed students' prior engagement with information about the Bolgoda ecosystem through five modes of exposure (Given et al., 2023): having heard, read, systematically studied, visited, or seen pictures and videos of the ecosystem. Section 3 consisted of ten *true/false/don't know* statements designed to measure factual knowledge of the Bolgoda ecosystem, from which a composite knowledge score ranging from 0 to 10 was derived. The statements were developed based on the standard descriptions of wetlands stipulated by the National Wetland Directory of Sri Lanka (Central Environmental Authority et al., 2006). Section 4 presented ten topics related to the Bolgoda ecosystem and asked respondents to select up to five topics they would most like to learn about, thereby capturing their information needs. Section 5 required respondents to indicate their single preferred format for receiving ecosystem-related information. Section 6

captured perceptions of the usefulness of the school library as a resource for environmental awareness, measured on a four-point scale ranging from *Not Useful* to *Very Useful*.

The questionnaire's internal consistency was evaluated prior to analysis using Cronbach's alpha across all 34 items. The resulting coefficient of 0.750 indicated an acceptable internal consistency of the instrument.

Data Collection Procedure

The survey was administered in school libraries across all six DSDs within the Bolgoda region following ethical approval and authorisation from relevant school authorities. Questionnaires were distributed to students during routine library visits and collected upon completion. Despite the minimum required sample size of 780, a total of 841 complete questionnaires were received, which may have increased the statistical precision of the estimates and support the representativeness of the sample.

Data Analysis

All responses were coded, entered, pre-processed, and analysed using IBM SPSS Statistics for Windows, version 27. The analysis followed a structured sequence. First, frequency distributions and descriptive statistics were generated to provide a demographic profile of respondents and to summarise responses for each questionnaire section. Second, a composite knowledge score was computed by summing the number of correct responses to the ten *true/false/don't know* statements in Section 3 (score range: 0–10). Third, mean knowledge scores by gender, educational level, and DSD were calculated, facilitating comparison of knowledge levels across subgroups. Finally, chi-square tests of independence were conducted to examine whether significant associations existed between respondents' knowledge scores and their modes of prior information engagement, as well as between knowledge scores and preferred learning formats. Additionally, a one-sample *t*-test was conducted to determine whether the population's mean knowledge score differed significantly from a hypothesised benchmark value of 5 out of 10. A significance level of 0.05 was applied to all inferential analyses.

Results and Discussion

Demographic Profile of Respondents

The demographic characteristics of 841 (participants from school library users across six DSDs of the Bolgoda region) are summarised in Table 3. Respondents ranged in age from 13 to 19 years, with the majority representing the 15-year (29.43%) and 16-year (33.41%) age groups, reflecting a predominantly mid-secondary school population with a mean age of approximately 16 years. The sample reflected a moderate male majority, comprising 494 males (58.81%) and 346 females (41.19%). Regarding educational level, most respondents were studying at the G.C.E. Ordinary Level (74.26%), while the remaining 25.74% were G.C.E. Advanced Level students, consistent with the typical enrolment structure of secondary schools in the region. Geographical distribution across the six DSDs: Ratmalana (12.1%), Panadura (20.2%), Moratuwa (19.5%), Bandaragama (9.2%), Kesbewa (20.0%), and Kalutara (19%), reflected a balanced representation except Bandaragama. It recorded a comparatively lower proportion of respondents due to the smaller student population.

Table 3
Demographic Profile of Respondents

Variable	Description	Percentage
Gender	Male	58.8
	Female	41.2
Age	13 years	0.5
	14 years	10.5
	15 years	29.4
	16 years	33.4
	17 years	11.6
	18 years	12.4
	19 years	2.2
Educational Level	G.C.E. (Ordinary Level)	74.3
	G.C.E. (Advanced Level)	25.7
DSD	Ratmalana	12.1
	Panadura	20.2
	Moratuwa	19.5
	Bandaragama	9.2
	Kesbewa	20.0
	Kalutara	19.0

Library Usage Patterns

Table 4 presents the frequency of library visits among respondents. Although most students visited the library either rarely (32.36%) or weekly (28.33%), 60% reported visiting at least once a month. This finding suggests that frequent library use is the dominant pattern among the sample, which may enhance library-based environmental awareness programmes.

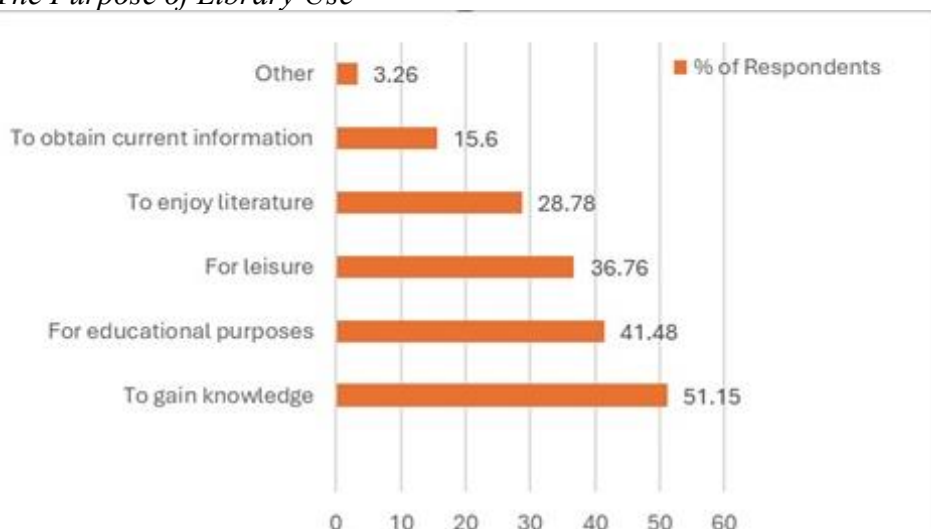
Table 4
Frequency of Library Visits

Frequency of Library Visit	Number	Percentage
Daily	49	5.98
Several Days a Week	156	19.05
Weekly	232	28.33
Monthly	51	6.23
Once Every Few Months	66	8.06
Rarely	265	32.36

Purpose of Library Use

As the purpose of library use was a multiple-response question, a total of 827 valid respondents across all sub-items were recorded. According to Figure 1, gaining knowledge was the most frequently reported purpose (51.15%), followed by educational purposes (41.48%), and leisure-related use (36.76%). Enjoying literature (28.78%) and obtaining current information (15.60%) were reported less frequently. The high proportion of knowledge-seeking and educational motivations among library users is an encouraging finding. It suggests that the student population already approaches the library as a resource for learning. Hence, library-based initiatives that include environmental conservation content can be successful.

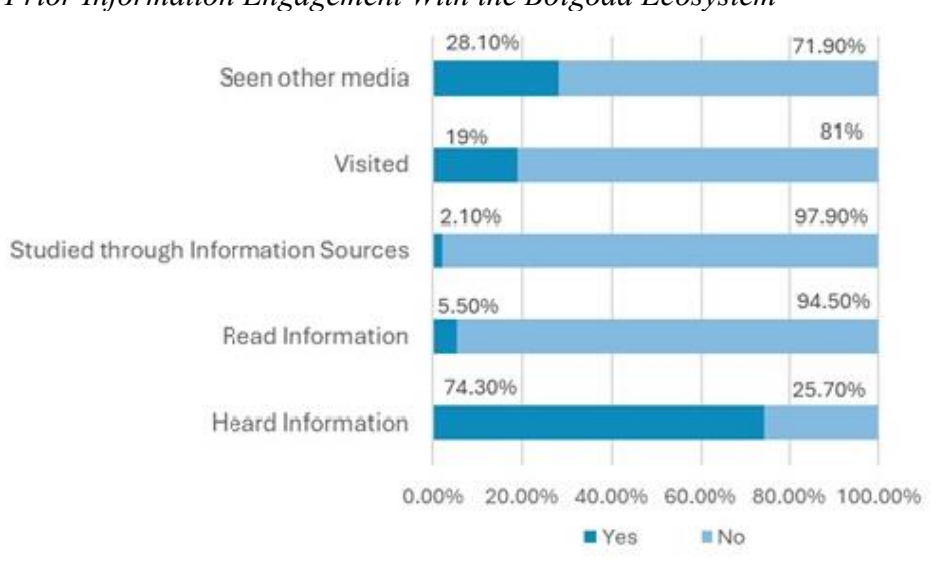
Figure 1
The Purpose of Library Use



Information Engagement

Section 2 of the survey assessed respondents' prior engagement with information on the Bolgoda ecosystem through five modes of exposure. As this was a multiple-response item, respondents could select more than one option. As shown in Figure 2, having *heard* information about the Bolgoda ecosystem was the most common form of engagement (74.28%). Having *seen pictures, photographs, or videos* ranked second (28.08%), followed by having *visited* the ecosystem (19.03%). In contrast, reading information was minimal (5.51%), and conducting *a systematic study* was the least reported (2.10%). These findings suggest that while a substantial proportion of the sample had some passive awareness of the Bolgoda ecosystem, deeper and more deliberate forms of engagement, such as reading, research, and direct visitation, remained limited. This highlights a clear gap that school libraries are well-positioned to address by providing curated reading materials, research resources, and organised field visits centred on the Bolgoda ecosystem.

Figure 2
Prior Information Engagement With the Bolgoda Ecosystem



Factual Knowledge on the Bolgoda Ecosystem

Section 3 assessed respondents' factual knowledge of the Bolgoda ecosystem through 10 *true/false/don't know* statements, yielding a composite knowledge score ranging from 0 to 10. Of the 841 respondents, 778 provided valid responses. The mean knowledge score was 2.53 (SD = 2.17), with a median of 2.00 and a mode of 0, indicating generally low knowledge levels. The score distribution was positively skewed (skewness = 0.421), with scores concentrated at the lower end (Figure 3). According to the results, 27.4% of respondents scored zero. Scores of 3 (15.2%) and 4 (13.2%) were the next most common, while only a very small proportion of respondents achieved high scores ($\leq 2.3\%$ scored 7 or above). Over 65% of respondents scored 3 or below, and over 89% scored 5 or below. The negative kurtosis value (-0.787) indicates a flatter-than-normal distribution, reflecting the wide spread of scores across the lower range (Figure 3). These findings reveal a generally low level of factual knowledge about the Bolgoda ecosystem among the study population, underscoring the significant potential for school libraries to play a meaningful role in improving environmental literacy through targeted information provision and conservation education resources.

Figure 3

Distribution of Knowledge Score

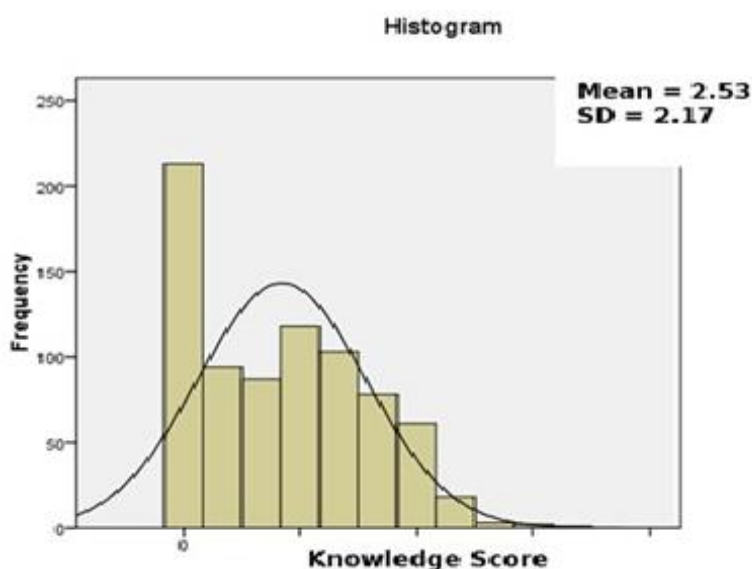


Table 5 presents mean knowledge scores by gender, educational level, and DSD. Female respondents demonstrated a slightly higher mean score (2.60) than males (2.48), though the difference was negligible. Regarding educational level, A/L students demonstrated a higher mean knowledge score (2.73) than O/L students (2.49), as expected, given that A/L students are older and have had greater academic exposure to environmental topics. Across DSDs, Panadura recorded the highest mean knowledge score (3.19), followed by Kesbewa (2.81) and Moratuwa (2.62). Kalutara recorded an intermediate score (2.42), while the lowest mean scores were observed in Ratmalana (2.22) and Bandaragama (2.19). These spatial variations may reflect differences in proximity of schools to the Bolgoda ecosystem, the quality and availability of relevant library resources, or varying levels of community engagement with conservation issues across the divisions.

Table 5
Mean Knowledge Score by Demographic Variables

Variable	Description	Mean Knowledge Score	Standard Deviation
Gender	Male	2.48	2.10
	Female	2.60	2.23
Educational Level	G.C.E. (Ordinary Level)	2.49	2.11
	G.C.E. (Advanced Level)	2.73	2.36
DSD	Ratmalana	2.22	2.12
	Panadura	3.19	1.68
	Moratuwa	2.62	2.26
	Bandaragama	2.19	1.87
	Kesbewa	2.81	2.11
	Kalutara	2.42	2.63

Association Between Information Engagement and Knowledge

Chi-square test results assessing the associations between respondents' knowledge scores and their five modes of prior engagement with information about the Bolgoda ecosystem are presented in Table 6.

Table 6
Significance of Knowledge Score and Information Engagement

Mode of Prior Engagement	X^2	df	P-value
Have Heard Information	14.168	10	0.165
Have Read Information	6.175	10	0.800
Have Conducted a Systematic Study	10.711	10	0.380
Have Visited the Ecosystem	23.311	10	0.010
Have Seen Pictures/Photographs/Videos	22.206	10	0.014

Of the five engagement modes tested, two showed statistically significant associations with knowledge score: having *visited* the ecosystem ($P = 0.010$) and having *seen pictures, photographs, or videos* of the ecosystem ($P = 0.014$). These findings indicate that experiential and visual forms of engagement are meaningfully linked to higher levels of factual knowledge about the ecosystem, suggesting that libraries should organise field visits, documentary screenings, and photographic exhibitions to improve environmental literacy among students.

The remaining modes, having heard information, having read information, and having conducted a systematic study, did not show significant associations with knowledge score. This suggests that passive or incidental exposure to information, even though reading, does not yield factual knowledge gains, highlighting the importance of active and immersive learning experiences in conservation education. However, Ambarwati et al. (2026) indicated that integrating ecological knowledge, ecological attitudes, and literary engagement provides a strong foundation for students' ecological behaviour among junior school students engaged in literacy and environmental conservation activities, such as eco-literacy clubs, green classes, etc.

Knowledge Score Benchmark Analysis

A one-sample *t*-test was conducted to assess whether the mean knowledge score differed significantly from a benchmark value of 5. The sample mean (2.53, SD = 2.17) was significantly lower than the benchmark ($P < 0.05$), with a mean difference of -2.470. The 95% confidence interval (-2.62, -2.32) indicates that the true population mean knowledge score lies between 2.38 and 2.68, well below the benchmark of 5. This finding provides strong statistical evidence that the level of factual knowledge about the Bolgoda ecosystem among school library users in the Bolgoda region is significantly below. This strengthens the earlier descriptive findings and highlights the critical need for targeted school library-based environmental education interventions to bridge the substantial knowledge gap identified in this study.

Information Needs on the Bolgoda Ecosystem

Section 4 of the survey asked respondents to select up to five topics they would most like to learn about. Table 7 presents the results. The most frequently selected topic was activities around the ecosystem, such as fishing, boating, and bird watching (78.40%), suggesting that respondents are primarily drawn to the experiential and recreational dimensions of the ecosystem. This was followed by interest in attractive locations within the Bolgoda environment (68.86%) and plant and animal species associated with the ecosystem (60.96%). Tourist accommodation around the Bolgoda Lakes ranked fourth (57.22%), indicating a notable interest in the area's tourism potential. Conversely, topics more directly related to environmental stewardship and scientific understanding, such as water quality (28.19%), environmental conservation efforts (34.41%), threats to the ecosystem (35.11%), and the size and capacity of the reservoir (36.33%), received lower levels of interest. The geographical location of the ecosystem (46.42%) and its historical or cultural significance (44.80%) recorded intermediate levels of interest. These findings are notable in the context of this study. While the high interest in activities, locations, and biodiversity presents clear opportunities for library-based environmental engagement, the relatively low demand for information on conservation efforts, threats, and water quality suggests that students have yet to develop a strong conservation-oriented information consciousness. This points to a significant role for school libraries not only in responding to existing information needs but also in proactively cultivating awareness of the ecological challenges facing the Bolgoda ecosystem through curated collections, programmes, and guided inquiry activities.

Table 7
Information Needs on the Bolgoda Ecosystem

Information Need	Selected Percentage
1. Geographical location of the Bolgoda Ecosystem	46.42
2. Size and capacity of Bolgoda Reservoir	36.33
3. Activities around the Bolgoda Ecosystem (fishing, boating, bird watching, etc.)	78.40
4. Attractive locations within the Bolgoda environment	68.86
5. Historical or cultural significance of the Bolgoda Ecosystem	44.80
6. Plant and animal species associated with the Bolgoda environment	60.96
7. Environmental conservation efforts related to Bolgoda	34.41
8. Tourist accommodations around the Bolgoda Reservoir	57.22
9. Water quality of Bolgoda	28.19
10. Threats to the Bolgoda Ecosystem	35.11

Preferred Format for Learning About the Bolgoda Ecosystem

Section 5 of the survey asked respondents to select a single preferred format for receiving information about the Bolgoda ecosystem. Accordingly, environmental tours were the most preferred format (65.38% of valid responses), making it by far the dominant choice among the sample. This was followed by social media (13.63%) and video presentations (13.03%). Lectures (5.67%), brochures/posters (1.57%), and other formats (0.72%) were the least favoured options.

A Chi-square test confirmed a significant association between knowledge score and preferred learning format ($P < 0.05$), indicating that respondents' knowledge levels varied meaningfully by preferred learning format.

The strong preference for environmental tours is a particularly significant finding. It indicates that school children are not passive consumers of environmental information. They desire active, place-based learning experiences that bring them into direct contact with the Bolgoda ecosystem. This aligns closely with the chi-square results, which demonstrated that having visited the ecosystem was significantly associated with higher knowledge scores.

Taken together, these findings highlight the potential for school libraries to take a facilitative role in organising or promoting environmental tours and to complement such experiences with supporting resources such as field guides, maps, and multimedia content. The secondary preference for social media and video presentations further suggests that digital and visual formats are well-suited to reaching this student population, presenting additional avenues for library-led environmental awareness initiatives.

Further, school librarians can also be facilitators for school projects carried out under Environmental Pioneer Programs and Environmental Eco Club programmes. By understanding their information needs and information-seeking behaviour, school librarians can ensure the supply of relevant information to solve specific problems and make effective decisions. Guiding and directing towards crowdsourcing or citizen science initiatives would add excitement and fun. They can be used as games (Murray, 2015). Librarians should think about how gamification could be applied in their context. As such, librarians can be coordinators in bringing projects to build citizen scientists, not only to monitor their surroundings but also to become partners in environmental conservation (Malalgoda & Sithara, 2025).

Perceived Usefulness of the School Library

According to the results of Section 6, the sample shows a positive perception of library usefulness in developing environmental awareness. The largest proportion of respondents rated the library as *Very Useful* (45.34%), followed by *Somewhat Useful* (38.60%). Collectively, over 83% of valid respondents viewed the school library as at least somewhat effective for fostering environmental awareness. A small minority indicated *No Idea* (12.01%) or rated the library as *Not Useful* (4.04%). The mean rating was 3.25 (SD = 0.82), with a median of 3.00 and a mode of 4, confirming that the central tendency of perceptions is strongly oriented towards the useful end of the scale. The negative skewness (-0.29) further corroborates this, indicating a leftward skew in responses toward the higher end of the scale.

The findings are encouraging and carry important implications for the study. The strong positive perception of library usefulness among school students in the Bolgoda ecosystem

catchment area suggests that libraries are already recognised as credible and valuable information resources within this community. This existing goodwill provides a sound foundation upon which school libraries can build targeted environmental conservation programmes, expand their collections of Bolgoda-related materials, and position themselves as active contributors to ecosystem literacy and conservation awareness in the region. As such, opportunities provided by the Millennium Development Goals and Sustainable Development Goals for libraries to develop as partners in achieving a sustainable environment can be fully utilized. It is also essential to address issues like inadequate facilities, limited financial resources, technological barriers, and a lack of awareness and understanding by librarians (Tariq et al., 2025).

Conclusion

The findings of this research reveal the extent to which school children understand the ecological value and vulnerabilities. It also identifies critical knowledge gaps that educational interventions must address, and students' preferred formats for receiving environmental information. The study provides actionable insights into designing effective library-based outreach programs while the research evaluates students' perceptions of libraries as potential platforms for environmental education, assessing credibility of institutions as useful sources of ecological information. By examining the intersection of information science, environmental education, and conservation practice through the lens of a specific threatened ecosystem and its surrounding communities, this research contributes to broader discussions about the role of libraries in addressing environmental challenges. The findings could apply to other sensitive ecosystems in Sri Lanka, where libraries currently remain as a largely untapped resources for conservation education. Furthermore, understanding what library users know, what they want to learn, and how they prefer to access environmental information represents the essential first step in transforming libraries from passive repositories into active agents of ecosystem conservation. Therefore, the outcomes of this study could make a significant implication for both library science and conservation practice.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author(s) used Grammarly (desktop application, version current as of 2026) for proofreading and language refinement.

References

- Akinsemolu, A. A., & Onyeaka, H. (2025). The role of green education in achieving the sustainable development goals: A review. *Renewable and Sustainable Energy Reviews*, 210, 115239. <https://doi.org/10.1016/j.rser.2024.115239>
- Ambarwati, A., Prasetyo, H. D., Murniatie, I. U., & Umamah, A. (2026). Literature-based environmental literacy for middle school students' understanding of local ecology in East Java. *Bioweb of Conferences*, 04013(2025), 1–9. <https://doaj.org/article/ac82954adfec4ea181758c56f2c3dedd#:~:text=https%3A//doi.org/10.1051/bioconf/202620904013>
- Ashley, P., & Bill, B. (2006). Quantitative and qualitative approaches to research in environmental management. *Australasian Journal of Environmental Management*, 13(2), 70–78. <https://doi.org/10.1080/14486563.2006.10648674>
- Central Environmental Authority. (2013). *Bolgoda environmental protection area*. https://www.cea.lk/web/?option=com_content&view=article&layout=edit&id=1162
- Central Environmental Authority. (2020). *Prioritisation of environmental research/study/survey relevant to the mandate of the Central Environmental Authority*. Central Environmental Authority.
- Central Environmental Authority. (2024). *Environmental education & awareness, promotion, information services*. <https://www.cea.lk/web/component/content/article?layout=edit&id=56>
- Central Environmental Authority. (2025). *Bolgoda lake*. https://www.cea.lk/web/?option=com_content&view=article&layout=edit&id=1806
- Central Environmental Authority, International Union for Conservation of Nature, & International Water Management Institute. (2006). *National Wetland Directory of Sri Lanka*. The Central Environmental Authority.
- Chowdhury, G., Jack, E., Macquarrie, K., & McNamara, S. (2025). LIS sector's contributions to climate action : Indicators for measuring success. *IFLA Journal*, 51(4), 982–997. <https://doi.org/10.1177/03400352241310528>
- Davis, K., Christodoulou, J., Seider, S., Gardner, H., Davis, K., Christodoulou, J., Seider, S., & Gardner, H. (2011). *The theory of multiple intelligences*. <https://ssrn.com/abstract=2982593>
- Department of Census and Statistics. (2024). *District statistical handbook*. <https://www.statistics.gov.lk/ref/HandbookDictionary#gsc.tab=0>
- Donaldson, T. (2024). Librarians as eco-literacy leaders: Creating a culture of environmental learning in the library. *Canadian School Libraries Journal*, 8(3), 12.

- Elaturoti, A. B. (2018). Sustainable development: The role of school libraries. *Library Philosophy and Practice (e-Journal)*, 2196.
<https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=5604&context=libphilprac/1000>
- Förster, J. (2022). *Linkages between biodiversity and climate change and the role of science-policy-practice interfaces for ensuring coherent policies and actions 02*.
https://unfccc.int/sites/default/files/resource/Thematic_Paper_2_Linkages_Between_Biodiversity_and_Climate_Change_and_the_Role_of_Science-Policy-Practice_Interfaces_for_Ensuring_Coherent_Po.pdf
- Given, L. M., Case, D. O., & Willson, R. (2023). *Looking for information: Examining research on how people engage with information*. Emerald Publishing Limited.
- IFLA. (2014). *Lyon Declaration on access to information and development*.
<https://repository.ifla.org/handle/20.500.14598/3498>
- Inayah, N., Muhtadi, A., & Fadriawan, A. A. (2025). Enhancing students' sustainability awareness through international collaboration: A study of the Australia-Indonesia Sister School Initiative. In *Proceedings of The Asian Conference on Education & International Development 2025*, 1–14.
- Malalgoda, D., & Sithara, D. (2025). *Can science and community save Jaffna's groundwater ?* <https://www.iwmi.org/blogs/can-science-and-community-save-jaffnas-groundwater/>
- Murray, T. E. (2015). The Human Nature of Information Work. *Journal of Library Administration*, 55(4), 320–328. <https://doi.org/10.1080/01930826.2015.1038933>
- Nurwindo, N., Amin, M., Ibrohim, I., & Sureb, S. (2020). The Role of eco-school program (Adiwiyata) towards environmental literacy of high school students. *European Journal of Educational Research*, 9(3), 1089–1103. <https://doi.org/10.12973/eujer.9.3.108918>
- Rajić, J. (2024). Green information literacy for children in the library - Raising environmental awareness for a greener future. In *Proceedings of 16th International Conference on Education and New Learning Technologies*, 6055–6062.
<https://doi.org/10.21125/edulearn.2024.1443>
- Seneviratne, T., Liyanaarachchi, W., & Jayawardena, C. (2024). Awareness on Bolgoda wetlands: A study on Panadura Public Library users. In *Proceedings of 18th National Conference on Library & Information Science 2024*, 42–43.
- Seneviratne, T. M., Darshani. R.A.D.N., Jayanthi, Y. C., Chandrasekera, W. U., & Jayawardena, C. L. (2025). Information needs for environmental awareness: A study on library contributions for Bolgoda ecosystem, Sri Lanka. In *Proceedings of the Annual Sessions WILDLANKA International Symposium*, 32.

Seneviratne, T. M., Perera, M. U. I., Peiris, M. L. W., Gurusinghe, C. W., Jayawardena, C. L., & Chandrasekera, W. U. (2025). Information engagement and environmental awareness on the Bolgoda ecosystem among public library users in the Kesbawa Divisional Secretariat Division, Sri Lanka. In *81st Annual Sessions of Sri Lanka Association for the Advancement of Science 2025: Special Session on Interdisciplinary & Transdisciplinary Studies*, 220.

UN Department of Economic & Social Affairs. (1992). *Agenda 21*.
<https://sdgs.un.org/publications/agenda21#:~:text=Agenda%2021%20is%20a%20comprehensive,human%20impacts%20on%20the%20environment>

UNESCO & UNEP. (1977). Tbilisi Declaration. <https://www.gdrc.org/uem/ee/tbilisi.html>

UNESCO. (2020). *Education for sustainable development: a roadmap*. UNESCO.
<https://doi.org/10.54675/YFRE1448>

Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper and Row.

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