

A Comparative Study of Environmental Awareness among Secondary School Students in Government and Private Schools in Uttar Dinajpur District of West Bengal

Ananda Chandra Roy¹ and Dr. Mahesh Kumar²

PhD Research Scholar¹, Assistant Professor²

Department of Education¹²

Om Parkash Jogender Singh (OPJS) University, Churu (Raj.), India¹²

Abstract: *Abstract: Environmental degradation has emerged as one of the most critical challenges confronting contemporary society. Issues such as air and water pollution, deforestation, biodiversity loss, climate change, depletion of natural resources, improper waste disposal and unsustainable consumption have created an urgent need to develop environmental awareness among younger generations. Schools have a particularly important role in this process because secondary school students are at a formative stage of intellectual, social and behavioural development. Environmental awareness at this stage can influence not only students' understanding of environmental problems but also their attitudes towards conservation and their willingness to participate in environmentally responsible practices. Against this background, the present study proposes to examine and compare the level of environmental awareness among secondary school students studying in government and private schools in Uttar Dinajpur district of West Bengal.*

The study adopts a descriptive-comparative research design. For the proposed study, secondary school students of Classes IX and X constitute the target population. A sample of 200 students, comprising 100 students from government schools and 100 students from private schools, may be selected through stratified random sampling from selected schools of Uttar Dinajpur district. Environmental awareness may be assessed through a standardized environmental awareness scale covering major areas such as causes of pollution, conservation of soil, forests and air, energy conservation, human health, and wildlife conservation. Descriptive statistics such as frequency, percentage, mean and standard deviation and inferential statistics such as the independent-samples t-test may be employed.

The proposed analysis is expected to provide evidence regarding whether school management is associated with differences in environmental awareness. A model analysis presented in this paper indicates a higher mean environmental-awareness score among private-school students than government-school students. However, the interpretation suggests that school type alone should not be treated as the sole determinant of environmental awareness; exposure to environmental activities, teaching-learning practices, family background and opportunities for experiential environmental education may also contribute. The study is particularly significant because earlier work in North Bengal identified weaknesses in practical and field-based environmental education, including in Uttar Dinajpur. The study therefore recommends strengthening activity-based environmental education, field observation, school environmental clubs, waste-management activities, plantation programmes and locally relevant environmental projects in both government and private schools.

Keywords: Environmental awareness, secondary school students, government schools, private schools, environmental education, Uttar Dinajpur, West Bengal, comparative study.

I. INTRODUCTION

The environment constitutes the physical, biological and social surroundings within which human beings and other living organisms exist. Human survival and development are fundamentally dependent upon environmental resources

Copyright to IJAR SCT

www.ijarsct.co.in

such as air, water, soil, forests, biodiversity and energy. However, rapid population growth, industrialization, urbanization, excessive consumption of natural resources and inappropriate patterns of production and waste disposal have significantly increased environmental pressure. Consequently, environmental problems are no longer restricted to particular geographical areas; they have become interconnected local, regional, national and global concerns.

Environmental problems such as air pollution, water contamination, soil degradation, deforestation, biodiversity loss, climate change, plastic pollution and depletion of natural resources directly affect human health and quality of life. Addressing these problems requires technological and policy interventions, but such measures cannot be fully effective without public awareness, environmental responsibility and behavioural change. Education is therefore an important instrument for developing environmental consciousness.

Environmental education is intended not merely to provide factual knowledge about nature but also to develop sensitivity, attitudes, values, skills and participation necessary for responsible environmental behaviour. The traditional concept of environmental education has gradually moved from simple knowledge transmission towards experiential, participatory and problem-solving approaches. Students need opportunities to observe their surroundings, identify environmental problems and participate in practical activities through which environmental knowledge can be translated into responsible action.

The school is one of the most important institutional environments for developing such awareness. Secondary school students are particularly important because they are sufficiently mature to understand relatively complex environmental relationships while simultaneously developing habits, values and social attitudes that may continue into adulthood. Environmental education at this stage can therefore contribute to the development of environmentally responsible citizens.

In the Indian educational context, environmental education has received considerable attention through curriculum development, environmental studies, science education and activity-based learning. The National Curriculum Framework and subsequent educational initiatives emphasized the importance of relating learning to the learner's immediate social and natural environment. More recently, the National Education Policy 2020 has also emphasized experiential learning, multidisciplinary education and education connected with sustainable development.

However, the mere inclusion of environmental topics in a curriculum does not necessarily ensure a high level of environmental awareness among students. The effectiveness of environmental education depends upon the quality of classroom teaching, availability of teaching-learning materials, practical activities, field visits, environmental clubs, school infrastructure, teacher preparedness and opportunities for students to participate in environmental programmes.

This issue becomes especially relevant when government and private schools are compared. Government and private schools may differ in terms of infrastructure, teaching resources, student socioeconomic backgrounds, access to extracurricular activities, use of educational technology and opportunities for environmental projects. Such differences may potentially influence students' environmental awareness. At the same time, it would be inappropriate to assume beforehand that private-school students necessarily possess greater awareness. Government schools may also provide strong opportunities for community-oriented environmental activities because of their close connection with local communities.

Previous research has produced mixed findings. Some studies have reported significantly higher environmental awareness among private-school students, whereas other studies have found no significant difference according to school type. For example, Nagra and Kaur (2013) reported no significant difference in environmental education awareness according to school type among senior secondary students. In contrast, Poonam (2013) reported significant differences between government and private secondary-school students. Danielraja (2019) also reported no significant difference according to type of institution. Such contradictory findings establish the need for context-specific studies.

The regional context of North Bengal makes the issue particularly important. Halder's study of environmental education in North Bengal included Uttar Dinajpur and found shortcomings in the implementation of environmental education, including irregular practical and field-observation activities. In the Uttar Dinajpur sample, 70% of schools reported irregular practical environmental classes, while only 15% reported regular field-observation classes.

II. REVIEW OF LITERATURE

Halder (2012)

Halder conducted an empirical study entitled *An Appraisal of Environmental Education in Higher School Education System: A Case Study of North Bengal, India*. The study covered six districts of North Bengal, including Uttar Dinajpur, and surveyed 1,244 students across 120 schools. The study examined the frequency of environmental classes, practical classes, field observations, teaching methods and evaluation practices. The study found considerable weaknesses in the implementation of environmental education. In Uttar Dinajpur, approximately 70% of schools reported irregular practical environmental classes, while only 15% reported regular field-observation classes. The study also found that 60% of schools in Uttar Dinajpur relied on lecture-based teaching.

Nagra and Kaur (2013)

Nagra and Kaur investigated environmental education awareness among 200 senior secondary school students. Environmental Awareness Ability Measure was used, and mean, standard deviation and *t*-test were applied. The researchers reported a generally high level of environmental education awareness. Importantly, no significant differences were found according to type of school, gender or subject stream. However, differences were observed between male and female students within government and private schools. .

Poonam (2013)

Poonam conducted a comparative study of environmental awareness among government and private secondary school students in Gurdaspur district. The study specifically focused on the difference between students studying in government and private schools. The findings indicated significant differences in environmental awareness and its different components between the two groups

Shimray and Sasidharan (2014)

Shimray and Sasidharan conducted a preliminary investigation of students' environmental awareness in the context of environmental education in Indian schools. The study examined students' understanding of the environment, their knowledge of local environmental problems and their ability to connect classroom learning with environmental realities outside school. The researchers identified gaps in students' conceptual understanding of the environment and noted difficulties in connecting curriculum content with real-life environmental situations.

D'Souza, Sharma and Singh (2014)

D'Souza, Sharma and Singh investigated the effectiveness of different instructional approaches in developing environmental awareness among school students. Their research used a pre-test/post-test experimental design and included Grade IX students from government and private schools in Patna. The study examined the effect of an environmental-awareness programme and demonstrated the importance of instructional intervention in improving environmental understanding.

Kar and De (2014)

Kar and De conducted a study involving secondary students in West Bengal and examined environmental awareness in relation to water pollution and achievement in Life Science. The research considered knowledge, understanding, causes, remedies and the extent of awareness concerning water pollution. The study reported that knowledge concerning water pollution was relatively strong among the secondary students, and it also investigated the relationship between environmental awareness and achievement in Life Science.

Barman (2015)

Barman's comparative study examined environmental awareness among secondary-level students. The findings indicated differences in awareness according to demographic and institutional characteristics, with male students from rural, private and English-medium schools reported to have higher awareness in the investigated context.

Rathee and Thakran (2017)

Rathee and Thakran examined environmental awareness among rural and urban secondary school students in Rohtak district. The study used a descriptive survey method and a sample of 80 students. Environmental Awareness Ability Measures developed by Praveen Jha were used. The researchers reported no significant difference between rural and urban students and also found no significant difference between male and female students.

Biswas (2017)

Biswas investigated environmental awareness among secondary school students in relation to gender, locale and medium of instruction in and around Murshidabad district of West Bengal. The study employed survey methodology and used the Environmental Awareness Ability Scale developed and standardized by Praveen Kumar Jha. A sample of 158 secondary students was selected.

Bhat (2017)

Bhat studied environmental awareness among 150 secondary school students from 18 high schools in Anantnag district. Using the Environmental Awareness Questionnaire developed by Haseen Taj, the researcher examined caste and class of study. The results showed significant influence of caste and class of study on environmental awareness.

Danielraja (2019)

Danielraja examined environmental awareness among 180 Standard XII students using an environmental-awareness scale. Significant differences were observed between science and arts students and between science and vocational students, whereas no significant differences were found according to gender or type of institution.

III. OBJECTIVES OF THE STUDY

The study may be guided by the following objectives:

1. To assess the overall level of environmental awareness among secondary school students in Uttar Dinajpur district of West Bengal.
2. To compare the level of environmental awareness among secondary school students studying in government and private schools.
3. To examine whether significant differences exist in environmental awareness between male and female secondary school students within government and private schools.
4. To compare students' awareness regarding major environmental concerns such as pollution, conservation of natural resources, energy conservation, human health and wildlife conservation.
5. To suggest appropriate educational measures for strengthening environmental awareness among secondary school students in Uttar Dinajpur district.

IV. HYPOTHESES OF THE STUDY

The following null hypotheses may be formulated:

H₀1: There is no significant difference in the overall environmental-awareness scores of secondary school students in government and private schools.

H₀2: There is no significant difference in environmental awareness between male and female secondary school students.

H₀3: There is no significant difference between government and private school students in the major dimensions of environmental awareness.

H₀4: School type does not significantly influence the level of environmental awareness among secondary school students.

V. RESEARCH METHODOLOGY

5.1 Research Design

The proposed study follows a descriptive-comparative research design. The design is appropriate because the principal purpose is to describe the existing level of environmental awareness and compare students belonging to two institutional categories—government and private schools.

5.2 Study Area

The study is proposed to be conducted in Uttar Dinajpur district of West Bengal. Uttar Dinajpur is located in northern West Bengal and forms part of the wider North Bengal region. The district has a predominantly rural character, although Raiganj and other urban centres provide important educational and administrative functions.

The selection of Uttar Dinajpur is academically significant because previous research on North Bengal has documented limitations in the implementation of environmental education, including inadequate practical and field-based activities. Halder's study included 20 schools and 205 students from Uttar Dinajpur within a larger North Bengal survey. ([ResearchGate](#))

5.3 Population

The population of the proposed study comprises students studying in Classes IX and X in selected government and private secondary schools of Uttar Dinajpur district.

5.4 Sample

For the model study, a sample of **200 students** is proposed:

School Type	Male	Female	Total
Government	50	50	100
Private	50	50	100
Total	100	100	200

The sample may be selected from eight schools, preferably four government and four private schools, to ensure representation from different geographical areas.

5.5 Sampling Technique

A stratified random sampling technique may be employed. School type constitutes the principal stratum, with government and private schools treated as separate groups. Within selected schools, students may be selected randomly from Classes IX and X.

5.6 Variables

Independent Variable

- Type of school:
 - Government
 - Private

Secondary Variable

- Gender:
 - Male
 - Female

Dependent Variable

- Environmental awareness

5.7 Tool for Data Collection

A standardized environmental-awareness scale may be employed. One suitable instrument is the Environmental Awareness Ability Measure/Scale developed by Praveen Kumar Jha, which has been widely used in Indian school-level environmental-awareness studies. Research using this instrument has examined areas including pollution, conservation of soil, forests and air, energy conservation, human health, and wildlife conservation.

5.8 Data Collection Procedure

After obtaining institutional permission, the researcher may administer the environmental-awareness scale to selected students. Students should be informed that participation is academic, responses will remain confidential and there are no academic consequences associated with their responses.

5.9 Statistical Techniques

The following techniques are appropriate:

- Frequency
- Percentage
- Mean
- Standard deviation
- Independent-samples *t*-test

- Effect size, preferably Cohen's *d*
- Where appropriate, ANOVA

The significance level may be fixed at **0.05**.

VI. RESULTS AND DISCUSSION

Table 1: Model Distribution of Students According to Level of Environmental Awareness

Level of Awareness	Government n (%)	Private n (%)	Total n (%)
Low	18 (18.0)	9 (9.0)	27 (13.5)
Moderate	57 (57.0)	45 (45.0)	102 (51.0)
High	25 (25.0)	46 (46.0)	71 (35.5)
Total	100 (100)	100 (100)	200 (100)

The model distribution indicates that the largest proportion of students in both groups falls within the moderate-awareness category. However, the proportion of students with high environmental awareness is greater among private-school students (46%) than among government-school students (25%). Conversely, the proportion of students with low awareness is higher among government-school students.

Table 2: Model Comparison of Environmental Awareness Scores by School Type

School Type	N	Mean	SD	Mean Difference	<i>t</i>	df	Significance
Government	100	39.84	5.12	3.42	4.94	≈196	< .001
Private	100	43.26	4.67				Significant

The model results indicate that private-school students obtained a higher mean environmental-awareness score ($M = 43.26$, $SD = 4.67$) than government-school students ($M = 39.84$, $SD = 5.12$). The model *t*-value of approximately 4.94 indicates a statistically significant difference at the 0.05 level.

The null hypothesis that there is no significant difference between government and private-

Table 3: Model Environmental-Awareness Scores According to Gender

Gender	N	Mean	SD	<i>t</i>	Significance
Male	100	41.32	4.98	0.31	Not significant
Female	100	41.50	4.86		

The model result suggests only a very small difference between male and female students. Such a finding would indicate that gender may not substantially influence overall environmental awareness.

This interpretation is consistent with Rathee and Thakran (2017), who found no significant gender difference among secondary students. Danielraja (2019) also reported no significant gender difference.

VII. DISCUSSION

7.1 Discussion of Objective 1

The first objective was concerned with assessing the general level of environmental awareness among secondary school students. The literature suggests that students generally possess some degree of awareness concerning common environmental issues such as pollution, deforestation, water conservation and waste management. However, awareness does not necessarily imply the capacity to translate knowledge into environmentally responsible action.

Shimray and Sasidharan (2014) identified a gap between students' understanding of the concept of environment and their ability to connect school learning with environmental problems outside the classroom. This distinction is crucial. A student may correctly identify air pollution as an environmental problem but may not necessarily understand the relationship between household fuel use, transportation, emissions and human health.

Therefore, the present research should interpret "environmental awareness" as a multidimensional concept involving knowledge and understanding rather than simply memorization of environmental facts.

7.2 Discussion of Objective 2

The second objective directly compares government and private schools. Existing literature provides contradictory evidence.

Poonam (2013) found significant differences between government and private secondary-school students. ([Research India Publications](#)) Conversely, Nagra and Kaur (2013) found no significant difference according to school type, while Danielraja (2019) similarly found no significant difference based on institution type. ([Indian Journals](#))

This suggests that the relationship between school type and environmental awareness is context-specific.

If the actual Uttar Dinajpur data confirm higher awareness among private-school students, the explanation should not simply be that "private schools are better." Instead, several possible mechanisms should be examined:

1. Greater availability of environmental teaching-learning materials.
2. More frequent environmental projects.
3. Greater exposure to educational technology.
4. More environmental club activities.
5. Greater parental educational exposure.
6. More frequent field visits.
7. Differences in English-medium or Bengali-medium instruction.
8. Differences in socioeconomic background.
9. Differences in teacher training.
10. Differences in school-level environmental management practices.

Such an interpretation would be more academically defensible.

7.3 Discussion of Objective 3

The model gender analysis suggests that male and female students may have broadly similar levels of environmental awareness. This is consistent with several earlier studies.

The absence of a gender difference would indicate that environmental awareness has become sufficiently integrated into general school learning that both male and female students receive comparable exposure. It would also support the development of gender-inclusive environmental programmes.

Nevertheless, awareness and behaviour should not be assumed to be identical. A student may possess environmental knowledge but may differ in willingness or opportunity to participate in environmental activities.

VIII. MAJOR FINDINGS

Subject to confirmation through actual field data, the proposed study is designed to identify the following major findings:

1. Secondary school students in Uttar Dinajpur possess measurable awareness concerning environmental problems.
2. A substantial proportion of students may fall within the moderate-awareness category.
3. The proposed model results show a higher mean awareness score among private-school students than government-school students.
4. The proposed model indicates a statistically significant school-type difference.
5. Gender may not produce a statistically significant difference in overall environmental awareness.
6. Existing literature suggests that school type does not have a universally consistent effect on environmental awareness.
7. Practical environmental education appears to be an important factor in strengthening awareness.
8. Previous North Bengal evidence indicates that environmental education has historically suffered from inadequate practical and field-based implementation.
9. Environmental awareness should therefore be developed through experiential activities rather than only classroom lectures.

10. The local environmental context of Uttar Dinajpur should be integrated into school-level environmental education.

IX. EDUCATIONAL IMPLICATIONS

The findings and literature have several implications for teachers, schools and educational administrators.

9.1 Strengthening Activity-Based Environmental Education

Environmental education should move beyond textbook-based instruction. Students should participate in:

- plantation programmes;
- school gardens;
- waste segregation;
- composting;
- water conservation;
- biodiversity surveys;
- cleanliness drives;
- plastic-reduction campaigns;
- environmental quizzes;
- poster competitions;
- nature walks;
- local environmental surveys.

9.2 Field-Based Learning

The findings of Halder's North Bengal research are especially relevant. His investigation demonstrated that field observation was insufficiently regular in many schools, including those in Uttar Dinajpur.

Therefore, students should be given opportunities to observe ponds, rivers, agricultural areas, waste-disposal sites, vegetation, local markets and other environmental settings.

9.3 Environmental Clubs

Every secondary school should have an active environmental club. Merely establishing a club is insufficient; it should conduct regular activities throughout the academic year.

9.4 Teacher Training

Teachers require training in:

- experiential environmental education;
- project-based learning;
- local environmental case studies;
- environmental assessment;
- biodiversity education;
- waste-management education;
- climate-change education.

9.5 Equal Attention to Government and Private Schools

If actual data reveal differences between government and private schools, educational authorities should not interpret the finding simply as a difference in institutional quality. Instead, successful environmental practices from one category of school can be adapted in the other.

X. CONCLUSION

Environmental awareness among secondary school students is an important component of sustainable development. Students at this educational stage are capable of understanding environmental problems and developing responsible attitudes and behaviours. However, effective environmental education requires more than the presence of environmental topics in textbooks.

The present study proposes a comparative investigation of environmental awareness among secondary school students studying in government and private schools in Uttar Dinajpur district of West Bengal. The review of ten pre-2021 studies demonstrate that environmental-awareness research in India has generated mixed conclusions. Some studies have identified significant differences between government and private schools, while others have reported no significant institutional difference. Research has also shown that gender, caste, subject stream, class level, locality and educational practices may influence environmental awareness.

The North Bengal context is particularly significant. Halder's research demonstrated that environmental education in North Bengal faced important implementation challenges, including irregular practical classes and inadequate field observation. Uttar Dinajpur formed part of this regional investigation, thereby providing an important foundation for the present study.

The proposed model analysis indicates that private-school students may obtain higher environmental-awareness scores than government-school students. However, this result must not be interpreted as evidence that private schooling inherently produces greater environmental consciousness. Differences may emerge from variations in educational resources, parental background, extracurricular exposure, teaching methods and environmental activities.

The most important implication is therefore that school type should not become the endpoint of the analysis. Rather, researchers and educational administrators should identify the specific educational practices that produce stronger environmental awareness and make those practices available to students irrespective of school management.

For Uttar Dinajpur, environmental education should be closely connected with local environmental realities. Students should be encouraged to investigate pollution, water resources, agricultural practices, biodiversity, waste management and other environmental issues within their own communities. Such locally grounded education can transform environmental awareness from a textbook concept into a practical social responsibility.

Ultimately, the goal of environmental education should not merely be to produce students who can answer questions about pollution or conservation. It should produce young citizens who understand environmental problems, care about their surroundings, possess the skills to address environmental challenges and are willing to participate collectively in protecting the environment.

REFERENCES

1. Abraham, M., & Arjunan, N. K. (2005). Environmental interest of secondary school students in relation to their environmental attitude. *Perspectives in Education*, 21(2).
2. Barman, N. (2015). A comparative study of environmental awareness among secondary level students. *International Journal of Innovative Research in Science, Engineering and Technology*, 4(8), 7575–7579. ([ResearchGate](#))
3. Bhat, B. A. (2017). A study of environmental awareness among secondary school students in relation to caste, class of study in Anantnag district. *International Journal of Indian Psychology*, 5(1), 90–93. <https://doi.org/10.25215/0501.071> ([Indian Psychology Journal](#))
4. Biswas, M. (2017). A study on the environmental awareness of secondary school students in relation to gender, locale of study and medium of instruction. *International Education and Research Journal*. ([IERJ](#))
5. D'Souza, D., Sharma, D., & Singh, R. P. (2014). Comparing efficacy of instructional approaches to develop environmental awareness among school students. *SAGE Open*. <https://doi.org/10.1177/2158244014562387> ([Sage Journals](#))
6. Danielraja, R. (2019). A study of environmental awareness of students at higher secondary level. *Shanlax International Journal of Education*, 7(3), 6–10. <https://doi.org/10.34293/education.v7i3.480> ([ResearchGate](#))
7. Halder, S. (2012). An appraisal of environmental education in higher school education system: A case study of North Bengal, India. *International Journal of Environmental Sciences*, 2(4), 2223–2233. <https://doi.org/10.6088/ijes.00202030105> ([Indian Journals](#))
8. Kar, S., & De, R. C. (2014). A comparative study of secondary students on environment awareness and achievement in Life Science. ([ResearchGate](#))

9. Nagra, V., & Kaur, B. (2013). Environmental education awareness among senior secondary school students. *ZENITH International Journal of Business Economics & Management Research*, 3(1), 133–141. ([Indian Journals](#))
10. Poonam. (2013). A comparative study of environmental awareness among government and private secondary school students. *International Journal of Education and Information Studies*, 3(2), 39–41. ([Research India Publications](#))
11. Rathee, N., & Thakran, S. (2017). A study of environmental awareness among rural and urban secondary school students. *International Education and Research Journal*, 3(5). ([IERJ](#))
12. Shimray, C. V., & Sasidharan, R. (2014). Preliminary study on environmental awareness of students with the implementation of environmental education in schools in India. *School Science*, 52(2), 56–62. ([NCERT Journals](#))
13. Taj, H. (2003). *Environmental Awareness Questionnaire*. National Psychological Corporation.
14. UNESCO. (1977). *Intergovernmental conference on environmental education: Final report*. UNESCO.