



**ROLE OF EDUCATION TOWARDS ENVIRONMENTAL
SUSTAINABILITY: AN ANALYTICAL STUDY IN BURDWAN DISTRICT
OF WEST BENGAL, INDIA**

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ABSTRACT

The present paper attempts to analyze the impact assessment of education on awareness and environmental sustainability in Burdwan district of West Bengal. The study comprises of three hundred and sixty school students, seventy five guardians and seventy five teachers and members of school authorities in some selected higher secondary level schools both in urban and rural areas of Burdwan district in West Bengal. The analysis were undertaken by the 'chi-square' test and the results indicate that education especially environmental education has a significant positive impact in making a sense of consciousness among respondents about environmental sustainability in the study area. Again, students't- test has also been used to look at the assumed hypothesis whether any discrepancy among students about understanding of environment of schools, situated in different localities as well as school status (i.e. govt.; govt. aided and private schools,), subsist or not. A Multiple response analysis has been applied to find out the nature and magnitude of association between education and environmental sustainability in the study area.

Key Words: - Education, Environmental sustainability, Student's consciousness, 'Chi-square' test, Student's t-test,

1. INTRODUCTION

Environment is defined as the total planetary inheritance and the totality of all resources. It includes all the biotic and abiotic factors that influence each other. While all living elements- the

birds, animals, plants, fisheries etc. are biotic elements, abiotic elements include air, water, sunlight etc. They constantly interact with each other. Organisms change in response to conditions in their environment. In the environment, there are interactions between plants, animals, soil, water, temperature, light, and other living and non-living things. (<https://simple.wikipedia.org/wiki/Environment>)

According to Douglass and Holland “Environment is a word which describes, in the aggregate, all external forces, influences and conditions which affect the life, nature, behaviour and the growth, development and maturation of living organism”.

In present days, man has been degrading his environment in his attempt to fabricate goods for his own comforts and luxuries. In this context there is an urgent need to be careful about the protection of environment for the survival and welfare of his species on a sustain basis (Aggarwal, 1995). Therefore, proper education which may relate to environment is a right solution in this regard. Environmental education is evidently related to nature conservation education, but there is an significant difference in that it transcends issues of nature, biodiversity, and ecology to also and prime including issues are environmental degradation, environmental health, pollution, preservation of natural resource and so on that have a lot to do with the way we live, generate, and consume. (Wals. A. E. J., 2012)

“Environmental education is also a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action” (UNESCO, Tbilisi Declaration, 1978).

Education related to environment i.e., environmental education has an important role in promoting knowledge, understanding, awareness and enhancing sustainable quality of life of students. It provides consciousness to the people on nature conservation and its relation with sustainable quality of life of the people and community as a whole. Various studies have been undertaken to examine the role of environmental education on sustainable quality of life in India and abroad (Disinger and Monroe, 1994; Dey, 1999; Landers, 1997; Das & Sur, 2012; Julie & Monroe, 2008; Sharp, 1947; Paul & Baskey, 2012 etc.) and the factors of environmental sustainability (OECD Environment Directorate, 2008). All these studies indicate that education especially environmental education helps learners to achieve environmental literacy through the formation of positive attitude and behavior in addition to a knowledge component. In this regard, the present study tries to analyze the impact of education on environmental sustainability which

improves the quality of life through the awareness not only for the students but also for the people and community as well of Burdwan district in West Bengal.

2. OBJECTIVES

The following objectives are laid down to substantiate the present study

1. To examine the awareness of the students about the environment and sustainable approach towards environment in their localities;
2. To acquire knowledge and understanding about the environment, environmental protection and natural resource management.
3. To make strong attitude about the environment for maintaining sustainable environmental quality in the study area.
4. To encourage the participation of students in programs related to environmental sustainability.
5. To find out the factors which are helpful to promote environmental sustainability through the introduction of education especially environmental education in schools.

3. HYPOTHESES

The present study includes the following hypotheses:

3.1 Null Hypotheses

H_0^1 : There is no significant difference between education and awareness of students towards environmental sustainability among guardians of students, teachers and members of school authorities.

H_0^2 : There is no significant variation of awareness about environmental sustainability among the students going through education especially environmental education in urban and rural areas;

H_0^3 : There is no significant discrepancy of consciousness about environment among the students of govt. & govt. aided schools and private schools going through environmental education.

3.2 Alternative Hypotheses

H_1^1 : There exists significant difference between education and awareness of students towards environmental sustainability among guardians of students, teachers and members of school authorities.

H₁²: There prevails significant variation of awareness about environmental sustainability among the students going through environmental education in urban and rural areas.

H₁³: There exists significant discrepancy of consciousness about environment among the students of govt. & govt. aided schools and private schools going through environmental education.

4. METHODOLOGY

4.1 Sample

The study is mainly analytical in nature and the purposive sampling technique was used. A self made questionnaire has been used for the collection of primary data during 2015-2016 from 360 students of higher secondary schools under govt. schools, govt. aided schools and private schools, 75 guardians and 75 teachers and members of school authorities comprising in urban as well as in rural areas of Burdwan district in West Bengal.

4.2 Data Source

Table- 2 and Table- 3 represent sample distribution.

Table-1:

Sub Division	Respondents (Students)			
	Govt. School	Govt. aided School	Private School	Total
Burdwan North	20	20	20	60
Burdwan South	20	20	20	60
Kalna	20	20	20	60
Katwa	20	20	20	60
Durgapur	20	20	20	60
Asansole	20	20	20	60
Total	120	120	120	360

Source: Field Survey, 2015-16

Table- 2:

Sub Division	Respondents		
	Teachers	Members of School Authorities	Total
Burdwan North	13	12	25
Burdwan South	13	12	25
Kalna	13	12	25
Katwa	12	13	25
Durgapur	12	13	25

Asansole	12	13	25
Total	75	75	150

Source: Field Survey, 2015-16

4.3 Tools

The following tools were used for collection of data.

4.3.1 Questionnaire

The data was collected through a questionnaire of exclusive segments pertaining to ‘Education and Environmental Sustainability’ in the study area having 20 question-statements. Equal numbers of positive and negative statements were included in the questionnaire. The respondents were asked to answer correctly and rate each of the statements accordingly. 20 question-statements in the questionnaire were finalized after a thorough review of literature and all the statements reflected to ‘Environmental Sustainability’.

4.3.2 Interview Schedule

It was drafted on the basis of major variables, parameters and objectives of the study. Primary data was also collected from reputed educational experts and social workers using interview schedule. Secondary data was collected from Government agencies like office of DM, BDO/SDO, panchayets, different schools etc. and project reports related to environment given by various NGO’s.

4.4 Indicators selected to study the effect of education on environmental sustainability

The indicators selected to examine the effect of education especially environmental education on sustainable approach towards environment are i) Awareness of Students towards Environment (ASE) ii) Acquiring Knowledge through Environmental Education (AKEE) iii) Attitude about Preservation of Natural Resources (APNR) iv) Attainment of Efficiency against Degrading of Nature (AEDN) v) Participation in Environment related Programs (PEP). The variables selected in this study and their possible explanation have been expressed in the following table (vide table -1) (Paul & Baskey, 2012).

Table-3: Selected variables explaining the environmental sustainability among the respondents

Sl. No.	Variables	Explanation
1	Awareness of Students towards Environment	It can be described as consciousness among the students about environment through education

		especially environmental education.
2	Acquire Knowledge through Environmental Education	It can be described as proxy variable of acquiring knowledge and understanding about environment among the surveyed students.
3	Attitude about Preservation of Natural Resources	It can be used as a proxy variable of growing attitude about protection of environment and Preservation of Natural Resources
4	Attainment of Efficiency against Degrading of Nature	It can be treated as a proxy variable about the skillness and efficiency needed to minimize degradation of nature.
5	Participation in Environment related Programs	It can be described as proxy variable to organize and participation in environment related programs.

5. ANALYSIS AND INTERPRETATION OF THE DATA

This whole part has been carried out under the following heads:

1. Environmental Education and Sustainable Approach towards Environment: A Conceptual Framework
2. Education and Awareness of Students about Environmental Sustainability: A Non-Parametric Chi-square Analysis
3. Attitudes of students belongs to different status (i.e. govt.; govt. aided and private schools) and location of schools: An Analysis in terms of Students' t-test
4. Tabular representations are used to make a comparative static analysis of collected data.
5. Charts and diagrams are used to make more appropriate for the representation.

5.1 Environmental Education and Sustainable Approach towards Environment: A Conceptual Framework

The benefits of environmental education for achieving sustainable quality of life can be explained in term of the following system analysis.

**Diagram -1: Environmental Education and Sustainable Approach towards Environment:
A System Model**

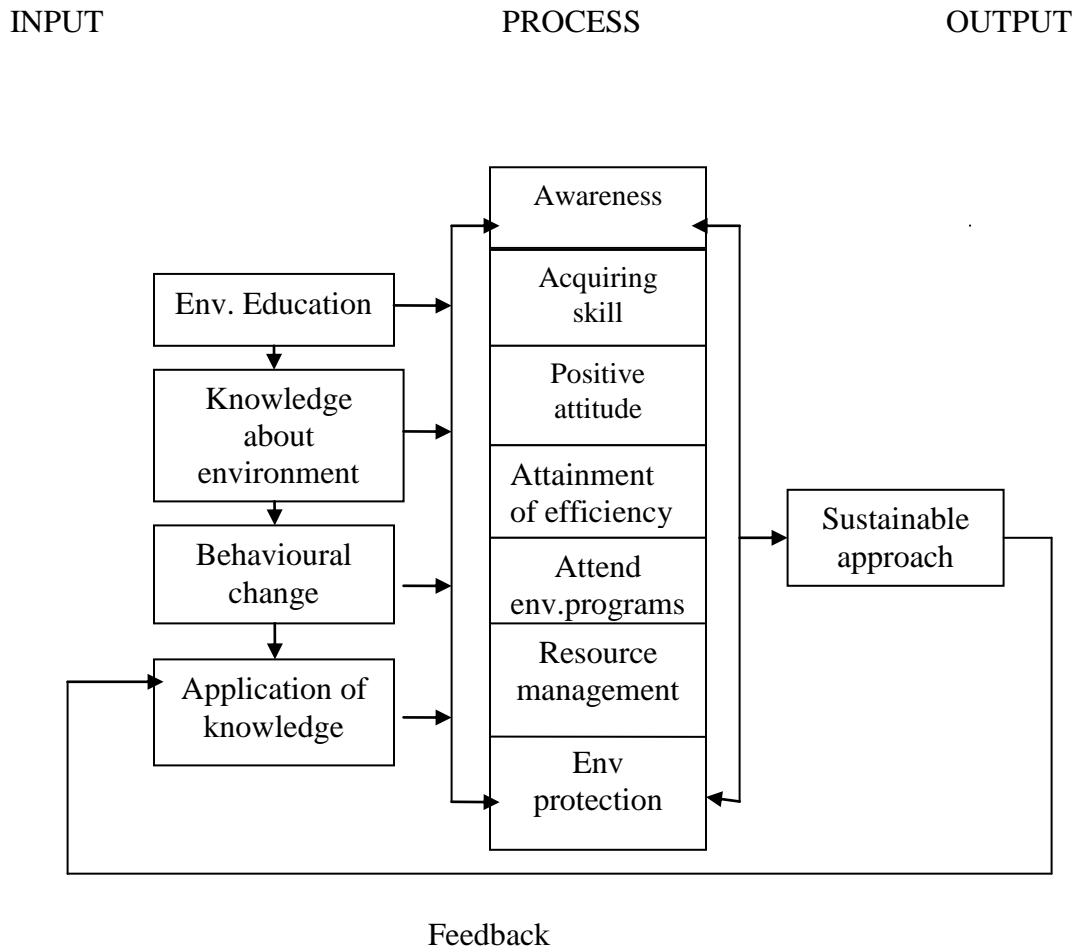


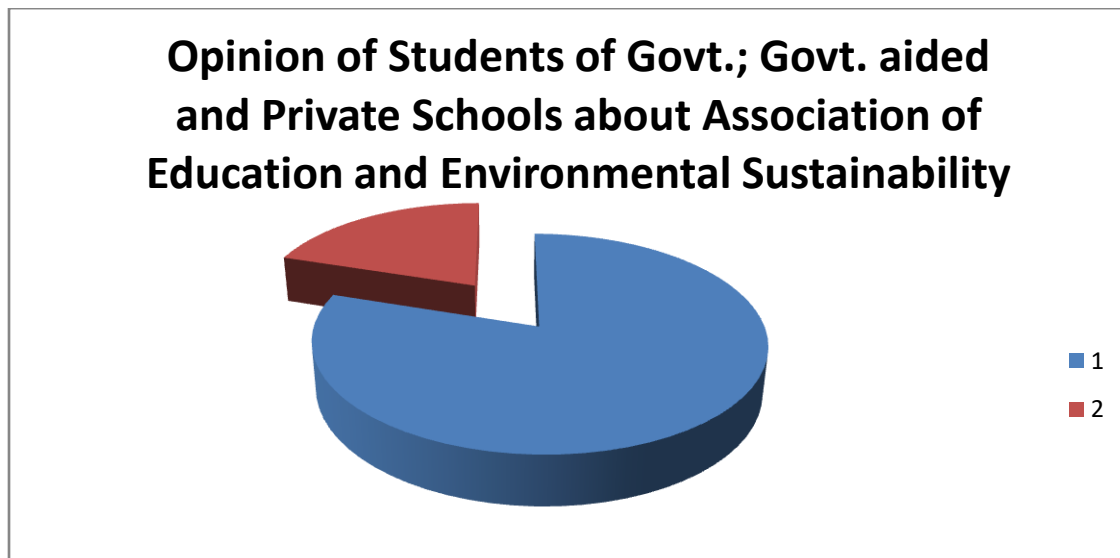
Diagram- 1 above depicts the hypothesized advantage of pertaining environmental education in various school categories (i.e. govt.; govt. aided and private schools), reflecting intermediate and decisive impact goals. The inputs of environmental education channeled through the Knowledge about environment, behavioral change among the students and application of their knowledge towards environmental sustainability which have large scale potential to produce intermediate or first order effects that include awareness about environment, acquaintance with various sustainable skills, making positive attitude about nature, attainment of efficiency, participation in environment related programmes and finally it facilitates natural resources management and protection of environment. Ultimately, these first order benefits provide the potential for the second order, and effects on sustainable approach towards environment and above all sustainable quality of life of the students taken under consideration for the present study.

5.2 Association of Education and Environmental Sustainability

Table – 4: Opinions of different Respondents of various subdivisions of Burdwan district under the present study

Respondents	In favour of environmental sustainability	Not in favour of environmental sustainability	Total
Students of Govt. School	100 (83.33)	20 (16.67)	120 (100)
Students of Govt. aided School	86 (71.67)	34 (28.33)	120 (100)
Students of Private School	102 (85)	18 (15)	120 (100)
Total	288 (80)	72 (20)	360 (100)

Note: Figures in the bracket indicates percentage to total



N.B: Series -1 indicates percentage of students of govt. school, govt. aided school and private school in favor of association between environmental education and sustainability
 Series -2 indicates percentage of students of govt. school, govt. aided school and private School not in favor of association between environmental education and Sustainability.

5.3 Environmental Education and Students' Awareness: A Non-Parametric Chi-square Analysis

The present study has attempted to make an assessment of perceptions of the guardians of students, teachers and school authorities about the role of education especially environmental education in awareness among the school students in terms of non-parametric 'Chi-square' analysis. The opinions of the respondents collected from the field survey has been expressed in the following table (vide table- 5).

Table – 5: Opinions of different Respondents under the present study

Respondents	Yes	Uncertain	No	Total
Guardians	57	07	11	75
Teachers and Authorities	61	09	05	75
Total	118	16	16	150

Source: Field Survey, 2015-16

The calculated and observed value of 'Chi-square' are shown in the table below (vide table- 6).

Table - 6: Testing of the Hypothesis H_0^1

Variables compared	Calculated value of (χ^2)	Critical value (5 % level)	Degrees of freedom	Level of Significance
Education and awareness of students towards environmental sustainability	2.634	4.61	2	0.05

Source: Authors' calculation based on field survey, 2015-16

It appears from the table- 6 that the observed value of Chi-square ($\chi^2_{,df-2}$) is 2.634 and it is significant at 0.05 level for degrees of freedom 2, therefore the null hypothesis is accepted and the alternative hypothesis is rejected. So, we have no hesitation to conclude that there exists no significant difference between education and awareness of students towards environmental sustainability among guardians of students, teachers and members of school authorities.

5.4 Attitudes of students about Environment belongs to different status and location of schools: An Analysis in terms of Students' t- Test

Education especially environmental education has had a positive impact on the sustainable quality of life of the students. But there exists significant variation of impact of environmental education on students according to status and location of schools. This can be expressed in terms of the calculated values of students't-test.

Table - 7: Testing of the Hypothesis H_0^2 :

Attitudes of Higher Secondary students about the awareness on environmental sustainability in terms of calculated values of mean, S.D., t values and level of statistical significance.

Location of School	N	Mean	S.D.	SEM	't' Value	Level of Significance
Urban	165	27.95	3.09	0.2406	2.85	0.01
Rural	195	27.01	3.15	0.2256		

Source: Author's calculation based on field survey, 2015-16

Table- 7 provides an explanation about the relative comparison of values of mean, S.D. and calculated t values of urban and rural students The value of 't' is 2.85 which is significant at 0.01 level, indicating that there exists significant variation of awareness among the higher secondary level students about their awareness on environmental sustainability. During field survey, it has been observed that most of the higher secondary schools in urban areas of Burdwan district provide satisfactory environmental knowledge and understanding to the students in comparison to the higher secondary schools in rural areas. Thus null hypothesis is rejected and alternative

hypothesis is accepted. The finding of this study is contrary to the study of Paul and Baskey (2012).

Table - 8: Testing of the Hypothesis H_0^3 :

Attitudes of students according to school status about the awareness on environmental sustainability in terms of calculated values of mean, S.D., t values and level of statistical significance.

Status of School	N	Mean	S.D.	SEM	't' Value	Level of Significance
Govt. & Govt. aided School	175	28.30	3.08	0.2328	3.79	0.01
Private School	120	26.90	3.16	0.2885		

Source: Author's calculation based on field survey, 2015-16

Table- 8 provides an explanation about the relative comparison of values of mean, S.D. and calculated t values of students' of govt. & govt. aided schools and private schools. The value of 't' is 3.79 which is significant at 0.01 level, indicating more awareness of students of govt. & govt. aided schools than the students of private schools. During field survey, it has been observed that most of the govt. & govt. aided schools are situated in urban areas where students are facing more pollution compared to rural areas due to higher population density and the rural populations give less importance about preservation of nature due to more dependence on the agriculture and forests for livelihood for mitigation of their poverty. Thus null hypothesis is rejected and alternative hypothesis is accepted. This finding is again consistent with the study of Paul & Baskey (2012).

5.5 Attitudes of Students towards Environmental Sustainability: Multiple Response

Analysis

Table - 9: Attitude of students going through the education especially environmental education in different school categories of Burdwan district towards environmental sustainability

Respondents	Variables	No. of sample selected	Indicators of Environmental Sustainability associated with respondents				
			ASE	AKEE	APNR	AEDN	PEP
Students	Govt. Schools	120 (100)	105 (87.50)	100 (83.33)	79 (65.83)	99 (82.50)	85 (70.83)
	Govt. aided Schools	120 (100)	97 (80.83)	89 (74.16)	88 (73.33)	93 (77.50)	78 (65.00)
	Private Schools	120 (100)	101 (84.16)	98 (81.67)	87 (72.50)	91 (75.83)	103 (85.83)

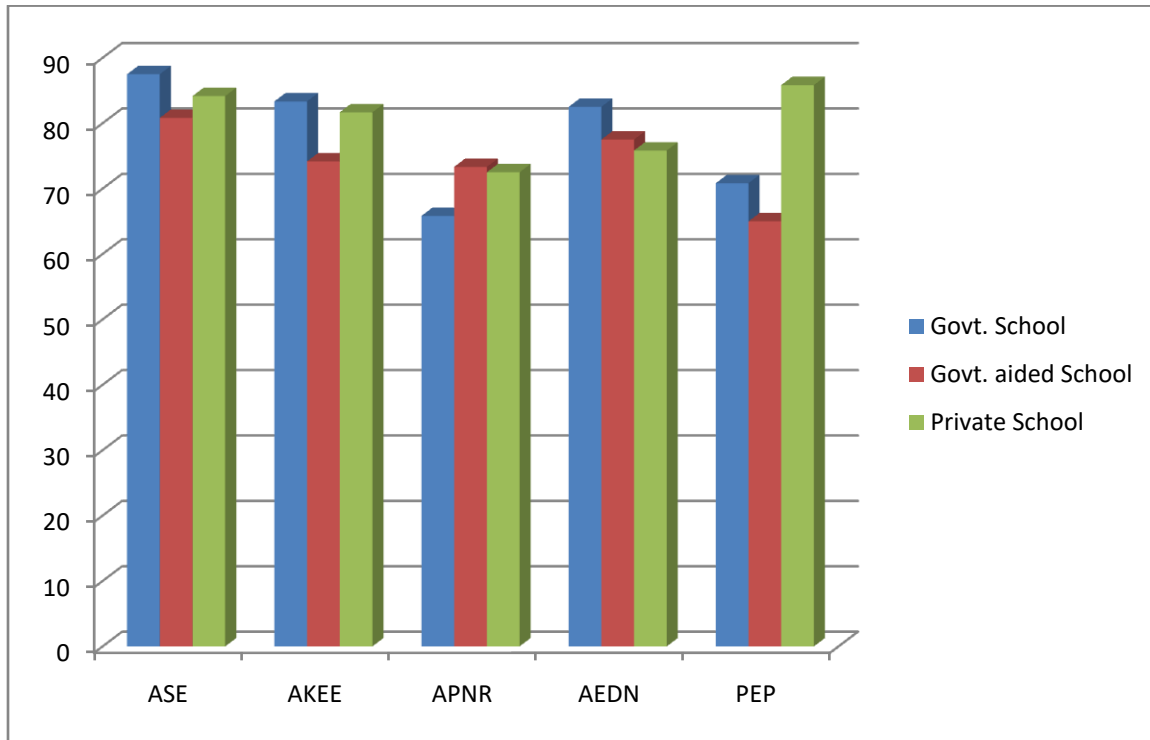
Note: Figures in the bracket indicates percentage to total

Indicators of Environmental Sustainability associated with respondents are (i) Awareness of Students towards Environment (ASE) , (ii) Acquiring Knowledge through Environmental Education (AKEE), (iii) Attitude about Preservation of Natural Resources (APNR), (iv) Attainment of Efficiency against Degrading of Nature (AEDN), (v) Participation in Environment related Programs (PEP).

Table- 9 describes that students of govt. and private schools have no significant difference in attitude about Awareness towards Environment (ASE) but students of govt. aided school are little behind regarding ASE. Acquiring knowledge and understanding of environment through Environmental Education i.e. indicator AKEE suggests that students of govt. and private schools have no significant difference but in case of students of govt. aided schools, there is a difference which is not negligible. In general, the students of Burdwan district are not so aware about preservation of natural resources. Indicators APNR shows their low attitude about it but during survey most of the govt. aided schools are choose in agriculture prone area of Burdwan district, the concepts of preservation of natural resources are little so better in this area. From the study, it

is revealed that the efficiency against degrading of nature i.e. the indicator AEDN shows the students of govt. schools have strong attitude about this and the students of govt. aided and private schools are in the same position regarding AEDN. Again from the field survey, it has also been found that students of private schools are more interested than students of govt. and govt. aided schools about the participation in Environment related Programs i.e. PEP.

Diagram-2: Opinion of students about the selected indicators related to social awareness in association with the festivals.



From the diagram, it is evident that students of govt. and private schools are more aware about environment as well as they acquire more knowledge about nature through environmental education. The students of Burdwan district are not so aware about preservation of natural resources. Efficiency to minimize the natural degradation is maximum in govt. school students where as the attitude about the participation in environment related programs are maximum in private school students.

6. CONCLUSION

The present paper describes the role of education especially environmental education towards environmental sustainability indicating the enhancement of sustainable quality of life through

promoting the awareness about environment, pollution, its protection and proper natural resource management of the govt., govt. aided and private higher secondary level school students of Burdwan district in the state of West Bengal. The result exposed a significant relationship between environmental education and awareness of students about the environment. There has been occurred significant positive influence on sustainable approach of students towards environment by taking into consideration the factors like (i) Awareness of Students towards Environment (ASE) , (ii) Acquiring Knowledge through Environmental Education (AKEE), (iii) Attitude about Preservation of Natural Resources (APNR), (iv) Attainment of Efficiency against Degrading of Nature (AEDN), (v) Participation in Environment related Programs (PEP).

It is to be noted that there exists some discrepancies regarding the degree of knowledge and awareness towards environmental sustainability and quality of life among the students belongs to different status (i.e., govt., govt. aided and private higher secondary level schools) and different locations (i.e., urban and rural) of school. This study also suggests suitable Government developmental policy for alleviation of poverty especially in rural areas due to their ignorance about forest (i.e., deforestation) and proper resource management in Burdwan district of West Bengal.

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