

Environmental Education in the Age of Environmental Degradation: A Comparative Study of Elementary Level Students of Delhi and Dhaka

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Abstract: Environmental education is considered to be a continuous and lifelong process that can be learnt through formal or informal ways. The basic assumption behind introducing environmental education as a part of the formal education system from the early 1970s has been to change human knowledge, attitude and behaviour towards the environment through formal education. Against this assumption, the introduction of environmental education at the elementary level studies has been considered to be the beginning of formal environmental education to deal with environmental challenges facing by today's society. The present paper focuses on the effectiveness of environmental education provided at the elementary level studies in two of the fastest growing capital cities of South Asia: Delhi and Dhaka, which are currently facing tremendous challenges. A specially designed questionnaire has been used to collect data from both government and private elementary schools by applying a purposive sampling technique. The findings suggest that students' environmental knowledge is not adequately translated into environmental attitude and behaviour. There is thus a need to re-assess the designing of the course curricula and selection of the study methods and materials used for environmental education for the elementary level students to make environmental education more effective for the younger generations.

Keywords: Environmental Education, Knowledge, Attitude, Behaviour, Efficiency

1. Introduction

Man is an intrinsic part of the nature [1]. But due to mainly anthropogenic reasons man-environment relationship has become fragile over the last several decades, particularly from the beginning of the second half of the 20th century. The severity and intensity of this fragility have increased many-fold in recent years due to changes in human attitude, behaviour and perception towards the environment and because of the emergence of consumerism. Hundreds of seminars, conferences and workshops have been organized to debate, discuss and identify the reasons, their potential solutions at academic and policy levels. International initiatives like the United Nations' Conference on Human Environment (Stockholm; 1972); International Workshop on Environmental Education (Belgrade; 1975); Tbilisi Declaration (USSR; 1977); Earth Summit (Rio de Janeiro; 1992); World Summit on Sustainable Development

(Johannesburg; 2004); Kyoto Protocol (Kyoto, Japan; 1995), United Nations Conference on Sustainable Development (Rio Plus 20) (Rio de Janeiro; 2012), UN Summit on Sustainable Development (New York; 2015), UNFCCC Climate Conference (CoP 21: Paris; 2015), among others, have laid down important landmarks in dealing with environmental challenges. It is not that the world couldn't have achieved any positive outcome of these initiatives, but there is a need to do more to face the multi-dimensional environmental challenges as they are posing serious threats to human life and the very survival itself. Among possible means to fight environmental degradation, environmental education is considered to be a very effective instrument that can play significant role in changing people's knowledge, attitude and behaviour towards the environment. Environmental education is the process of recognizing values and classifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man,

his culture and biophysical surroundings. Environmental education also entails practice in decision making and self formulation of a code of behavior about issues concerning environmental quality [7]. It is thus important that countries design effective environmental education, particularly with a focus to school children and educate them on environmental benefits and also make them aware about their duties and responsibilities towards the environment [10].

Although the introduction of environmental education as a course curricula is a recent phenomenon, almost across developed and developing countries considering the recentness of the gravity of environmental challenges, many countries have successfully designed environmental education for both school and post-school education. The basic philosophy behind the introduction of environmental education has been to educate learners about environmental degradation and their consequences on the nature and human interests. It is assumed that through environmental education, learners' will have gradual changes in their behavior and attitude towards the environment [3, 5, 6]. Countries which have introduced environmental education in this context also need to assess the effectiveness of such programmes and their suitability of changing learners' behaviour and attitude towards the nature.

South Asia, being one of the fragile regions due to environmental degradation, needs to think about effective measures to control them. Most South Asian countries, including India and Bangladesh (which are the two environmentally vulnerable most countries), have introduced relevant courses/ chapters on environmental education in their school course curricula. But how far these initiatives are effective in dealing with the pre-determined objective of changing human knowledge, attitude and behavior towards nature remains untested. It is sometimes really difficult to evaluate learners' knowledge, attitude and behaviour as these not only be influenced from formal course curricula, but also are often attached to learning from the surroundings, media, friends, families and society as a whole. With these challenges in mind, a comparative study between school-going children of two similar South Asian cities, Delhi and Dhaka, has been designed to assess and evaluate learners' knowledge, attitude and behavior towards nature. It is expected that findings from this study would help us to understand the nature and extent of changes in learners' knowledge, attitude and behavior towards nature.

2. Environmental Education: The India-Bangladesh Context

Environmental education involves teaching about value judgment and the ability to think clearly about complex problems about the environment as they are technical. It is the educational process dealing with man's relationship with the natural and man-made surroundings, including the relation of population, resource allocation and depletion, conservation, transportation, technology and urban and rural

planning to the total human environment. Environmental education aims to enable people to enjoy good health and a high quality of life, it is vital to prevent harmful effects to human health or damage to the environment in the form of air, water, soil and noise pollution, loss of ecosystems and biodiversity, etc. caused by firms and individuals. In this way, environmental education motivates civil action and individual code in regard of environmental quality and economic development.

Environmental consciousness and environmentally responsive behavior among the masses across the South Asian countries are found to be quite poor due to a number of reasons, including poverty, poor education and awareness, cultural habit or simply ignorance about the need for conserving the nature. This necessitates the states to come up and design number of measures to deal with the issue environmental degradation and develop civic responsibilities towards the nature. These include constitutional, policy and legal provisions, awareness generation, introducing course curricula at different academic levels, working at the grassroots among the vulnerable people develop their resilience capacities to cope up with the changed environment, etc. India or Bangladesh is no different than other South Asian countries in this regard.

The Article 51A of the Constitution of India states, "it shall be the duty of every citizen of India to protect and to improve the natural environment, including forest, lakes, rivers and wild life and to have compassion for the living creatures". Similarly, the Kothari Commission (1964) realized the importance of environmental education and recommended that environmental activities would lead to the study of physical sciences, natural sciences, geography, history and civics; construction and creative skills would serve as the basis of simple art and crafts and practice of healthy living would serve as the foundation of environmental education. The National Council of Educational Research and Training (NCERT) in India in 1975 revised the curriculum of schools and introduced environmental education at primary level. At secondary and higher secondary levels, a few chapters on environmental aspects were included in geography and biology. The National Policy on Education (NPE) in 1986 also emphasized that there is a paramount need to create a consciousness of the environment. Later on, a number of initiatives were also taken to introduce environmental education as part of formal course curricula in India at different stages to make learners environmentally aware and also made them behave accordingly. The honourable Supreme Court of India in the year 2003 directed all educational institutions to introduce environment as a subject and also make it compulsory for all schools so that students can get a chance to understand the nature and the need for its management and preservation. There is no other option, but to introduce environmental education for the young learners to get them prepared to face the reality with efficiency. In order to achieve this objective, the NCERT prepared a National Curriculum Framework for School Education regardless of boards [Central Board of

Secondary Education (CBSE), Indian Certificate of Secondary Education (ICSE), Indian School Certificate (ISC), etc.].

Similarly, Bangladesh too gives much priority for environmental issues. Under the 15th Amendment in 2011, the Constitution of the People's Republic of Bangladesh in the *Article 18A* states, "the State shall endeavour to protect and improve the environment and to preserve and safeguard the natural resources, bio-diversity, wetlands, forests and wildlife for the present and future citizens". Similarly, [9] emphasizes on the need "to build students as skilled human resources to fight the challenges of the world threatened by climate change and other natural disasters and to create in them a social awareness about environment". Similarly, according to [11], "environmental education would be imparted to the teachers and students at all levels of education and specific measures must be undertaken to ensure participation of women at every level of education", while [5] pointed out that environmental education would: (i) eradicate illiteracy and create widespread mass awareness regarding the protection of the environment and utilization of all national resources in a sustainable and environmentally sound manner; (ii) ensure inclusion and dissemination of environmental knowledge and information in the formal and non-formal systems of education and the media; (iii) encourage spontaneous and active participation of people in all environmental activities; (iv) incorporate environmental issues in all training programs for public and private sector officials and employees, including industrial and commercial workers; (v) encourage necessary research and evolve technology so as to ensure long term, sustainable and environmentally sound utilization of all resources; and (vi) ensure that environmental issues get due consideration in all research activities by research and development institutions.

School education in Bangladesh comprises three distinct streams of education, i.e. general education, *madrasha* (Islamic academic system) education and technical/vocational education systems. In Bangladesh despite a clear recommendation by [9] on offering elementary level education (up to class eight) by primary schools, the schools still offer primary (up to class five) and junior secondary level education (six to eight) separately; while in India up to class eight (elementary) education is provided by same schools. Environmental education at elementary level schools in Bangladesh is covered in two main subjects: 'general science' and 'social science'. It is understood that environmental aspects of education have been described in the course curricula mostly from a knowledge point of view or more correctly from a subjective perspective (physics, chemistry, biology, etc.), but has not been introduced in an interactive manner- i.e. man-environment relationship. Emerging environmental issues such as climate change and human adaptations, however, did not receive any attention at all, and is missing [2]. In India, the textbooks for environmental studies which are prepared by NCERT has taken the cross curricular approach to teaching environmental concepts through language,

mathematics about the environment. In classes I and II there is no separate environmental studies (EVS) book. For classes III and IV, environmental studies (EVS) textbooks are available. Environmental education has been further reinforced under the art of healthy and productive living (AHPL) for which a single teacher's handbook has been developed for classes I to V. The NCERT textbooks of 'Science' and 'Social Science' for class six to eight standards have incorporated most important environmental concepts in the textbooks.

As mentioned, the basic objectives of introducing environmental education at school levels have been to educate learners about environmental challenges, change their attitude towards the environment and behave accordingly. But how far these objectives are met is an issue to evaluate critically. In this context, a comparative assessment of the environmental education provided at the elementary in the two neighbouring countries having almost similar state of their environment and environmental challenges may help us in understanding their effectiveness and introducing required modification, if needed. With this objective in mind, the present paper tries to evaluate critically the state of the environmental education provided at the elementary level schools in India and Bangladesh and assess their effectiveness.

3. Materials & Methods

3.1. Sample Characteristics and Data Sources

A comparative analysis of the state of environmental education provided at the elementary level schools of Delhi and Dhaka is a gigantic task considering the number of government and private schools and collecting data from them using a representative sampling technique. Considering all schools offer the same syllabus prescribed by the respective government and not much difference can be found in terms of students' environmental knowledge, attitude and behavior, this study has thus used a purposive sampling technique for the collection of data from the two cities. It has employed a sample size of 200 students, equally drawing from both government and private-run elementary schools and from Delhi and Dhaka. It means that from each city 100 questionnaires have been filled by selecting 50 students each from government and private schools in 2016 to assess their differences in environmental knowledge, attitude and behaviour.

3.2. Designing the Survey Questionnaires

The study employed primary data collected by using a specially designed questionnaire, although the relevant secondary information was also collected for supporting the findings from the primary survey. For collecting data from the two different cities, certain modifications were made. Both the versions of the questionnaires contained almost similar type of questions, except for a few country-specific issues. For the benefit of the students, questionnaires were

also translated in local languages i.e. Hindi for India and Bangla for Bangladesh.

The questionnaires had three major parts, besides having a brief introduction containing students' name, age, sex and school identity. These are:

- a. Student's Environmental Knowledge;
- b. Student's Attitudinal Responses towards Environment; and
- c. Student's Environmental/ Ecological Behaviours

Data were collected from class V to VIII level students only as environmental studies/education before class V are not offered in a systematic manner either in social science or science paper. For collecting data, a few students from each class were selected randomly and an in-person data collection method was followed. Students were initially provided with the required information for the purpose of the study and what they need to do to minimize errors, including non-response related problem.

Table 1. Students' Socio-demographic Characteristics.

Variable	Dhaka			Delhi			Average (Delhi and Dhaka)
	Government Schools	Private Schools	Overall	Government Schools	Private Schools	Overall	
Age (years)	14.22	14.44	14.33	14.38	14.44	14.41	14.40
Sex (number)	M=54	M=48	M=51	M=58	M=48	M=53	M=52
	F=46	F=52	F=49	F=42	F=52	F=47	F=48

M = Male respondents; F = Female Respondents

Source: Primary Surveys, 2016

The above table (*table-1*) clearly indicates that the students are by and large from the similar age-groups which in reality can also be justified as 14 years is an ideal age group for eighth standard students. Similarly, students selected from both the cities have almost similar type of sex ratio from both government and as well as privately-owned elementary schools. This implies that the expected outcomes in their responses can be judged according to other factors rather

3.3. Techniques for Data Analysis

For analyzing data collected through questionnaire surveys from Delhi and Dhaka, descriptive analytical tools (e.g. percentage, ratio, etc.) with Pearson's coefficient of correlation and 'paired t-test' techniques have been used to assess and differentiate students' environmental knowledge, attitude and behavior between the two cities.

3.4. Results and Discussions

3.4.1. Descriptive Analysis

Before analyzing details about the possible differences of environmental knowledge, attitude and behavior of the elementary level students of the two selected cities, data have been assessed and compared in terms of their major socio-demographic indicators.

than age and sex differences, which are not expected to influence their variation much.

3.4.2. Environmental Knowledge

Major characteristics of the elementary students surveyed from both the countries and from both government and privately run schools are presented in various tables in the following sections:

Table 2. Elementary Students' Knowledge on Environment - the Case of Dhaka (figures in percentage).

Question	Correct Answer (Pvt. Schools)	Correct Answer (Govt. Schools)	Correct Answer (Overall)
What is environment?	80	40	60
Why environment is important for us?	54	42	48
Syeda Rizwana Hassan is associated with	24	26	25
The polluted form of sound is noise, which is	10	8	9
Why should polythene bag be banned in Bangladesh?	38	44	41
Why river dredging is very important in Bangladesh?	24	12	18
What was the reason for starting the 'Tiger Census' in Bangladesh in 2008?	88	62	75
A8: Which ecosystem is rich in biodiversity in Bangladesh?	20	18	19
Why is Dr. Atiq Rahman famous in Bangladesh?	40	20	30
Which pollutant (GAS) causes ozone layer depletion?	58	42	50
With what the global warming is related to?	84	16	50
What is the full form of C.N.G.?	66	44	55
Climate change impacts can be in the form of	64	20	42
Why is the Paris Agreement famous for?	50	38	44
Who is the Minister of the Ministry of Environment & Forests of the Government of Bangladesh now?	20	32	26

Source: Primary Survey, 2016

The table (*table-2*) presents data collected through the primary survey conducted in different elementary schools

from Dhaka city. A careful analysis of the above data reveals that the overall performance of the students is not that

satisfactory. Suppose, the general question related to the famous environmental activist Syeda Rizwana Hassan in Bangladesh is not very well-known among the elementary students as only 25% of the overall students could answer it correctly. The question related to the noise pollution is another example that receives very poor response from the students. This indicates that many of the generic environmental issues are not well-known to the students. But many of the questions that frequently get placed in social

science and general science textbooks in Bangladesh have got relatively higher scores. For example, questions about the environment, climate change, etc. have higher correct responses. Further, differences between government and private schools can also be seen quite clearly in a number of cases. This indicates the difference in students' knowledge on the environment between government and private elementary schools in Dhaka city.

Table 3. Elementary Students' Knowledge on Environment - the Case of Delhi (figures in percentage).

Question	Correct Answer (Pvt. Schools)	Correct Answer (Govt. Schools)	Correct Answer (Overall)
What is environment?	94	48	71
Why environment is important for us?	54	54	54
Sunderlal Bahuguna is associated with	24	22	23
The polluted form of sound is noise, which is	16	12	14
Why should polythene bags be banned in India?	30	50	40
The 'Ganga Action Plan' is meant for	68	40	54
The 'Project Tiger' was started because	80	62	71
Which ecosystem is rich in biodiversity in India?	40	32	36
Medha Patkar is associated with	38	40	39
Which pollutant (GAS) causes ozone layer depletion?	78	38	58
Global warming is related to	96	92	94
What is the full form of C.N.G.?	96	52	74
Climate change impacts can be in the form of:	36	20	28
Why is the Paris Agreement famous for?	40	26	33
Who is the Minister in-charge of the Ministry of Environment & Forests of the Government of India (GOI)	50	10	30

Source: Compiled from Primary Survey, 2016

In the case of Delhi, it can be seen an almost similar tendency in the students' responses (table-3). Most of the environmental awareness related questions have got somewhat poor responses from the students, whereas questions from their textbook topics received better responses. Another important issue that demands attention is the differences between government schools and private schools in their performances. For example, what is environment has a highly different response rate between the two types of schools in Delhi. This can be related to the level

of attention given by a school and also students admitted from different socio-economic backgrounds. It is assumed that generally most government schools are attended by students from weak socio-economic backgrounds who hardly can afford the expensive private schools. Students from weaker backgrounds are also expected to have limited access to extra-curricular activities and media exposures and thus have lesser possibility of developing their environmental knowledge. Such outcomes are thus not unexpected.

Table 4. A Comparative Analysis of Environmental Knowledge by the Students of Dhaka and Delhi

Question	Dhaka	Delhi
What is environment?	60	71
Why environment is important for us?	48	54
Syeda Rizwana Hassan/ Sunderlal Bahuguna is associated with	25	23
The polluted form of sound is noise, which is:	9	14
Why should polythene bags be banned in Bangladesh/ India?	41	40
River dredging is very important in Bangladesh/ Ganga Action Plan is very important for India	18	54
What was the reason for starting the 'Tiger Census' in Bangladesh in 2008 / 'Project Tiger' in India?	75	71
Which ecosystem is rich in biodiversity in Bangladesh/ India?	19	36
Why is Dr. Atiq Rahman/Medha Patkar famous?	30	39
Which pollutant (GAS) causes ozone layer depletion?	50	58
Global warming is related to	50	94
What is the full form of C.N.G.?	55	74
Climate change impacts can be in the form of	42	28
Why recently held Paris was in news?	44	33
Who is the Minister in-charge of the Ministry of Environment & Forests of the Government of Bangladesh (GOB)/ India (GoI)?	26	30

Source: Primary Surveys, 2016

The findings suggest that on an average a student from Delhi has a higher environmental knowledge than Dhaka. Of the 15 questions, 10 have higher scores for Delhi; while the remaining 5 questions have shown higher values for schools from Dhaka (*table-4*). This can be traced to the reasons that environmental educations provided at the elementary level classes in Delhi are thought to be better than Dhaka. Socio-economic factors and their roles in this difference can also be a possible reason behind these differences.

Table 5. Test Statistics for Environmental Knowledge.

Statistic	Dhaka	Delhi
No. of Observations (N)	15	15
Mean Value (X)	39.47	47.93
Standard Deviation (SD)	18.00	22.43
Correlation of coefficient (r)	Correlation, $r = 0.72$ Level of significance $= 0.003$	

Source: Primary Surveys, 2016

The test statistics presented in the *table-5* above indicates that the average environmental knowledge score for Delhi students significantly higher than Dhaka, although data on Delhi also have greater variability as indicated by the higher standard deviation value. It implies that students from Delhi are endowed with higher knowledge about environmental issues and challenges, which can be attributed to favourable course curricula as well as better non-academic learning opportunities on environmental knowledge. But the paired t-test values for the two data sources indicate that there is no strong and significant difference between the level of environmental knowledge between students of Dhaka and Delhi (*table-6*). This means that although Delhi shows a higher environmental knowledge than Dhaka, but the difference is not statistically significant and thus any difference between the two city's students' environmental attitude and behavior may not be attributed much of their state of environmental knowledge.

Table 6. Outcomes of the Paired t-test for Environmental Knowledge.

Pair Type	Paired Differences				T Value	Df	Sig. (2-tailed) P
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower Upper			
Pair 1 BD IND	-8.47	15.78	4.08	-17.21 .27	-2.08	14	.057

BD=Bangladesh; IND=India

Source: Primary Surveys, 2016

3.4.3. Environmental Attitude

Experts opine that people's attitude towards the nature can significantly be influenced by their learning and education. It is against this understanding that the study has tried to identify whether environmental education among the elementary

students in Dhaka and Delhi have any impact on their environmental attitude. Further, their responses have also been scrutinized to assess any possible difference between responses' from two cities. The following two tables (one each from Bangladesh and India) have shown the results.

Table 7. Students' Environmental Attitude- the Case of Dhaka (figures in percentage).

Question	Agreed (Pvt. School)	Agreed (Govt. School)	Agreed (Overall)
When I am outside, I usually don't notice the natural things around me like trees, flowers, clouds, etc.	42	52	47
I think nobody can stop the environmental degradation in Bangladesh	56	48	52
I am very much concerned about the air pollution in Dhaka City	62	82	72
Dhaka's whether is changing from good to the worst and it bothers me a lot	74	50	62
I am not interested of reading on nature, biodiversity or pollution	30	48	39
More land should be set aside for wildlife habitats	60	46	53
I believe that I can make some change in the environment, even if it is a very small one	70	56	63
I am concerned about the environmental health hazards like air or water pollution related risks	88	62	75
Many people in Dhaka city regularly misuse water	66	64	65
Bangladesh should undertake more economic activities without considering about the environment now as it is a developing country	38	54	46
I think environmental issues are highly exaggerated	64	60	62
Bangladesh is doing enough for saving its environment	12	36	24
It's very difficult to stop people from polluting air and water in Dhaka	62	44	53
Adopting more strict legal measures can improve the environmental quality in Dhaka	66	56	61
I am very much optimistic about the possible improvement of the environmental quality of Dhaka city	66	64	65

Source: Primary Survey, 2016

The above table (*table-7*) describes the average scores of environmental attitude of the students from various private and government schools of Dhaka. Although it is not that easy for these data to understand the exact differences between the two groups, out of the 15 questions asked on

environmental attitude 10 are found to have higher scores for private schools than the government schools for Dhaka city. It gives a gross picture of the comparability between two sets of attitudinal answers. The average figures for private, government and all schools together are found to be 57, 55

and 56 out of maximum 200, respectively.

Table 8. Descriptive Statistics of the Attitudinal Questions-the Case of Dhaka city.

Environmental Attitude related Questions	Mean	Std. Deviation	No. of Observation
When I am outside, I usually don't notice the natural things around me like trees, flowers, clouds, etc.	2.14	1.443	100
I think nobody can stop the environmental degradation in Bangladesh	2.36	1.375	100
I am very much concerned about the air pollution in Dhaka City	3.01	1.049	100
Dhaka's whether is changing from good to the worst and it bothers me a lot	2.71	1.104	100
I am not interested of reading on nature, biodiversity or pollution	2.07	1.233	100
More land should be set aside for wildlife habitats	2.44	1.225	100
I believe that I can make some change in the environment, even if it is a very small one	2.58	1.191	100
I am concerned about the environmental health hazards like air or water pollution related risks	3.10	1.219	100
Many people in Dhaka city regularly misuse water	2.76	1.272	100
Bangladesh should undertake more economic activities without considering about the environment now as it is a developing country	2.25	1.298	100
I think environmental issues are highly exaggerated	2.55	1.175	100
Bangladesh is doing enough for saving its environment	1.53	1.329	100
It's very difficult to stop people from polluting air and water in Dhaka	2.33	1.349	100
Adopting more strict legal measures can improve the environmental quality in Dhaka	2.62	1.301	100
I am very much optimistic about the possible improvement of the environmental quality of Dhaka city	2.71	1.233	100

Source: Primary Survey, 2016

Table-8 presents outcomes of the descriptive analysis of attitudinal questions asked to students from Dhaka city. The findings suggest similar outcomes like the previous table with moderate values of both mean and standard deviation for

almost all the questions. In both the cases, the maximum and minimum values range from 5 to 0. The findings suggest that students' environmental attitudes were not really up to the mark and there is a need to look into the matter more seriously.

Table 9. Students' Environmental Attitude-the Case of Delhi.

Question	Agreed (Pvt. School)	Agreed (Govt. School)	Agreed (Overall)
When I am outside, I usually don't notice the natural things around me like trees, flowers, clouds, etc.	46	54	50
I think nobody can stop environmental degradation in India	62	48	55
I am very much concerned about the air pollution in Delhi	68	82	75
Delhi's whether is changing from good to the worst and it bothers me a lot	70	56	63
I am not interested of reading on nature, biodiversity or pollution	48	40	44
More land should be set aside for wildlife habitats	60	50	55
I believe that I can make some change in the environment, even if it is a very small one	74	64	69
I am concerned about the environmental health hazards like air or water pollution related risks	82	64	73
Many people in Delhi city regularly misuse water resource	76	76	76
India should undertake more economic activities without considering about the environment now as it is a developing country	52	52	52
I think environmental issues are highly exaggerated	68	70	69
India is doing enough for saving its environment	56	42	49
It's very difficult to stop people from polluting airspace and waterbodies in India	62	42	52
Adopting more strict legal measures can improve the environmental quality in India	66	54	60
I am very much optimistic about the possible improvement of the environmental quality of Delhi	68	64	66

Source: Primary Survey, 2016

Table-9 above shows the similar type of attitudinal questions for Delhi. In the case of Delhi, 10 out of the 15 questions exhibited higher average scores for private schools, while only 3 government schools showed better scores compared to private schools. This implies that private

schools are better performers than government schools, which in reality are also found to maintain higher standards in their educational and co-curricular activities. The overall average score is estimated to be 60.53 out of the maximum possible score of 200.

Table 10. Descriptive Analysis of the Attitudinal Questions- the Case of Delhi.

Environmental Attitude related Questions	Mean	Std. Deviation	No. of Observations
When I am outside, I usually don't notice the natural things around me like trees, flowers, clouds, etc.	2.19	1.412	100
I think nobody can stop environmental degradation in India	2.40	1.333	100
I am very much concerned about the air pollution in Delhi	2.95	1.158	100
Delhi's whether is changing from good to the worst and it bothers me a lot	2.73	1.090	100
I am not interested of reading on nature, biodiversity or pollution	2.11	1.246	100
More land should be set aside for wildlife habitats	2.53	1.029	100
I believe that I can make some change in the environment, even if it is a very small one	2.74	1.070	100
I am concerned about the environmental health hazards like air or water pollution related risks	2.91	1.093	100
Many people in Delhi city regularly misuse water resource	3.15	0.999	100
India should undertake more economic activities without considering about the environment now as it is a developing country	2.43	1.233	100
I think environmental issues are highly exaggerated	2.74	0.928	100
India is doing enough for saving its environment	2.32	1.213	100
It's very difficult to stop people from polluting airspace and waterbodies in India	2.37	1.269	100
Adopting more strict legal measures can improve the environmental quality in India	2.48	1.314	100
I am very much optimistic about the possible improvement of the environmental quality of Delhi	2.72	0.996	100

Source: Primary Survey, 2016

In the case of mean and standard deviation values estimated against each question on environmental attitude for Delhi, the outcomes are quite different. Out of the 15 questions, 10 have shown higher values for Delhi. It means

that only the other three have higher values in Dhaka (table-10). This implies that students' environmental attitude is quite different in nature from the two cities.

Table 11. Environmental Attitudes: A Comparative Picture.

Question	Dhaka	Delhi
When I am outside, I usually don't notice the natural things around me like trees, flowers, clouds, etc.	47	50
I think nobody can stop the environmental degradation in Bangladesh/India.	52	55
I am very much concerned about the air pollution in Dhaka/Delhi City.	72	75
Dhaka's/Delhi's whether is changing from good to worst and it bothers me a lot.	62	63
I am not interested in reading about nature, biodiversity or pollution related books.	39	44
More land should be set aside for wildlife habitats.	53	55
I believe I can make some change in our environment, even if it is very small.	63	69
I am concerned about environmental health hazards such as those caused by air or water pollution.	75	73
Many people in Dhaka/Delhi regularly misuse water.	65	76
Bangladesh/India should undertake more economic activities without considering about environment now as it is a developing country.	46	52
I think environmental issues are highly exaggerated.	62	69
Bangladesh/India is doing enough for saving its environment.	24	49
It's very difficult to stop people polluting our air and water in Dhaka/Delhi.	53	52
More strict legal measures can improve environmental quality in Dhaka/Delhi.	61	60
I am very much optimistic that we can improve our environmental quality, if we want it to be improved.	65	66

Source: Primary Surveys, 2016

In the case of environmental attitude, the overall statistics suggest that the two average values are highly correlated with a value of 0.87 and very high level of significance. But the mean of scores for the two cities is quite different: Delhi has

a higher average score than Dhaka (table-11). On the other hand, the estimated t-value indicates that there is a strong and significant difference in the environmental attitude of the two selected groups (table-12).

Table 12. Test Statistics for Environmental Attitude.

Statistic	Dhaka	Delhi
No. of Observations (N)	15	15
Mean Value (X)	55.93	60.53
Standard Deviation (SD)	13.24	10.38
Correlation of coefficient (r)	Correlation, $r = 0.87$ Level of significance = 0.000	

Source: Primary Surveys, 2016

Similarly, the paired t-test values for the two sets of data indicate that there is a strong and significant difference between the level of environmental attitude of the students of Dhaka and Delhi (table-13). This means that differences in the attitudinal values for two cities' elementary students are statistically significant. This means that attitude of the elementary level students of Delhi are more

environmental-friendlier than Dhaka and are also expected to be reflected in their behavior.

Table 13. Outcomes of the Paired t-test for Environmental Knowledge.

Pair Type	Paired Differences				T Value	Df	Sig. (2-tailed) P
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
				Lower Upper			
Pair 1 BD IND	-4.60	6.62	1.71	-8.27 -0.93	-2.691	14	0.018

BD=Bangladesh; IND=India

Source: Primary Surveys, 2016

3.4.4. Environmental Behaviour

Environmental education and attitude are perceived to influence the environmental behaviour of the learners. As education increases pupils' knowledge base and thus influences learners' attitudes and behaviours. The following

two tables under this section have tried to analyze students' environmental behaviours which are the prime concern for providing environmental education at all levels, and particularly at elementary level students.

Table 14. Students' Environmental Behaviour- the Case of Dhaka.

Question	Agreed (Pvt. School)	Agreed (Govt. School)	Agreed (Overall)
I generally switch-off my electric fan if nobody is the room where the fan is on.	92	84	88
I frequently throw garbage here and there.	72	56	64
I, walk, take public transportation, or ride a cycle instead of using a car running by petrol.	60	60	60
I purchase a product over the other one as it is packed in a reusable container.	74	60	67
I write to newspaper about environment.	50	56	53
I support someone for captaincy in my class who favours cleanliness of the school premises & my classrooms.	90	92	91
I suggest my mother to separate & keep kitchen wastes into different bins as 'degradable' and 'biodegradable' one.	78	76	77
I plant trees and saplings in my garden/ yard/ rooftop.	76	68	72
I avoid traveling by a bus which does not use CNG as fuel.	58	60	59
I spit on the road frequently.	72	64	68
I tell my younger brother/ sister/ friend not to through wastes in the open space.	84	68	76
I like to visit zoo/garden/park for enjoying animals, trees, grasses, etc.	76	80	78
If someone throws a rotten banana on the way, I generally keep it in a bin or safe place.	80	66	73
I use a mug for washing my face rather than using the basin pipe.	78	78	78
If there will be a 'Campaign for Cleaning the River Buriganga' I will Participate on it.	84	76	80

Source: Primary Survey, 2016

From a careful look over the *table-14* can make us understand that the scores of the privately run schools for 9 questions are higher than the government schools, while 2

questions exhibited same figures. It means that the remaining 4 answers and their average scores are larger for government schools than the selected private schools in Dhaka city.

Table 15. Descriptive Analysis of Environmental Behaviour Questions-the Case of Dhaka.

Environmental Behaviour Question	Mean	Std. Deviation	No. of Observation
I generally switch-off my electric fan if nobody is the room where the fan is on.	3.01	1.176	100
I frequently throw garbage here and there.	2.04	1.348	100
I, walk, take public transportation, or ride a cycle instead of using a car running by petrol.	1.85	1.410	100
I purchase a product over the other one as it is packed in a reusable container.	2.09	1.371	100
I write to newspaper about environment.	1.74	1.461	100
I support someone for captaincy in my class who favours cleanliness of the school premises & my classrooms.	3.14	1.015	100
I suggest my mother to separate & keep kitchen wastes into different bins as 'degradable' and 'biodegradable' one.	2.35	1.258	100
I plant trees and saplings in my garden/ yard/ rooftop.	2.43	1.350	100
I avoid traveling by a bus which does not use CNG as fuel.	1.88	1.451	100
I spit on the road frequently.	2.05	1.306	100
I tell my younger brother/ sister/ friend not to through wastes in the open space.	2.44	1.336	100
I like to visit zoo/ garden/ park for enjoying animals, trees, grasses, etc.	2.59	1.264	100
If someone throws a rotten banana on the way, I generally keep it in a bin or safe place.	2.44	1.416	100
I use a mug for washing my face rather than using the basin pipe.	2.37	1.308	100
If there will be a 'Campaign for Cleaning the River Buriganga' I will participate on it.	2.43	1.358	100

Source: Primary Survey, 2016

The descriptive analysis techniques used for the above table (*table-15*) on elementary students' environmental behaviour for Dhaka display quite moderate values as the mean values for most of the questions have exhibited figures that are around 2.50 in a scale of 5, except for a few questions. This implies that the overall environmental

behaviour among the students of Dhaka are found to be moderately environment-friendly and thus are expected to be influenced by the state of their environmental knowledge earned through course curricula and other non-academic sources like media, peer influence, internet, etc.

Table 16. Students' Environmental Behaviour- the Case of Delhi.

Question	Agreed (Pvt. School)	Agreed (Govt. School)	Agreed (Overall)
I generally switch-off my electric fan if nobody is the room where the fan is on.	94	88	91
I frequently throw garbage here and there.	76	58	67
I, walk, take public transportation, or ride a cycle instead of using a car running by petrol.	80	66	73
I purchase a product over the other one as it is packed in a reusable container.	78	62	70
I write to newspaper about environment.	56	56	56
I support someone for captaincy in my class who favours cleanliness of the school premises & my classrooms.	92	100	96
I suggest my mother to separate & keep kitchen wastes into different bins as 'degradable' and 'biodegradable' one.	74	76	75
I plant trees and saplings in my garden/ yard/ rooftop.	78	66	72
I avoid traveling by a bus which does not use CNG as fuel.	58	62	60
I spit on the road frequently.	54	54	54
I tell my younger brother/ sister/ friend not to through wastes in the open space.	86	68	77
I like to visit zoo/ garden/ park for enjoying animals, trees, grasses, etc.	88	82	85
If someone throws a rotten banana on the way, I generally keep it in a bin or safe place.	70	68	69
I use a mug for washing my face rather than using the basin pipe.	72	70	71
If there will be a 'Campaign for Cleaning the River Yamuna' I will Participate on it.	80	76	78

Source: Primary Survey, 2016

In Delhi, it is found that private schools have scored fairly better than their counterparts. Out of the fifteen behavioural questions, nine are having higher scores of private schools in Delhi than government schools, while the average score for private and government schools are found to be about 76 and 70, respectively. This once again indicates that private

schools have done fairly better if compared with government schools in Delhi (*table-16*). It can be argued that most private schools in Delhi maintain a better educational standards and extra-curricular activities than their government counterparts. Higher scoring by private schools in this context is in line with the 'a priori' expectation.

Table 17. Descriptive Analysis of Environmental Behaviour Questions-the Case of Delhi.

Environmental Behaviour related Question	Mean	Std. Deviation	No. of Observation
I generally switch-off my electric fan if nobody is the room where the fan is on.	3.08	1.089	100
I frequently throw garbage here and there.	2.18	1.431	100
I, walk, take public transportation, or ride a cycle instead of using a car running by petrol.	2.21	1.233	100
I purchase a product over the other one as it is packed in a reusable container.	2.12	1.320	100
I write to newspaper about environment.	1.73	1.434	100
I support someone for captaincy in my class who favours cleanliness of the school premises & my classrooms.	3.17	0.922	100
I suggest my mother to separate & keep kitchen wastes into different bins as 'degradable' and 'biodegradable' one.	2.37	1.419	100
I plant trees and saplings in my garden/ yard/ rooftop.	2.23	1.370	100
I avoid traveling by a bus which does not use CNG as fuel.	1.83	1.407	100
I spit on the road frequently.	1.69	1.454	100
I tell my younger brother/ sister/ friend not to through wastes in the open space.	2.49	1.403	100
I like to visit zoo/ garden/ park for enjoying animals, trees, grasses, etc.	2.63	1.186	100
If someone throws a rotten banana on the way, I generally keep it in a bin or safe place.	2.26	1.454	100
I use a mug for washing my face rather than using the basin pipe.	2.23	1.434	100
If there will be a 'Campaign for Cleaning the River Yamuna' I will Participate on it.	2.43	1.451	100

Source: Primary Survey, 2016

On the other hand, the average scores and their respective standard deviations for environmental behavior of the elementary students from Delhi presented in *table-17* show that most questions have quite average values (on a scale of 0-5), although there are some minor differences that can be

read from the data table. Finally, if the schools in Dhaka city are compared with that of Delhi, it can be understood that Delhi schools have done marginally better than Dhaka in environmental behaviour (*table-18*), although they are quite better in environmental knowledge and marginally better in

environmental attitude. It implies that knowledge may not necessarily get reflected in the students' environmental attitude and behaviour.

Table 18. *Environnemental Behaviour: A Comparative Picture.*

Question	Dhaka	Delhi
I generally switch-off my electric fan if nobody is the room where the fan is on	88	91
I frequently throw garbage here and there	64	67
I, walk, take public transportation, or ride a cycle instead of using a car running by petrol	60	73
I purchase a product over the other one as it is packed in a reusable container	67	70
I write to newspaper about environment	53	56
I support someone for captaincy in my class who favours cleanliness of the school premises & my classrooms	91	96
I suggest my mother to separate & keep kitchen wastes into different bins as 'degradable' and 'biodegradable' one	77	75
I plant trees and saplings in my garden/ yard/ rooftop	72	72
I avoid traveling by a bus which does not use CNG as fuel	59	60
I spit on the road frequently	68	54
I tell my younger brother/ sister/ friend not to through wastes in the open space	76	77
I like to visit zoo/ garden/ park for enjoying animals, trees, grasses, etc.	78	85
If someone throws a rotten banana on the way, I generally keep it in a bin or safe place	73	69
I use a mug for washing my face rather than using the basin pipe	78	71
If there will be a 'Campaign for Cleaning the River Buriganga/Yamuna' I will Participate on it	80	78

Source: Primary Surveys, 2016

In the case of environmental behaviour, the overall statistics suggest that the two average values representing Dhaka and Delhi are highly correlated with a value of 0.85 and the perfect level of significance (table-19). The means of

the average scores for the two cities are also found to be quite close to each other. It implies that the collected information from India and Bangladesh support a weak and insignificant relationship between their respective environmental behavior.

Table 19. *Test Statistics for Environmental Behaviour.*

Statistic	Dhaka	Delhi
No. of Observations (N)	15	15
Mean Value (X)	72.27	72.93
Standard Deviation (SD)	10.60	11.73
Correlation of coefficient (r)	Correlation, $r = 0.85$, Level of significance = 0.000	

Source: Primary Surveys, 2016

Finally, the estimated 't' with a poor 'p' value indicates that there is a weak and insignificant difference in the estimated environmental behaviours of the two selected groups (table-20). This implies that although environmental

knowledge and environmental attitude are found to be higher in Delhi compared to Dhaka, in reality environmental behavior by the selected elementary level students of the two cities are almost similar in nature.

Table 20. *Outcomes of the Paired t-test for Environmental Behaviour.*

Pair Type	Paired Differences				t-value	Df	Sig. (2-tailed) p
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
				Lower Upper			
Pair 1 BD IND	-6.67	6.23	1.61	-4.12 2.78	-0.414	14	0.685

BD=Bangladesh; IND=India

Source: Primary Surveys, 2016

4. Conclusion

The findings from the comparative analysis of the two cities from two neighbouring countries with different level of formal environmental education at elementary level studies suggest that despite the selected elementary-level students' environmental knowledge and attitude for Delhi schools are found to be better than Dhaka, their environmental behavior are not significantly different. It shows a missing link between environmental knowledge, attitude and behavior in this context. The very purpose of introducing environmental education at elementary-level classes to influence learners'

behavior seems to be remained unfulfilled. Such findings are not uncommon in literature [5; 8] This demands an assessment of the designing of course curricula, developing study materials, and teaching methods, which may have failed to influence learners to behave in a pre-determined manner. It should also be kept in mind that in today's digitized age students not only learn from their textbooks and institutional environment, print and electronic media, social networks, and the environment around play quite vital roles in shaping their knowledge, attitude and behavior. Considering environmental degradation for both the countries is a serious development challenge, which may only get

exaggerated if required steps are not taken in time, making the younger generations environmentally-responsible citizens has no viable alternative. It is thus important that effective environmental education is introduced at elementary-level studies that may make real impacts on environmentally responsible attitude and behavior of young learners.

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