



# AN ENVIRONMENT AWARENESS ABILITY OF 10+2 SCIENCE AND ARTS STUDENTS

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## **ABSTRACT**

*The main purpose of this article is to analyse the level an environment awareness ability of 10+2 science and arts students. The investigator used normative survey method and Sample selected through random sampling technique. 100 10+2 students were identified as samples including 50% of boys and 50% girls students were selected. The environment awareness ability scale developed by Dr. Praveen Kumar Jha, was used for collection of data. The scale here contains 51 items (including 41 positive and 8 negative statements) with agree and disagree response categories. The result shows that there is significant difference between boys and girls of 10+2 students in their environment awareness ability, there is significant difference between urban and rural of 10+2 students in their environment awareness ability and there is significant difference between science and arts students of 10+2 classes in their environment awareness ability.*

**Key Words:** Environment Awareness Ability, Science, Arts

## **1. Introduction**

Mahatma Gandhi said, "Earth provides enough to satisfy every man's needs but not every man's greed's". Jawaharlal Nehru said, "In spite of our culture and civilization in many ways man continues to be not only wild but more dangerous than any of the so called wild animals". It hardly needs to be emphasized that environment has assumed the highest priority on the world agenda and the major global

environment concern we are facing today cannot be overlooked any longer. Environment has become the concern of all; the academicians, intellectuals, scientists, policy makers and government across the continents. The depletion of the ozone layer, increase in the level of carbon dioxide and acid rains are the most serious environment issues facing us today. The UN world conference on the environment is Stockholm in 1972, the earth summit held in Rio de Janeiro in 1992, the global forum 1992 and the activities organized by the international NGO forum show that environment is an the agenda of the international community.

There is an increasing realization that the human race now stands at the cross roads in choosing the options it has in the areas of environment and development. Man in his economic activities have increased at an exponential rate during the past several decades in the earth's resource base and life support systems have become vastly depleted. The striking manifestations of these are as global climate, the intricate webs of forests, ecology, and diversity of living beings. Hence our indifference towards environment will have serious implications for our own well being. The need for environmental awareness therefore can never be over-emphasized since safeguarding environment means improving the quality of life. The developing countries need abundant material growth to fulfill, the basic needs of their people, but they cannot afford to repeat the mistakes of industrial countries. Awareness about all these factors has to be created in our new generation through the process of education. An environment protection start by creating awareness among the people so that it becomes part of their life style. The objective of environmental education includes awareness, knowledge, attitudes, and skills and participation of people in protecting environment.

## **2. Environment:**

Environment is a surrounding or all the outside factors influencing development or growth of an individual from his birth. The environment is everything that influences the individual except his genes. Environment comprises almost everything around us. It includes humans, plants, animals, and invisible microorganisms. Also it includes surface water, ground water, air, land, and oil and other element available from the earth. Man ordered and defined environment. They grow out of the pressing social problems and are multi-disciplinary in nature. They include the study of man as an integral part of every problem and are conceived with human problems. In relation to an environment of which man is both victim and conqueror. Man is a slave of

environment. The child may have all kinds of abilities but cannot be developed fully without a proper environment. Environment starts influencing the child from the stage of embryo. This influence has been called “social heredity”

There are two distinct environments, one created by nature and the other being created by human beings. Here we are concerned with only environment created by nature. Environment may further be classified into;

1. Physical environment: this includes food, temperature, climate, home, buildings, libraries, museums, schools, temples etc.,
2. Social environment: it includes members of the family, relatives, friends, neighbours, teachers and society in large. It also includes rules, regulations, and traditions of the society
3. Emotional environment: it covers emotional nature of the family members, other relatives, friends, neighbours, and teachers
4. Biotic environment: this includes living organisms surrounding us e.g. all the animals including water animals, microorganisms and plants.

### **3. Ecology:**

Ecology is defined as the study of organisms in relation to their environment. Ecology is the study of the total relations of the animals both to its organic environment including its friendly and inimical relations with those animals and plants with which it comes directly or indirectly. In essence ecology is the study of ecosystem. The things of the world are classified into two major groups namely the living or biotic components and the non-living or a-biotic components. An aspect which deals with the inter-relationship between biotic and a-biotic components as well as the relationships among the individuals of the biotic components is called ecology.

### **4. Ecosystem:**

An ecosystem is a small segment of nature embracing the community of living things plus the physical environment. By definition an ecosystem is an ecological system that is in a state of equilibrium, it is a self sustaining system that needs only one input, that of energy. An ecosystem is the structural and functional unit of the biosphere. From the structural point of view, all ecosystems consist of the following basic components

1. Abiotic Component
2. Biotic Component

Thus in any ecosystem we have the following functional components

- a) Inorganic constituents (air, water, and minerals etc.)
- b) Organic constituents (plants, animals and microbes) and
- c) Energy inputs which enters from outside the sun. these three interact and form an environmental system.

## **5. Man and Environmental Extremism:**

The environment which sustains life is in peril at present. Human actions are the main reasons for this. Rapid industrialization, innovations in the field of science and technology and the abuse of this advancement in an arbitrary way and the fast growth of urbanization have passed danger to man himself. Man's life in terms of quality and sustainability, is dependent on the interrelationships among the natural environment, social environment and technological environment and the latter too being manmade. As proposed by the sociologist William Ogburn, a change in any one of the environments will lead to greater or lesser changes in every other part of the total complex. And these changes as a result will have a tremendous impact on the very living of the man. The most threatening aspect is the uncertainty prevailing about the fate of our future generations.

Generally people are indifferent to this environment. Newton's third law states, "every action has an equal and opposite reaction". This equally applies to man's relationship with nature as it relates to application of force on inanimate objects. While man sought domination over nature in five thousand years of recorded history, he has begun to realize that his welfare and his very existence are deeply interwined with the natural cycles and systems.

## **6. Factors causes environmental crisis:**

The major area of environmental problem is the conflict between progress and conservation. The factors causing environmental crisis are;

- 1) Pollution- air, water, soil, radioactive and noise pollution
- 2) Population explosion
- 3) Deforestation
- 4) Eco-disruption and
- 5) Energy crisis

- 1) **Pollution:** pollution is defined as an undesired change in the physical, chemical or biological properties of soil, water, and air. Pollution is defined as the addition of materials to water, air or land which adversely affect the natural quality of the environment. In some cases, it may involve the removal, rather than addition, of constituents from the environment. Life saving and sustaining natural resources for plant, animal and man's life are air, water and soil etc., these sources are being polluted to an extent that by disturbing the ecological balance.

There are various ways to classify pollution. For example we can classify pollution into different types based upon the nature of the pollutants. We can also classify pollution as natural and artificial pollution

- a) **Air pollution:** air pollution is the commonest type of pollution and its adverse effects are felt very rapidly. For example when large quantities of pollutants like smoke pollute atmospheric water vapour smog results and smog can cause death of humans by inducing respiratory failure. The following pollutant oxides of carbon cause air pollution, oxides of nitrogen, oxides of sulphur, radioactive isotopes. Air pollution is due to industrialization and its waste discharge in air and also due to exhaust of automobiles in big cities.
- b) **Water pollution:** water is precious natural resource whose purity has to be maintained at any cost. The property of water as a universal solvent makes it possible for a variety of chemicals including pollutants to dissolve in it. Water is polluted by domestic sewage, industrial effluents including thermal pollution caused by release of hot water into nearby lake or river, silt pollution and pollution by insecticides and related chemicals. The lakes in Kashmir and other tourist places are facing threat by the growth of some weeds, which has resulted in shrinking of the lake. The spillage and leakage of oil from the ships and tankers are threatening the ocean plants and animal life as half of the oil produced in the world is transported through oceans.
- c) **Soil pollution:** the soil pollution is caused by the improper disposal of solid and liquid wastes, soil pollutants includes garbage industrial wastes, chemicals and sometimes radio nuclides. From the soil system most of these pollutants like DDT, radio active elements are absorbed by the root system of the plants and from the plants and pollutants are passed along to different types of consumers.

- d) **Noise or sound pollution:** noise is defined as unwanted sound. Sound is an important means of communication but high frequency noise could damage hearing and cause deterioration in capacity to concentrate on work. Noise is measured in unit of decibel (dB). A person can experience problems of exposed constantly to 115 dB and a noise level of 145 dB causes acute ear pain. Noise or sound pollution is an occupational hazard in industries like foundries, in parts of cities close to busy airports and busy traffic
- e) **Radioactive pollution:** the radioactive pollutants are produced by the nuclear power plants and also by all kinds of nuclear explosions. These radio isotopes can enter the body through the food chains, if people are exposed to ionizing radiation's. they may develop cancer and genetic disorders. Strontium 90 is a common radioactive pollutants of the atmosphere. In India the health physics division of the BARC, Mumbai is doing work on the control of radioactive pollution
- f) **Population explosion:** population can be defined as a group of individuals belonging to a species in a given geographical area. There is a hue and cry about population explosion, ecological imbalance, and environmental pollution in all the cities of these days. The population of the world is growing by leaps and bounds. The principal cause for population explosion is high rate of population growth. The cause for this is mainly the decrease in death rate due to increase in medical facilities which has increased the life span of human beings. The ever increasing human population puts a great pressure on land for dwelling and agriculture. To obtain land for these purposes forests are being cleared results in deforestation
- g) **Deforestation:** population explosion and the increasing pace of industrialization have been the major causes for the indiscriminate use of forest resources. This has caused deforestation leading to ecological imbalance, loss of precious top soil siltation of lakes and irrigation of reservoirs and conversion, in the long run fertile land are converted into desert.
- h) **Energy crisis:** energy is the key to the better world. People talk of energy of a man of the sum of the waves and top the wind but what energy is? Energy has two sources i.e., conventional or non-renewable and renewable. Now it is known that the world has the resources of minerals, oils, coal and natural gases are limited in stock and once they are exhausted means we cannot create them. The energy

resource can further classified as commercial and non-commercial. The commercially exploited forms are coal, oil, hydropower and nuclear energy. The non-commercial sources are fire wood, form waste, cow dung and animal powers

## 7. Worldwide environmental issues:

- 1) **Green house effect:** many studies show that the atmospheric pollution is on a global scale. Carbon dioxide buildup leading to climatic change is one of those key issues, and the recent research indicates that increasing concentration of CO<sub>2</sub> in the atmosphere due to mainly to burning of fossil fuel would cause a warming trend leading climatic changes in the next country.
- 2) **Risk to ozone layer:** ozone is a different from life sustaining oxygen having their atoms instead of usual two. Scientists have found that this third atom is very unstable and can be eliminated by chloride and bromine ions. Chlorofluro carbon compounds used commonly in aerosol can sprays and cooling systems can damage the ozone layer in the higher atmosphere levels which can harm life on earth by increase of incident UV radiation's from sunlight; this leads to increased incidence of skin cancer
- 3) **Acid rain:** acid rain is now recognized as an international problem. The air of industrial towns partly is by chimneys at factories which push the pollution high into air. Theses chimneys have made the things better locally by despairing the pollutants but aggravated the international difficulties, for the sulphur and nitrogen compounds emitted fossils fuels can be brown thousands of kin, by the winds to cause the acid rain in countries for away from their points of origin.
- 4) **Loss of tropical forests:** the tropical forests are the world's richest biological zones and are estimated to contain as much as 40% of all terrestrial species on the planet. Many experts contend that tropical forest are being exploited at a rate and in a way that is ecologically destructive an economically unsuitable.

## 8. Environmental education

Environmental education is an approach to learning. It endeavours to create a way of thinking requiring people to overcome prejudices. The principle of environment education is that it makes the pupil's education problem related to understanding the environment and hazards of its pollution. The environmental education is socially relevant as it helps us how unchecked and unplanned development pollutes air, water, and soil and thereby threatening our subsistence and existence. Therefore,

environmental education means the educational process dealing with man's relationship with his natural and man made surroundings and includes the relations of population, pollution resource allocation and depletion, conservation, transportation, technology, energy urban and rural planning to the total biosphere.

A society or a country is nothing but an extension of individuals hence a very dynamic program on environmental education is needed to cater to school children, college and university students, adult illiterates and other section of the society. Special emphasis is needed to educate children as educating a child is educating a generation. The spectrum of environmental education falls in four major but integrating components;

- 1) Awareness
- 2) Real life situations
- 3) Conservation and
- 4) Sustainable development

## **9. Statement of the problem**

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## **10.Objectives of the study**

1. To assess environment awareness ability of 10+2 science students of boys and girls
2. To assess environment awareness ability of 10+2 arts students of boys and girls
3. To compare the awareness ability of 10+2 arts and science students of boys and girls
4. To suggest the measures to protect environment through education

## **11.Hypotheses of the study**

1. There is no significant difference between boys and girls of 10+2 students in their environment awareness ability
2. There is no significant difference between urban and rural of 10+2 students in their environment awareness ability
3. There is no significant difference between science and arts students of 10+2 classes in their environment awareness ability

## 12. Operational terms defined

Environment awareness: it is defined as the factual information or knowledge possessed by a student about environmental issues, facts and events in the content areas of ecological concepts, pollution, wildlife, natural resources, population and persons and organizations involved in the environmental movement.

## 13. Review of related literature:

1. Deopuria (1984) made a comparative study of teaching of Science through environmental and traditional approach in schools of Madhya Pradesh. The objectives were to compare the effectiveness of two different approaches in developing environmental awareness, attitude towards environmental education and cognitive achievement in science among students. the study revealed that the environmental approach group obtained higher achievement scores due to teaching of science through environmental approach.
2. Gupta (1986), in his study, attempted to develop a tool, which can measure the attitude of teachers towards EE. The data for his study were collected from teachers working in primary and secondary schools and junior colleges. The study showed that the teachers had favourable attitude towards EE but the degree of favourableness was the highest among college teachers and the lowest among primary school teachers. The study identified that crowded classroom, lack of time for proper planning of activities and loss of interest in the absence of follow up actions as stumbling blocks to the implementation of EE program.
3. Tripathi (2000): A study by Tripathi (2000) entitled Comparative Study of Environmental Awareness of Students Studying in Central Schools and Other Schools at 10+ level in Uttar Pradesh, revealed that: 1) the difference between boys and girls students of central schools was found to be significant with respect to their environmental awareness. Boy students were found significantly higher than girl students, 2) there was significant difference between environmental awareness of science and arts students of central schools. Arts students were found significantly higher than science students with respect to their environmental awareness.
4. Shaila (2003) conducted a study on effect of background variables on the environmental attitude of secondary school teachers in Bangalore city. The study revealed that: 1) there is no significant difference in the environmental attitude of male and female, science and arts, rural and urban, married and unmarried

secondary school teachers and 2) there is no significant difference in the environmental attitude of teachers belonging to different types of school management, dropout size of Secondary schools, joint and nuclear families and different size of families.

## 5. Methodology/Design of the study

The investigator used normative survey method and through random sampling technique 100 10+2 students were identified as samples including 50% of boys and girls and science and arts students. The environment awareness ability scale developed by Dr. Praveen Kumar Jha, was used for collection of data. The scale here contains 51 items (including 41 positive and 8 negative statements) with agree and disagree response categories. The dimensions of environment ability are;

- a) Causes of pollution
- b) Conservation of soil forest, air etc.,
- c) Energy conservation
- d) Conservation of human health
- e) Conservation of wild life and animal husbandry

't' test was employed for data analysis as quantitative analysis

## 6. Data analysis and Interpretation

The data so collected was analyzed objectives and hypotheses wise and results were interpreted and presented as below;

1. **Research Hypothesis(H<sub>a</sub>):** There is a significant difference between boys and girls of 10+2 science students in their environment awareness ability is converted to,

**Null Hypothesis(H<sub>0</sub>):** There is no significant difference between boys and girls of 10+2 students in their environment awareness ability

**Table-1**

**Mean, SD and t- value of students' environment awareness ability**

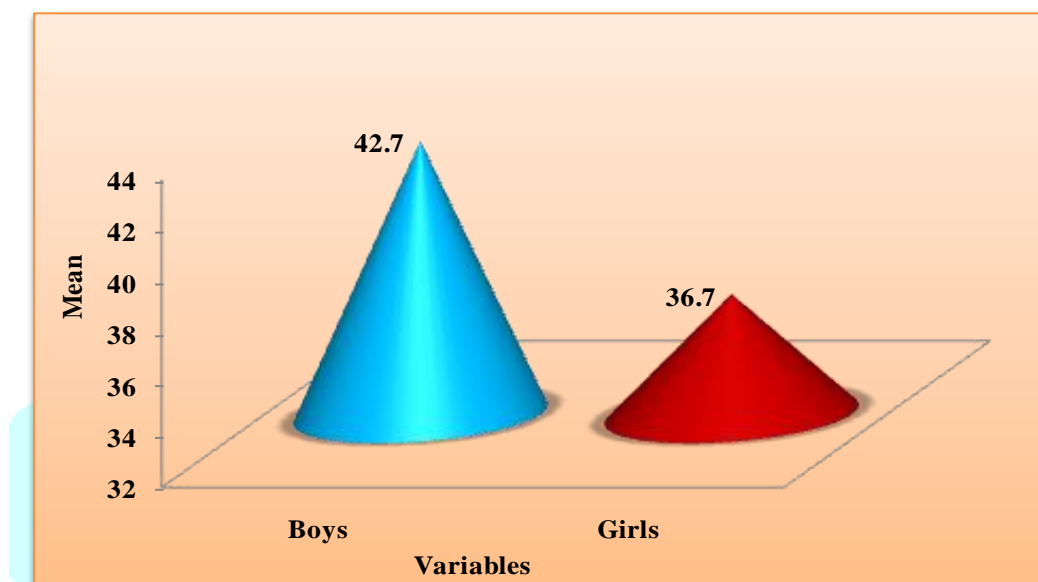
Sl. No.	Variables	Samples	Mean	SD	't' value
1	Boys	50	42.7	8.79	2.98*
2	Girls	50	36.7	11.51	

\* Significant at 0.01 and 0.05 level

DF= 98

**Interpretation:** the above table shows that the obtained 't' value is greater than the table 't' value at 0.05 level and hence the null hypothesis is rejected and alternative or research hypothesis is accepted. Hence it was concluded that there is significant difference between boys and girls of 10+2 students in their environment awareness ability. Results also showed that Boys students are having more environment awareness ability than that of Girls students.

**Graph -1: Comparison of students' environment awareness ability**



- Research Hypothesis(Ha):** There is a significant difference between urban and rural of 10+2 students in their environment awareness ability is converted to,  
**Null Hypothesis (H0):** There is no significant difference between urban and rural students of 10+2 classes in their environment awareness ability

**Table-2**

**Mean, SD and t- value of students' environment awareness ability**

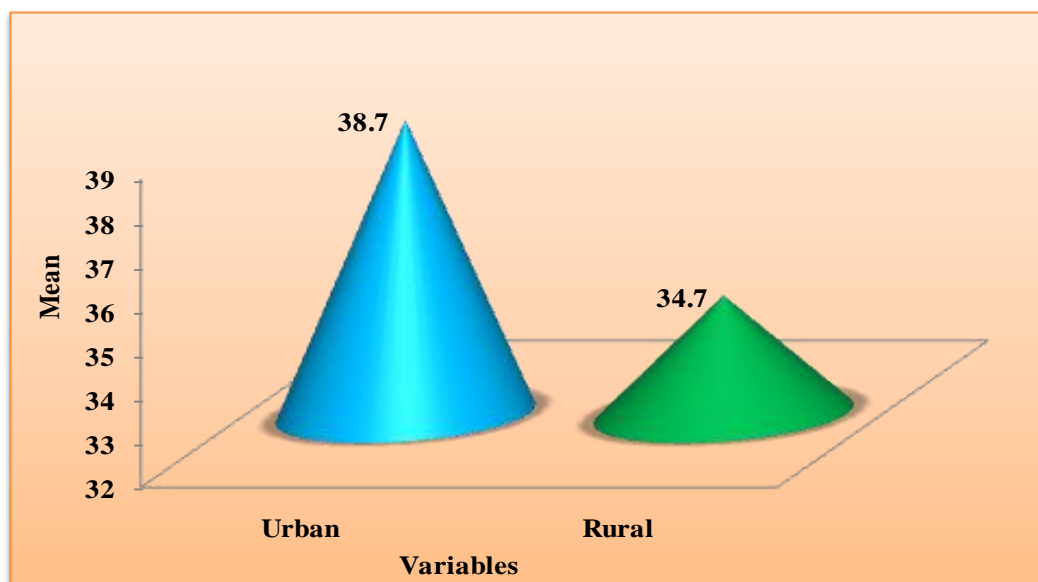
Sl. No.	Variables	Samples	Mean	SD	't' value
1	Urban	50	38.7	10.51	3.41*
2	Rural	50	34.7	13.32	

\* Significant at 0.01 and 0.05 level

DF= 98

**Interpretation:** the above table shows that the obtained 't' value is greater than the table 't' value at 0.05 level and hence the null hypothesis is rejected and alternative or research hypothesis is accepted. Hence it was concluded that there is significant difference between Urban and Rural 10+2 students in their environment awareness ability. Results also showed that Urban students are having more environment awareness ability than that of Rural students.

### Graph -2: Comparison of students' environment awareness ability



3. **Research Hypothesis(Ha):** There is a significant difference between boys and girls of 10+2 science and arts students in their environment awareness ability is converted to, **Null Hypothesis (H0):** There is no significant difference between science and arts students of 10+2 classes in their environment awareness ability

**Table-3**

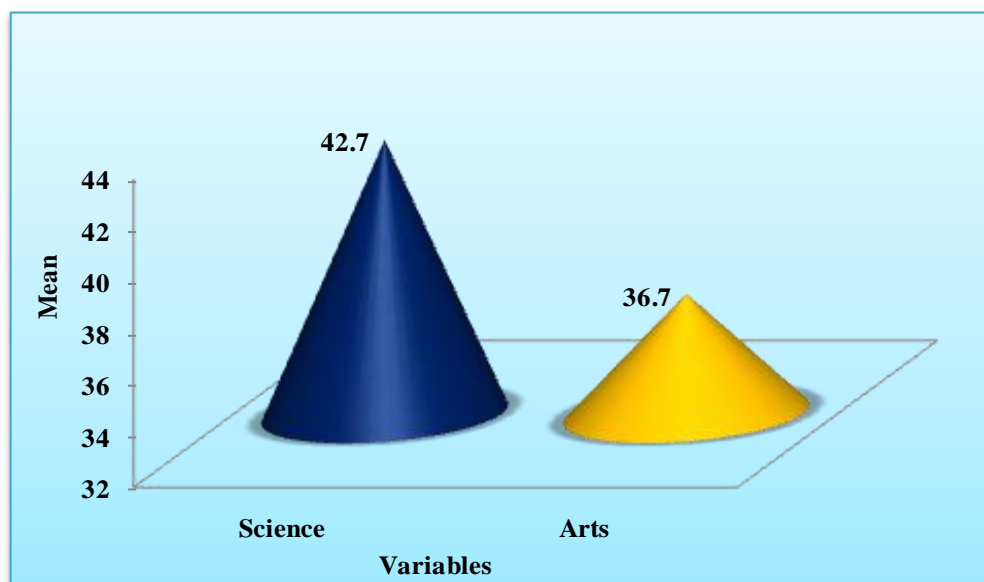
**Mean, SD and t- value of students' environment awareness ability**

Sl. No.	Variables	Samples	Mean	SD	't' value
1	Science	50	42.7	10.51	3.92*
2	Arts	50	36.7	13.32	

\* Significant at 0.01 and 0.05 level

DF= 98

**Interpretation:** the above table shows that the obtained 't' value is greater than the table 't' value at 0.05 level and hence the null hypothesis is rejected and alternative or research hypothesis is accepted. Hence it was concluded that there is significant difference between Science and Arts 10+2 students in their environment awareness ability. Results also showed that Science students are having more environment awareness ability than that of Arts students.

**Graph -3: Comparison of students' environment awareness ability****7. Findings:**

- 1) There is significant difference between boys and girls of 10+2 students in their environment awareness ability
- 2) Boys students are having more environment awareness ability than that of Girls students.
- 3) There is significant difference between urban and rural of 10+2 students in their environment awareness ability
- 4) Urban students are having more environment awareness ability than that of Rural students
- 5) There is significant difference between science and arts students of 10+2 classes in their environment awareness ability
- 6) Science students are having more environment awareness ability than that of Arts students

**8. Conclusion:**

Environment is a global concept and in the present environment it is very essential to carry on research work to cover different aspects of environmental education and its awareness through different ways. Such attempts have to be done by the teachers by creating environmental awareness at different levels of education. Therefore environmental awareness must find a place in curriculum as operational mode as the country is facing enormous environmental problems. A number of environmental problems have just a local dimension both in rural and urban areas. People should be made aware of these more frequently

There is no doubt that attention to environment was overdue and it is time to commit ourselves to aims at creating an awareness and developed relation attitude and practice the same in the future. In order to inculcate these ideas the schools, colleges and teacher play an important role. The coming generation should be made aware of environmental problems during their early years of studies

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