Study of Environmental Behaviour of Secondary School Students in Relation to their Environmental Ethics

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I. INTRODUCTION

In recent decades, many environmental problems have increased as the result of human activities and unplanned management of the technological development those interference ecosystems. The industrial revolution has permanently changed the ways human beings live and utilize natural resources by not only modernizing the life-style of human society but also causing an explosion in the population growth. The invention of automobiles and their growth has led to much faster exploitation of fossil fuel and its combustion resulting in a significant increase in carbon dioxide in the atmosphere, leading to a complex problem of global warming. Urbanization is rapidly expanding entailing huge demands of energy and mass generation of pollutants and wastes. These developments have led to much faster degradation of environmental quality, disappearance of biodiversity and loss of some pristine habitats from this universe, threatening the very existence of human population and its future sustenance. The State of Environment Report, India (2009) reports that as high as 45% of the total land in the country is degraded by changing patterns of land use with severe problems of air, land and water pollution. The main hurdle in tackling the problem of environmental degradation in developing countries like India is not only the lack of scientific knowledge but also the will to act. Under such scenario, the society needs to be educated about the importance of environment and sustainable development of ensuring a better environment for our future generations. Environmental education in this context plays a significant role in sensitizing people about the rationale use of natural resources hand hazards of environmental pollution.

II. NEED AND IMPORTANCE OF ENVIRONMENTAL PROTECTION

Environmental protection means consciously protecting and reasonably making use of natural resources and preventing natural environment from pollution and destruction. It includes all kinds of actions taken by human in order to solve the practical or potential environmental issues, coordinate the relationship between human and environment, and ensure a sustainable economic and social development.

With the growth of the population and the improvement of the living standard, the problem of environment is getting serious. People should be developed awareness to protect their environment. The environmental pollution is one of the main reasons why we should fight to protect environment. Besides, global warming is also another reason caused by the deforestation. Furthermore, warm climate change and flood also increase the opportunity of spread out pests and vector diseases.

Environmental air pollution which increases the concentration of carbon dioxide that caused the formation of acid rain. Another reason is one of the side effects like global warming caused by the deforestation which increases the global temperature caused the occurrence of ice melting. Moreover, the global warming change the climate become warmer and flood encouraged the growth of the pests and vectors like malaria and dengue fever to spread the disease out to the environment which increases the level of biochemical oxygen demand.

There is only one planet earth, where human can enjoy their life. Many natural resources are not renewable, and some will take a long time to form. For example, the forests and fossil oil will take up to 2 million years to renew.

Humans have to rely on the planet Earth to live, but the pollution they have caused may harm their own well-being. There are kinds of common pollution in daily life like vehicle exhaust, factory emission, and plant sewage. Particularly, those pollution are more serious in the large cities. And the people like elderly people and infants with weakened immune system are the most threatened by pollution.

These environment problems have caused the extinction of some rare animals which will cause not only the destruction of the food chain and the ecological balance, but lose research value from the disappeared species gene. Therefore, the environment should be protected for a better life in future.

III. ENVIRONMENTAL ETHICS

'Environmental ethics is the responsibility to understand the environmental consequences of our consumption and need to recognize our individual and social responsibility to conserve natural resources and protect the earth for future generation.'

Adjusting the relationship between humans and nature is one of the most fundamental issues we face and must deal with today. With the increasing deterioration of ecological systems on which human beings rely and the aggravation of the environmental crisis, human beings have realized that we cannot rely on economic and judicial methods alone to solve the problems of environmental pollution and ecological imbalances; we must also appeal to human beings' limitless internal ethical resources. Only after we have adopted an

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appropriate attitude towards nature and have established a new ethical relationship between human beings and nature will be able to love and respect nature automatically as well as conscientiously; and only with the guidance of such love and respect can we successfully deal with the issues of environmental pollution and ecological imbalances.

Environmental ethics is a new sub-discipline of philosophy that deals with the ethical problems surrounding environmental protection. It aims to provide ethical justification and moral motivation for the cause of global environmental protection.

IV. ENVIRONMENTAL BEHAVIOUR

Psychology attempts to develop human societies less exploitive in their use of natural resources. The degree of environmental awareness, attitude and ethics may determine an individual's ecological behaviour, i.e., actions which contribute towards environmental preservation or conservation (Axelrod and Lehman, 1993). A recent pioneering study has established environmental ethics as a powerful predictor of ecological behaviour (Kaiser et al., 1999). The three major components of environmental ethics, i.e., affect, knowledge and intention, may be used in prediction of ecological behaviour. Ecological behaviour may appear to be susceptible to a wide range of influences beyond one's control (Hines et al., 1987). For example, cost of water affects water conservation; architecture of a home affects energy consumption; political measures promote or demote optimal usage of resources and /or minimal generation of wastes by the society. Thus, socio-cultural constraints may also determine which ecological behaviour is easier to carry out and which harder. Environmental Ethics appeared to be internal variables that independently influenced pro-environmental behaviour (Clark et al., 2003). The actual individual commitment to protect the environment is a function of the level of education, the degree of subjective well being, and to a lesser extent the level of population pressure (Duroy, 2005). Environmental behaviour of the urban people was directly and indirectly under the influence of variable like age, gender, feeling of stress and preparedness to act of the residents (Kalantari et al., 2007).

High environment awareness among the old and young people may motivate them to adopt environmental friendly practices of living such as rational use of natural resources together with minimal generation of wastes. It may include elimination of diseases, poverty and waste accumulation in conjunction with conservation of natural resources and biodiversity, recycling of wastes and use of alternate sources of energy. Such eco-friendly psyche of people may cause a paradigm shift in their behaviour towards their immediate environment, which may reflect in their ways of utilization of natural resources, generation of wastes and its recycling; approach towards problems of environmental pollution and preservation of natural ecological resources. This in turn may harmonize environment with development.

V. SCALES USED FOR THE STUDY

Two scales have been used for this study

1. Environmental Ethics Scale (EES)

Environmental Ethics Scale (EES) is constructed to check the environmental ethics of secondary school students. The scale is developed to quantify the environmental ethics considering the dimensions like

1. Environmental Awareness,
2. Environmental Consciousness,
3. Environmental Attitude,
4. Environmental Values.

There are 60 statements in the scale. A total of 32 statements are positively worded and eliciting 'yes' response, and the remaining 28 statements are negatively worded and eliciting 'no' response from the students. For positive statements, 1 mark is to be awarded for a 'yes' response. For the negative statements, 1 mark is to be awarded for a 'no' response. The scale has the maximum of 60 marks and the minimum of 0 marks.

2. Environmental Behaviour Scale (EBS)

The Environmental Behaviour Scale (EBS) was constructed to quantify the environmental behaviour of the target student population considering the following dimensions of the environment:

1. Air Pollution.
2. Water Pollution
3. Noise Pollution
4. Land Pollution
5. Water Conservation
6. Forest Conservation
7. Biodiversity Conservation
8. Human Health Management
9. Energy Conservation and Management
10. Environmental Conservation and Management.

The framing the statements was based on the following components of environmental behaviour:

1. Social Desirability
2. Environmental Concerns
3. Environmental Knowledge
4. Environmental Values.

There are 60 statements in the scale. A total of 44 statements are positively worded-eliciting a 'yes' response, and the remaining 16 statements are negatively worded-eliciting a 'no' response from the students. For the positive statements, 1 mark is to be awarded for a 'y' response. For the negative statements, 1 mark is to be awarded for a 'no' response. The scale has the maximum score of 60 marks and the minimum of 0 marks.

VI. SAMPLE

Four High Schools have been selected for this study. Among four schools two schools are situated in rural area and two schools are in city. 200 students were selected for the four schools. 50 students of 9th standard were selected from each school. Among 200 students 100 were girls and remaining 100 were boys.

VII. ADMINISTRATION OF THE TOOL

Environmental Ethics Scale (EES) was administered first. After the gap of 3 days Environmental Behaviour Scale (EBS) was administered on the same sample.

VIII. SCORING

A separate answer sheet has been provided for giving the responses. The total score forms the Raw scores of the scale. For conversion of Raw scores into Standard scores, Z- score have been calculated

Raw Scores and Z- Scores of Environmental Ethics

Mean: 49.21

SD: 5.67

N: 200

Raw Score	Z- Score	Raw Score	Z- Score	Raw Score	Z- Score
37	-2.15	45	-0.74	53	0.66
38	-1.97	46	-0.56	54	0.84
39	-1.8	47	-0.38	55	1.02
40	-1.62	48	-0.21	56	1.19
41	-1.44	49	-0.03	57	1.37
42	-1.27	50	0.13	58	1.55
43	-1.09	51	0.31	59	1.72
44	-0.91	52	0.49		

Raw Scores and Z- Scores of Environmental Behaviour

Mean: 49.05

SD: 5.84

N: 200

Raw Score	Z- Score	Raw Score	Z- Score	Raw Score	Z- Score
33	-2.74	42	-1.2	51	+0.33
34	-2.47	43	-1.03	52	+0.5
35	-2.40	44	-0.86	53	+0.67
36	-2.23	45	-0.69	54	+0.99
37	-2.06	46	-0.52	55	+1.01
38	-1.89	47	-0.35	56	+1.19
39	-1.72	48	-0.17	57	+1.36
40	-1.54	49	+0	58	+1.53
41	-1.37	50	+0.16	59	+1.70

IX. ANALYSIS

The study shows 36.5% of the students possess average Environmental Ethics. The percentage of the students decreases from Positive Environmental Ethics to Extremely Positive Environmental Ethics. The percentage of students also decreases from Negative Environmental Ethics to Extremely Negative Environmental Ethics.

The study also shows 44.5% of the students show average Environmental Behaviour. The percentage of the students decreases from Positive Environmental Behaviour to Extremely Positive Environmental Behaviour. The percentage of students also decreases from Negative Environmental Behaviour to Extremely Negative Environmental Behaviour.

Interpretation of Environmental Ethics Status of 200 students based on Z- Scores

Sl.N	Raw Score Range	Z-Score Range	Grade	Environmental Ethics Status	No of Students	Percentage
1	60	+2.01 and above	A	Extremely Positive Ethics	0	0%
2	57-59	+1.26 to +2.00	B	Very Positive Ethics	18	9%
3	52-56	+0.51 to +1.25	C	Positive Ethics	53	26.5%
4	47-51	-0.50 to +0.50	D	Moderate (Average)	73	36.5%
5	42-46	-0.51 to -1.25	E	Negative Ethics	30	15%
6	38-41	-1.26 to -2.00	F	Very Negative Ethics	18	9%
7	37 and below	-2.01 and below	G	Extremely Negative Ethics	8	4%
Total					200	100%

Interpretation of Environmental Behaviour Status of 200 students based on Z- Scores

Sl.N	Raw Score Range	Z-Score Range	Grade	Environmental Behaviour Status	No of Students	Percentage
1	60	+2.01 and above	A	Extremely Positive Behaviour	0	0%
2	57-59	+1.26 to +2.00	B	Very Positive Behaviour	18	9%
3	52-56	+0.51 to +1.25	C	Positive Behaviour	34	17%
4	47-51	-0.50 to +0.50	D	Moderate (Average)	89	44.5%
5	42-46	-0.51 to -1.25	E	Negative Behaviour	32	16%
6	38-41	-1.26 to -2.00	F	Very Negative Behaviour	19	9.5%
7	37 and below	-2.01 and below	G	Extremely Negative Behaviour	8	4%
Total					200	100%

X. COMPARISON OF RESULTS

Out of 200 students 144 students possess average to positive Environmental Ethics and their percentage is 72.

Out of 200 students 141 students show average to positive Environmental Behaviour and their percentage is 70.5.

Comparison of Environmental Ethics and Environmental Behaviour of 200 Students

Type	Status	Number of Students	Percentage
Environmental Ethics	Average and Positive Environmental Ethics	144	72%
Environmental Behaviour	Average and Positive Environmental Behaviour	141	70.5%

XI. CONCLUSION

The students who showed Positive Environmental Ethics, showed Positive Environmental Behaviour. The students who showed Negative Environmental Ethics, showed Negative Environmental Behaviour. The study show that Environmental Behaviour of students is depends on their Environmental Ethics. Environmental Behaviour is the indicator of Environmental Ethics.

XII. IMPLICATIONS

1. In order to bring desirable change in the Environmental Behaviors of students, Environmental Ethics should be developed.
2. Teacher should develop environmental awareness, environmental consciousness, environmental attitude and environmental values among students in order to bring positive changes in Environmental Behaviors.
3. Trying to bring positive changes in Environmental Behavior of students directly is not effective.
4. Environmental Behavior is the indicator of Environmental Ethics.

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