

ENVIRONMENTAL ETHICS OF SECONDARY SCHOOL STUDENTS IN RELATION TO SCIENTIFIC ATTITUDE

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Abstract: *The present study strived to study the relationship between environmental ethics and scientific attitude among secondary school students and; to compare the environmental ethics and scientific attitude of secondary school students. Sample consisted of 100 number of secondary school students selected randomly studying in grade IX. Descriptive method of survey was entailed for data collection from the sample. The tools used were Environmental Ethics Scale (EES) by Haseen Taj (2001) and Scientific Attitude Scale by Syed Mustaq (2007). Pearson's Product moment coefficient of correlation and t-ratio were deliberated for the analysis of data. The findings inferred that Environmental ethics is positively related to scientific attitude. Thus, it can be inferred that secondary school students who have high scientific attitude have more favorable and give more consideration to environmental ethics in order to resolve environmental problems. The participative along with collaborative learning experiences can be integrated at school level to develop sensitivity regarding environmental issues and thus leading to environment friendly decision making for future perspectives. Integration of environmental activities and relevant topics in curriculum is required to develop desired environmental ethics among students especially at secondary level.*

Key Words: *Environmental ethics, scientific attitude, secondary school students, school curriculum, participatory learning*

1. INTRODUCTION:

Environment is simply the world in which we stay. Environment comprises of the organic as well as inorganic components of the earth including all layers of atmosphere, organic and inorganic matter and living organisms, the interacting natural systems such as ecosystem. Etymologist frequently concluded that in English usage at last, environment is total of the things or circumstances around an organism including humans- though environs are limited to the "surroundings neighbourhood of a specific place, the neighbourhood or vicinity". (Sadik, 2013)

Footsteps of civilizations are the deserts on the face of earth. The man is exploiting the nature and the natural resources just for the sake of his comforts and leisure. Modern technology and ever-increasing human population have brought about pollution and degradation to such an extent that many scientists believe that continued existence of humans and other forms of life on earth is seriously threatened.

"India has made one of the fastest progresses in the world, in addressing its environmental issues and improving its environmental quality" (source: Wikipedia). Still, India has a long way to go to reach environmental quality similar to those enjoyed in developed economies. Pollution and waste disposal remains major challenge and opportunity for India. Environmental issues are one of the primary causes of disease, health issues and long term livelihood impact for India. Education helps people to establish a strong bond with nature. Thus, it is necessary to make individuals conscious and sensitive about the prevailing environmental problems and practices to combat environmental degradation by educating and inculcating environmental ethics among our students.

2. LITERATURE REVIEW:

Caroline (2017) conducted a study on 300 higher secondary school students of Chennai to find out environmental ethics among them. The result of the study revealed average level of environmental ethics among the students. Furthermore, she found significant difference with regard to type of family whereas no such difference was found with respect to gender, subject of study and management of school.

Balachandran (2013) conducted a study to find out the level of environmental awareness and environmental ethics among the secondary and higher secondary school students of greater Mumbai. The findings exhibited that there exists significant difference on the basis of gender where female students had higher environmental ethics than male students. Also science students had higher Environmental ethics than commerce and arts stream students.

Stuti (2013) attempted to study the relationship between environmental moral reasoning and scientific attitude among 9th and 11th grade students. The findings showed that secondary school students' environmental moral reasoning is positively correlated to scientific attitude which showed students having high S.A gave more consideration to environmental issues whereas those of 11th grade had negative correlation with the scientific attitude. The study revealed that the exposure to science education, from lower to higher secondary tend to develop scientific attitude among students but not environmental moral reasoning ability.

Srivastava (2013) employed descriptive type survey approach to study relationship between scientific attitude and environmental awareness among senior secondary school students of U.P board schools of Allahabad city. Product moment coefficient of correlation was computed for analyzing the data. The result findings stated no significant correlation was found between scientific attitude and environmental awareness among secondary school students.

The above mentioned reviews showed contradictory results which prompted the investigators to carry out similar research with other environmental variables. Moreover, no research study is available which aim to study the relationship between environmental ethics and scientific attitude so far. So, the investigators felt the need to explore these variables and their relationship.

3. NEED AND IMPORTANCE OF THE STUDY:

The environment, which sustains life is at alarming situation at present. Selfish actions of human beings to meet their never ending demands at such a fast pace are responsible for environmental degradation. Modernization, urbanization, rapid industrial and technological advancements, modern lifestyles, changes in consumption patterns has posed danger not only to environment, but man himself.

For addressing the various environmental problems, Environmental Education for Sustainable Development (EESD) is emerging as an essential tool to change student's commitment, motivation, stewardship, behavior and attitudes (UNESCO, 2011). Education is a tool for self-empowerment because it enables us to take serious and effective action. Education on environmental issues and concern are important today as it lets people to build up skills, foster a dedication to take steps individually and communally to maintain and enhance the environment (Robinson, 2016).

Kumar (2017) stated that the main obstacle in protecting the environment in India today is that there is lack of scientific knowledge, attitude and will to act. Thus there is dire need to develop scientific attitude as a tool to develop environmental beliefs, attitudes and sense of moral and social responsibility. Therefore, immense need was felt by the investigators to study the relationship between environmental ethics and scientific attitude of secondary school students.

4. OPERATIONAL DEFINITIONS OF THE STUDY:

Environmental ethics refers to having concern towards the human environment relationship that addresses the ethical responsibilities of human beings for the natural environment. It also deals with the rights of other living creatures that inhabit the earth such as to encourage sustainable consumption of resources, resolving environmental issues and need to preserve earth. In the present study, it is the total score to be obtained from secondary school students with the help of environmental ethics scale by Haseen Taj (2001).

Scientific Attitude: It can be defined as the mental attitude characterized by open mindedness, rational thinking, objectivity, respect for evidence, intellectual honesty, curiosity, habit of diligence, confidence in procedures among individuals for seeking knowledge and expectation when new evidence is available, so that solution of problem will come through logically. In this study, scientific attitude means total scores to be obtained by secondary school students with the help of scientific attitude scale by Sayeed Mustaq (2007).

5. OBJECTIVES OF THE STUDY:

- To find out the relationship between environmental ethics and scientific attitude of secondary school students.
- To compare the environmental ethics and scientific attitude of secondary school students.

6. HYPOTHESES OF THE STUDY:

Ho1 There is no significant relationship between environmental ethics and scientific attitude of secondary school students.

Ho2 There is no significant difference between environmental ethics and scientific attitude of secondary school students.

7. METHODOLOGY:

Descriptive method of survey has been implied to find out the relationship between environmental ethics and scientific attitude among secondary school students of grade IX.

Sample

The sample of the study comprised of 100 school students of Grade IX studying in C.B.S.E affiliated government school of Chandigarh (U.T.). Out of 100 students, 50 of them were male and 50 numbers of female were selected with random sampling technique.

Tools used

- Taj Environmental Ethics Scale developed by Haseen Taj (2001)
- Scientific Attitude Scale by Sayeed Mustaq (2007)

8. RESULTS AND DISCUSSIONS:

Table 1: Mean, median, mode, standard deviation, skewness, kurtosis for the variables environmental ethics and scientific attitude

Variables	Mean	Median	Mode	SD	KU	KU
Environmental Ethics	110.12	109.5	112	13.375	0.0429	0.063
Scientific Attitude	168.63	172	163	24.320	- 0.18	-0.291

Before considering any data analysis it is very important to check the normal distribution of data to be computed. Table 1 presents the value of mean, median, mode, skewness and kurtosis of total sample for the two variables, environmental ethics and scientific attitude of secondary school students. From the above table it can be seen that value of mean, median and mode for environmental ethics are approximately same. The value of skewness is found to be 0.049 which means distribution is slightly skewed positively which can be considered equal to zero. The value of kurtosis came out to be 0.063 which is less than .263. Hence the distribution curve is leptokurtic that can be taken approximately 0.263.

The values of mean, mode and median of secondary school students for the variable scientific attitude are approximately same as shown in Table 1 so it shows distribution is normal. The value of skewness is -0.18 which is slightly skewed negatively. It can be considered approximately equal to zero and therefore the scores were taken to be normally distributed. The value of kurtosis is -0.291 which is less than 0.263. Hence distribution curve is leptokurtic but can be approximately taken equal to 0.263. Thus it can be said that distribution is normal.

Table 2: Relationship between environmental ethics and scientific attitude among secondary school students of grade IX

Variables	N	Mean	SD	R
Environmental ethics	100	110.12	13.375	0.44*
Scientific attitude	100	168.59	24.387	

*significant at 0.05 level

In this study the first objective was to find out the relationship between environmental ethics and scientific attitude among secondary school students. Table 2 shows positive correlation between environmental ethics and scientific attitude with r value of 0.4434 at 0.05 levels of significance. Thus, the null hypothesis that there is no relationship between environmental ethics and scientific attitude of secondary school students is rejected. It can be inferred that students with high scientific attitude gave more consideration to environmental ethics and consider it their moral duty and make eco friendly decisions in order to combat environmental issues and vice versa.

Table 3: Mean, SD and t-value showing difference between environmental ethics and scientific attitude of secondary school students

Variables	df	Mean	SD	t-ratio
Environmental ethics	98	110.12	13.375	2.50*
Scientific attitude		168.59	24.387	*significant at 0.05 level

The second objective of the study was to find out significant difference between the environmental ethics and scientific attitude secondary school students. Table 3 shows there exists significant difference with t value 2.50 at 0.05 level. Thus, the null hypothesis stating no difference exists between environmental ethics and scientific attitude is

rejected. Also from the mean scores it is quite evident that students ($M = 110.12$) have low environmental ethics in comparison to scientific attitude ($M = 168.59$).

9. CONCLUSION:

Findings of the present study revealed that environmental ethics is positively related to scientific attitude among secondary school students and significant difference exists between the environmental ethics and scientific attitude of secondary school students. This finding shows that special measures must be implied at school level to develop desired environmental ethics among secondary school students, which could be possible only after making positive changes in the existing science curriculum and manifesting scientific attitude among students. Imparting environmental knowledge is incomplete unless practice-oriented environmental activities are integral part of science curriculum where hands on experience are provided to each student. As mentioned by Zeidler and Keefer (2003) that science teachers should provide opportunities for students to deal sensibly with environment. Science and environment education goes in with hand in hand. Thus, the students should be involved in eco clubs, best out of waste and zero waste management exhibitions, environmental conservation documentaries etc. at school level to facilitate participative as well as collaborative learning. Developing environmental ethics through positive scientific attitude will enable students to combat environmental issues and ensure environment friendly decision making in rational manner.

Similar study can be carried out comparing environmental ethics and scientific attitude of primary and higher secondary school students of various different regions across India, other environmental variables could be compared with scientific attitude. Also, experimental studies could be done to study the role of scientific attitude to develop environmental concerns, ethics, perception and sustainability.

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