

Environmental awareness on environmental ethics and behaviour among the +2 students

Environment awareness had an impact on environment ethics and behaviour of +2 students in the study. There were no gender differences in the levels of environmental awareness. The girls were better in their environmental ethics and behaviour than the boys between high as well as low environmental awareness groups. The environmental behaviour of the Higher Secondary students was balanced towards problems of air, vehicular and water pollution but not towards the emerging environmental problems.

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Introduction : Global environmental problems of shrinking natural resources, increasing pollution and expanding population growth challenges the ways people live on the earth. The main hurdle in tackling the environmental problems in developing countries like India is not only the lack of scientific knowledge but also the will to act. Under such a scenario, the society needs to be educated about the importance of environment and sustainable development for ensuring a better environment to our future generations. Hungerford and Volk (1990) have proposed changing learner behaviour through environmental education. Based on their model, there are three corresponding categories of variables that contribute to behaviour. These categories are entry level, ownership and empowerment variables. Entry-level variables are prerequisite variables or at least variables that will strengthen the decision-making. The strongest variable in this category is environmental sensitivity. Ownership variables are environmental issues that are important at a personal level. The two major variables in this category are in-depth knowledge of the issues and personal investment. Empowerment variables strengthen the sense that we can change and are able to solve environmental problems.

It is, therefore, necessary to study not only the level of environmental awareness but also its impact on environmental ethics and behaviour, since action is more important than the theoretical concept and knowledge alone. If any impact is observed in the research findings then it will be advisable to have guidance and counselling sessions for remediation.

The present study has been designed to assess the level of environmental awareness among the +2 students and its impact on their environmental ethics and behaviour. The independent variable in the study is environmental awareness, the dependent variable is environmental ethics and behaviour, and the control variable is grade and age of the students.

Objectives: The following objectives have been formulated for the present study :

(1) To assess the level of environmental awareness among the boys and girls studying in +2. (2) To study the impact of environmental awareness on environmental ethics and behaviour of the boys/ the girls. (3) To compare environmental ethics and behaviour of the boys and the girls with high level of environmental awareness. (4) To compare environmental ethics and behaviour of the boys and the girls with low level of environmental awareness.

Research Methodology :

The present study was conducted on the 11th standard students studying in the Higher Secondary Schools of Jabalpur City, Jabalpur District, Madhya Pradesh. The sample was selected randomly by a chit system from the six hindi-medium schools of the city. The students from each school were randomly selected from the available ones on the scheduled day of visit. The sample comprised of 197 students with 102 boys and 95 girls. The environmental awareness among the selected students was quantified by the standard Environment Awareness Ability Measure test (EAAM) devised by Praveen Kumar Jha. The test assessed the environmental awareness of the students on the basis

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of causes of pollution, conservation of air, forest, soil, etc., energy conservation, conservation of human health, and Conservation of wild life and animal husbandry.

On the basis of the scores in the EAAM, 30 boys and 30 girls with the maximum score and similarly 30 boys and 30 girls with the minimum scores were short listed for assessment of their environmental ethics and behaviour.

The final sample was tested for their environmental ethics and behaviour by a test devised by the authors themselves. The Environmental Ethics and Behaviour Scale (EEB) considered the vehicular pollution, air pollution, water pollution, and miscellaneous pollution comprising of the emerging environmental issues like chemical pollution, global warming, ozone holes, etc.

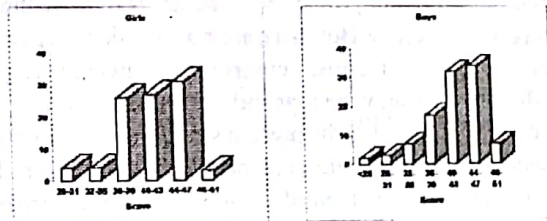
The student's 't' test was applied to test various hypotheses by compare different means.

Results and Discussion :

Environmental Awareness of the students :

The score of Environment Awareness Ability Measure ranged from 23 to 49 among the boys and from 28 to 51 among the girls on a scale of 0 to 51. Among the girls, 8% has the score between 28 and 35, 89% between 36 and 47, and 3% between 48 and 51 (Fig. 1). Among the boys, 2% has the score less than 28, 10% between 28 and 35, 83% between 36 and 47, and 7% between 48 and 51 (Fig. 1). It is, therefore, apparent that majority of the girls (92%) and boys (88%) exhibited high environmental awareness (i.e. score between 37 and 51). None of the girls as well as the boys in the sample has low environment awareness.

Figure 1 : Distribution of Environment Awareness Ability Measure scores among the students.



The final sample of the top 60 students comprised of 30 boys with the score between 45 and 49 and of the girls between 44 and 50. The final sample of the bottom 60 students was comprised of 30 boys with the score between 23 and 40 and of the girls with the score between 28 and 39. A comparison of the Environment Awareness between the girls and the boys showed that there was no gender difference in the sample, since the critical ratio of the two means was insignificant ($p > 0.05$).

Environmental Ethics and Behaviour of Boys

The boys with high level of awareness have performed better than those with low level of awareness, since the scoring by the high awareness group was more than that by the low awareness group in all the areas. The level of

awareness has a significant impact on two areas of pollution, namely, vehicular and miscellaneous, and no impact on the remaining two areas of air and water Pollution (Table 1). For both vehicular and miscellaneous areas, the environmental ethics and behaviour of the high awareness group is more than that of the low awareness group. For total pollution, there is an impact of the level of awareness, since high awareness group is comparatively better than the low awareness group. The level of awareness has not affected the spread of scores in all categories, since the SD is not very different between the 2 groups.

Table 1: Comparison of scores of Environmental Ethics and Behaviour Scale between Boys with low and high Environment Awareness.

Category (Score)	Level of Awareness	N	M	SD	CR	'p' value
Vehicle (0 - 10)	High	30	8.67	0.80	3.18	<0.01
	Low	30	7.90	1.06		
Air (0 - 4)	High	30	2.87	0.80	0.12	>0.05
	Low	30	2.90	0.84		
Water (0 - 4)	High	30	3.20	0.71	0.58	>0.05
	Low	30	3.10	0.61		
Miscellaneous (0 - 17)	High	30	14.33	2.78	2.23	<0.05
	Low	30	12.87	2.27		
Total (0 - 35)	High	30	29.40	2.87	3.51	<0.01
	Low	30	26.77	2.93		

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Table 2: Comparison of scores of Environmental Ethics and Behaviour Scale between Girls with low and high Environment Awareness.

Category (Score)	Level of Awareness	N	M	SD	CR	'p' value
Vehicle (0 - 10)	High	30	8.37	1.10	2.13	<0.05
	Low	30	7.73	1.20		
Air (0 - 4)	High	30	3.50	0.63	1.51	<0.05
	Low	30	3.23	0.73		
Water (0 - 4)	High	30	3.37	0.49	2.01	<0.05
	Low	30	3.13	0.43		
Miscellaneous (0 - 17)	High	30	15.50	1.28	3.05	<0.01
	Low	30	14.27	1.78		
Total (0 - 35)	High	30	30.70	2.10	3.93	<0.01
	Low	30	28.37	2.58		

Environmental Ethics & Behaviour of Girls

The level of awareness has affected all the areas of pollution, except for water pollution among the girls (Table 2). For all areas of pollution, the Environmental Ethics and Behaviour is better in the high awareness group as compared with that in the low awareness group. There is, however, no impact of level of awareness on the spread of scores in all the areas of pollution, since SD was not different between low and high awareness groups for all the areas of pollution (Table 2).

Environmental Ethics and Behaviour of Boys and Girls

Among the students of the low environmental awareness group, the differences in the environmental ethics and behaviour between boys and girls are statistically insignificant in the areas of air, vehicular and water pollution, but are significant in the areas of miscellaneous and total pollution (Table 3). The variability in the scores was not very different between boys and girls in all the areas of pollution.

Among the high awareness group of students, gender differences have affected all the areas of pollution, except for vehicular and water pollution (Table 4). For all areas of pollution except for vehicular pollution, the environmental ethics and behaviour among the high awareness group is better in the girls than the boys. The differences between the boys and the girls are significant only in areas of air, miscellaneous and total pollution. There is, however, no impact of gender differences on the spread of scores in all the areas of pollution, since SD was not different between girls and boys for all the areas of pollution (Table 4).

In the present study, the boys as well as the girls have similar levels of environment awareness, and most of them have high level of environment awareness. These results may denote that introduction of environmental education in the curricula of primary and secondary classes have a positive effect on the outlook of the Higher Secondary students towards environment. There are significant effects of gender differences on the environmental ethics and behaviour in the areas of miscellaneous and total pollution among the low and high environmental awareness groups of students. The girls have a better environmental ethics and behaviour than the boys across the high and low levels

Table 3: Comparison of scores of Environmental Ethics and Behaviour Scale between Boys and Girls with low Environment Awareness.

Category (Score)	Level of Awareness	N	M	SD	CR	'p' value
Vehicle (0 - 10)	Boys	30	7.60	1.15	0.58	>0.05
	Girls	30	7.73	1.20		
Air (0 - 4)	Boys	30	2.90	0.54	1.53	>0.05
	Girls	30	2.74	0.73		
Water (0 - 4)	Boys	30	3.10	0.51	0.24	>0.05
	Girls	30	3.13	0.43		
Miscellaneous (0 - 17)	Boys	30	12.67	2.27	2.55	<0.01
	Girls	30	14.27	1.78		
Total (0 - 35)	Boys	30	25.17	2.33	2.24	<0.05
	Girls	30	28.37	2.58		

Table 4: Comparison of scores of Environmental Ethics and Behaviour Scale between Boys and Girls with high Environment Awareness.

Category (Score)	Level of Awareness	N	M	SD	CR	'p' value
Vehicle (0 - 10)	Boys	30	8.57	0.80	1.20	>0.05
	Girls	30	8.37	1.10		
Air (0 - 4)	Boys	30	2.87	0.50	3.14	<0.01
	Girls	30	3.50	0.53		
Water (0 - 4)	Boys	30	3.20	0.71	1.08	>0.05
	Girls	30	3.37	0.43		
Miscellaneous (0 - 17)	Boys	30	14.33	2.78	2.09	<0.05
	Girls	30	15.50	1.28		
Total (0 - 35)	Boys	30	25.40	2.87	2.01	<0.05
	Girls	30	30.70	2.10		

of awareness. These results may signify that the girls are more sensitive in their environmental behaviour than the boys.

The high environment awareness group of boys as well as girls has shown a better environmental ethics and behaviour than that by the low environment awareness group of boys and girls only in the areas of miscellaneous and total pollution. But there are no significant differences between high- and low- environment awareness groups with respect to air, vehicular and water pollution. The results may demonstrate that the present structure of environmental education does facilitate a balanced behaviour of the Higher Secondary students towards problems of air, vehicular and water pollution but not towards the emerging environmental problems, which were mostly asked under the miscellaneous section of the Environmental Ethics and Behaviour Scale.

References :

- (1) Hungerford H.R. and Volk, T. (1990). Changing Learner Behaviour through Environmental Education. *Journal of Environmental Education*, 21:8-21.
- (2) Jha, P.K. (1998). *Manual for Environment Awareness Ability Measure*. National Psychology Corporation, Agra
- (3) Clark, C.F., Kotchen, M.J. and Moore, M.R. (2003). Internal and external influences on pro-environmental behaviour: participation in a green electricity programme. *Journal of Environmental Psychology*, 23: 237-246.
- (4) Kalantari, K., Fami, H.S., Asadi, A. and Mohammadi, H.M. (2007). Investigating factors affecting environmental behaviour of urban residents: a case study in Tehran city - Iran. *American Journal of Environmental Sciences*, 3: 67-74.

