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Effect of Discipline of Study On Environmental Behaviour of Higher Secondary Students

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ABSTRACT

The emerging problem of global warming and desertification are societal in nature and can be solved only by a collective action by the society. To achieve this objective, our youth, particularly of the formative age, should be exposed to higher levels of knowledge and practical implications of their environmental actions. The present paper analyses multiple dimensions of environmental behaviour across disciplines of Arts, Commerce and Science among higher secondary students of Jabalpur city, Madhya Pradesh. The discipline of study has significantly affected performance of students in their environmental behaviour. The students of Arts discipline scored the minimum and that of Science the maximum scores of environmental behaviour. The students of Commerce discipline were comparable to that of Science but significantly better than that of Arts discipline. There were significant differences among different dimensions of environmental behaviour. There were no differences in the dimensions like land pollution, energy conservation and management, and environmental conservation and management, but the differences were significant in the remaining 7 dimensions of environmental behaviour.

INTRODUCTION

The industrial revolution not only modernized the human society but has also caused an explosion in the human population. The modern life-styles require much higher consumption of natural resources and energy by an average human being. There is an increasing realization that the human race is now on the critical threshold of its sustenance due to a conflict between environment and development. Sustainable use and conservation of natural resources can make substantial contribution in reduction of poverty, improvement in human health and well being and availability of natural resources for a longer time period.

The rapid deterioration in environmental quality has drawn a lot of attention by national and international communities. The UN World Conference on the Environment in Stockholm in 1990, the Montreal Protocol in 1990, the Earth Summit in Rio de Janerio in 1992, the World Conservation Congress in Barcelona in 2008 and periodical meetings of Intergovernmental Panel on Climate Change show that environment is on the priority agenda for us. The challenge today is to make these local, regional, national and global environmental issues more meaningful to each and every individual by focusing on individual contributions to the problem and then to develop suitable decision making strategies for solution of such problems.

A high level of awareness in combination with positive attitude and sound environmental behaviour among the students at formative stage may facilitate rationale uses of resources and minimal generation of wastes by them, thereby saving extinction of life from our planet. The ingrained environmental behaviour can also facilitate sustained supply of vital ecosystem services, namely, Provisioning

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(providing food, fiber, energy and medicines), Regulating (maintaining quality of air, soil and water), and Supporting (enhancing primary production, soil formation, nutrient and water cycling).

The present paper, therefore, analyzed multiple dimensions of environmental behaviour of higher secondary students at Jabalpur across different disciplines of study.

MATERIALS AND METHODS

The present study was performed on higher secondary (i.e. XI standard) students, who were studying in different schools of Jabalpur city in the state of Madhya Pradesh. The schools were affiliated to the Central Board of Secondary Education, New Delhi or the Madhya Pradesh Board of Secondary Education, Bhopal. A total of 651 students were randomly selected out of which 158, 210 and 283 students belonged to the discipline of arts, commerce and science, respectively (Table 1).

The research has used the **standardized tool** entitled **"Environmental Behaviour Scale"** (Singhal et al., 2010) to measure environmental behaviour of the sampled students. The test is based on **60** statements covering the 10 dimensions of environment (Table 2). 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 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 score of 60 marks and the minimum of marks. The direction of scoring is such that a higher scoring at the scale shows better environmental behaviour.

Norms of the Environmental Behaviour Scale are defined as below:

Category of Environmental Behaviour	Range of Scores
Excellent	59 to 60
Positive	50 to 58
Average	44 to 49
Negative	35 to 43
Worst	<34

The score obtained by a student in each dimension was converted to a scale of 0 to 1 by dividing the obtained score by the maximum score in each dimension (Table 2).

The scores obtained by students were summarized by obtaining the arithmetic mean, standard deviation and standard error. The Student's t test was applied to compare two independent means. The one – way Analysis of Variance (F) followed by Duncan's New Multiple Range test and Turkey's procedure (Duncan, 1955; Scheffe, 1959; Turkey, 1953) were used to compare different means and to determine as to whether they belong to one group or more than one group of means by using standard statistical procedures and tables as provided in Asthana (2007).

RESULTS AND DISCUSSION

The environmental behaviour score of the students ranged from 22 to 58. There was no student with the excellent behaviour. The maximum proportion of students (i.e. 39.8%) had the positive, followed by that in the average (i.e. 30.0%), and negative (i.e. 23.8%) behaviour score categories (Fig. 1). The minimum proportion of students (i.e. 6.4%) recorded the worst behaviour.

Table 1:

The distribution of XI standard students randomly selected from the schools in Jabalpur city.

Name of School	Discipline of Study	Number of Students		Total Students
		Boys	Girls	
Government Girls Higher Secondary School, Karaundigram	Arts	Nil	41	41
	Commerce	Nil	43	43
	Science	Nil	54	54
M.L.B. Girls Senior Secondary School	Arts	Nil	26	26
	Commerce	Nil	31	31
	Science	Nil	15	15
Army Public School	Arts	Nil	Nil	Nil
	Commerce	Nil	03	36
	Science	13	03	16
Shishu Vidyapeeth	Arts	Nil	38	38
	Commerce	08	46	54
	Science	14	44	58
Pandit L. S. Jha Government Model Higher Secondary School	Arts	28	Nil	28
	Commerce	28	Nil	28
	Science	70	Nil	70
Khalsa Higher Secondary School, Cantonment	Arts	Nil	18	18
	Commerce	Nil	21	21
	Science	Nil	30	30
St. Thomas Higher Secondary School	Arts	07	Nil	07
	Commerce	30	Nil	30
	Science	40	Nil	40
Total	Arts	35	123	158
	Commerce	66	144	210
	Science	137	146	283
Total		**238**	**413**	**651**

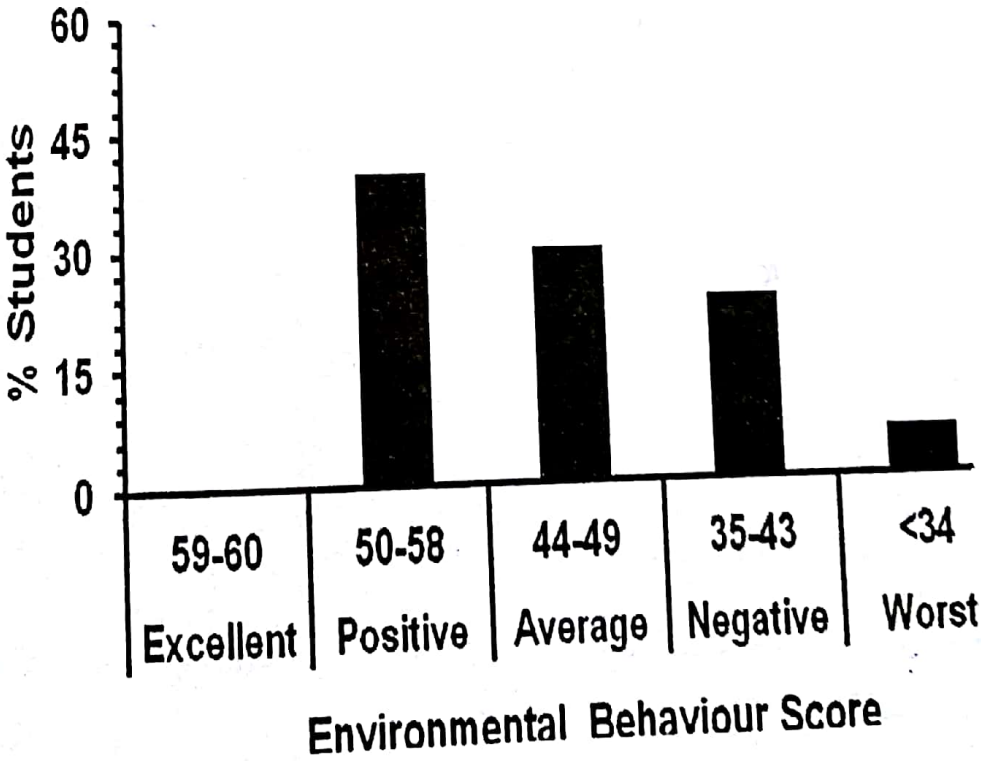
Table 2:

Number of statements in different dimensions of the Environmental Behaviour Scale.

Dimension	Number of Statements	Serial Number of Statements	Scoring Scale
Air Pollution	05	1 to 5	0 to 1
Water Pollution	05	6 to 10	0 to 1
Noise Pollution	05	11 to 15	0 to 1
Land Pollution	05	16 to 20	0 to 1
Water Conservation	05	21 to 25	0 to 1
Forest Conservation	05	26 to 30	0 to 1
Biodiversity Conservation	05	31 to 35	0 to 1
Human Health Management	05	36 to 40	0 to 1
Energy Conservation & Management	10	41 to 50	0 to 1
Environmental Conservation & Management	10	51 to 60	0 to 1

Fig. 1:

Distribution of students in different performance categories of environmental behaviour.



Among the students pursuing Arts discipline of study, the maximum proportion was in the average (i.e. 32.9%) and the minimum in the worst score category (i.e. 11.4%). The distribution of students according to their performance followed an order of average > negative > positive > worst (Fig. 2). Among those pursuing Commerce discipline of study, the maximum proportion was in the positive (i.e. 36.7%) and the minimum in the worst category (i.e. 4.3%). The distribution of students according to their performance followed an order of positive > average > negative > worst (Fig. 2). Among those pursuing Science discipline of study, the maximum proportion was in the positive (i.e. 49.8%) and the minimum in the worst category (i.e. 5.3%). The distribution of students according to their performance followed an order of positive > average > negative > worst (Fig. 2). The proportion of students with negative to worst behaviour was the maximum in Arts (i.e. 41%) followed by that in Commerce (i.e. 32%) and Science (23%) disciplines. The proportion of students with the positive behaviour was the maximum in Science and the minimum in Arts disciplines. The average environmental behaviour score differed significantly among students of different disciplines ($F = 16.84$, $p < 0.001$; Table 3). The mean score was the minimum in Arts and the maximum in Science disciplines. The mean behaviour followed an order of Arts < Commerce < Science ($p < 0.01$, Table 3). The coefficient of variation was about 14% among students of Commerce and Science discipline and 16% among those in Arts discipline (Table 3), indicating relatively consistent scoring by the students of Commerce and Science discipline compared to that by the students of Arts discipline.

Fig. 2:

Distribution of performance patterns of environmental behaviour in different disciplines of study among XI standard students.

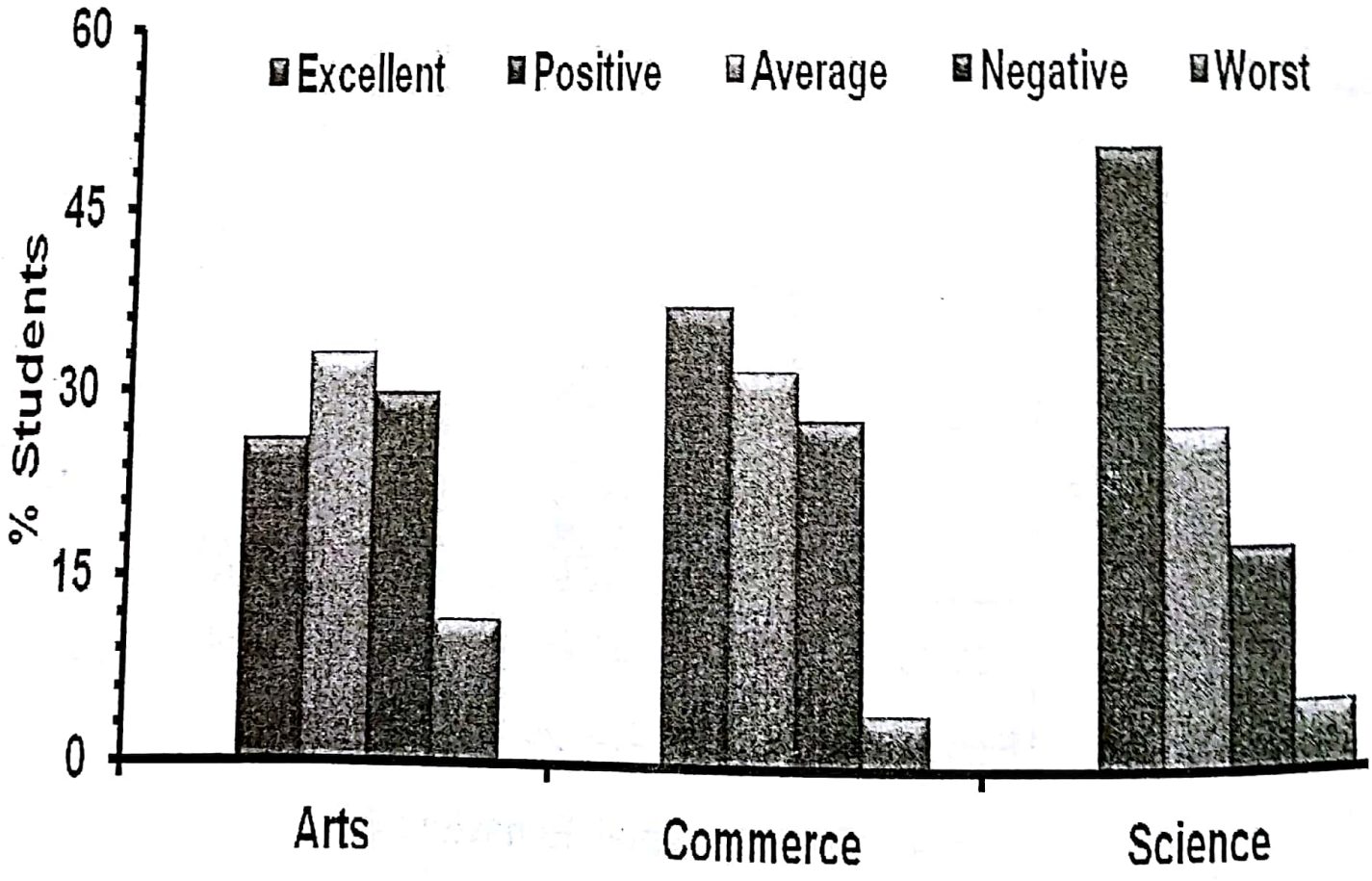


Table 3:

Comparison of average environmental behaviour of XI standard students according to discipline of study (*the means with same alphabets are statistically equal to each other*).

Discipline	n	Mean	Standard Error	Coefficient of Variation
Arts	158	44.08 a	0.56	16.1%
Commerce	210	46.49 b	0.44	13.8%
Science	283	47.95 c	0.40	14.1%

ANOVA Table

Source of Variation	Degree of Freedom	Sum of Squares	Mean Sum of Squares	F Ratio
Between disciplines of study	2	1520.78	760.39	
Error	648	29260.81	45.16	16.84***
Total	650	30781.59		

****p=<0.001*

Singhal (2013) reported that the proportion of the students with average to positive environmental behaviour was the minimum in the discipline of Arts and the maximum in Commerce and Science among higher secondary and graduate students. Wray-Lake et al. (2008) have concluded that there was an inverse relation between trends of affluence and youth's personal environmental responsibility and conservation behaviour. Many researchers have reported that level of education (Goetz et al., 1998), happiness (Frey and Stutzer, 2002) and population pressure (Brechin and Kempton, 1994) raised environmental concern and subsequently improved individuals' environmental behaviour (Duroy, 2005). GreenCOM (2001) observed that raising public awareness or fostering positive attitudes about a problem or issue did not ensure that people will act on that new knowledge and awareness. Despite increased knowledge and positive attitudes, majority of people still act in ways that they know they shouldn't. Lucas et al. (2008) seemed to have made very relevant recommendations in this respect: (i) people should be directly involved in a policy with responsibility for delivery, (ii) policy must simultaneously tackle several aspects of behaviour at multiple levels, and (iii) policies must pull in the same direction making them legitimate to the target audience. Sengupta et al. (2010) found significant relationship of environmental behaviour with awareness, which was neither direct nor structured. There is a gap or barrier between awareness and action, implying importance of some other independent variables in shaping environmental behaviour. Steg and Vlek (2009) have concluded that environmental psychologists have an important role to play in the management of environmental problems by the promotion of behavioural changes. Behavioural interventions are generally more effective when they are systematically planned, implemented and evaluated. Four key issues to be addressed are:

1. Identification of the behaviour to be changed,
2. Examination of the main factors underlying this behaviour,
3. Application of interventions to change the relevant behaviours and their determinants, and

4. Evaluation of intervention effects on the behaviour itself, its main determinants, environmental quality, and human quality of life.

Interdisciplinary collaboration is needed to effectively address these issues, because environmental problems are not just psychological problems; they are also ecological, technological, and sociocultural problems.

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