Gender Differences in Environmental Sensitivity among Primary School Students

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ABSTRACT

Environmental sensitivity is a significant objective of environment education to create an emotional empathy and bonding with environment so as to enhance environmental responsible behaviour. The purpose of this investigation was to study the environmental sensitivity of primary school students in relation to their gender and locus of control. The sample comprised 400 primary school students of Rohtak. 200 students were with external locus of control (123 boys and 77 girls) and 200 students with internal locus of control (119 boys and 81 girls).The tools employed were environmental sensitivity scale (developed by authors) and locus of control by Dr. Roma Pal (1982). Mean, S.D., and ANOVA were used to analyse the data.

Introduction

Environmental sensitivity has been described as one of the main objectives of environmental education for long thirty years but yet to be achieved. It is one of the several variables that contribute to the creation of citizens who will work to maintain a varied, beautiful and resource rich planet for future generations (Tanner, 1980). In Hungerford and Volk's words it is prerequisite or at the very least a variable that would enhance a person's decision-making, when environmental actions are taken.

Environmental sensitivity refers to an empathetic view of the environment and of its problems and issues. It is a view that respects ecological stability and promotes the idea that human beings must

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live in harmony with the natural environment. Research indicates that environmental sensitivity is more prevalent among those who behave in environmentally responsible ways than among those who do not (Marcinkowski 1989; Sia, Hungerford and Tomera 1985-86; Sivek and Hungerford 1990).

Environmental sensitivity is a predisposition to take an interest in learning about the environment, feeling concern for it and acting to conserve it, on the basis of formative experiences. Chawla (1998) found that there is no single experience that affects sensitivity but a combination of factors, such as

- childhood experiences in nature;
- experiences of environmental destruction;
- pro-environmental values held by the family;
- pro-environmental organisations;
- role models; and
- education.

Seven variables were found to be statistically significant in predicting responsible environmental behaviour. They were (1) level of environmental sensitivity; (2) perceived knowledge of environmental action strategies; (3) perceived skill in using environmental action Strategies; (4) psychological sex role classification; (5) individual locus of control; (6) group locus of control and (7) attitude towards pollution. Three major behaviour predictors (perceived skill in and knowledge of environmental action strategies and environmental sensitivity) need to be addressed in curriculum development and instructional practice (Sia et al,1985-86). Determinants of environmental sensitivity include cultural socio-structural group level and individual factors. Both mother's language and gender are among the determinants of the relative position of a person in the concrete socio-cultural symbolic landscape, which shape his/her socialisation towards certains attitude and beliefs (Chawla, 1998). Combination of adventure recreation and adventure education helped to develop as well as to enhance the environmental sensitivity and also the feelings of responsibility to care for our environment (Olson, 1999). Outdoor experiences, environmental destruction and positive formal education can be cited as life experiences instrumental in the development of environmental sensitivity (Sward, 1999). Environmental education programmes like field trips, hiking, camps and adventure activities purport to enhance student's appreciation and sensitivity towards the environment, outdoor behaviour and social relationship (Palmberg and Kuru, 2000).

Gender differences in environmentalism reflect real and symbolic asymmetry between categorical groups in the society. Subordinate groups tend to be more environmentally sensitive and express stronger beliefs and attitudes associated with environmentalism due to their greater vulnerability and having less power valuing altruism (Kalof et al, 2002). Sub-dominant social groups express greater environmental sensitivity as compared to the dominant ones. Men and women have also different patterns of environmental sensitivity (Rausdeep et al, 2004). Students showed significant environmental sensitivity when taught by action oriented experiential learning strategies (Harjai, 2007). Nature documentaries have a positive effect on students' environmental sensitivity (Barbos et al, 2009).

Locus of Control

Locus of control refers to one's perceived ability to bring about desirable outcomes in the world through one's actions. This concept deals with an individual's sense of personal effectiveness: that their actions and words ultimately do or don't make a difference in the world. Individuals with an 'internal' locus of control have a high expectancy of reinforcement for their actions and tend to take action with confidence. Those with an 'external' locus of control believe that situations are out of their control and lie in the hands of those more powerful.

According to Ramsey and Hungerford (2002) the research indicates that responsible environmental behaviour is associated with the following variables:

- Environmental sensitivity (i.e. feeling of comfort in and empathy toward natural areas).
- Knowledge of ecological concepts.
- Knowledge of environmental problems and issues.
- Skill in identifying, analysing and evaluating environmental problems and solutions.
- Beliefs and values (i.e. beliefs are what individuals hold to be true and values are what they hold to be important regarding problems/issues and alternative solution/action strategies).
- Knowledge of environmental action strategies (i.e., consumerism, political action, persuasion, legal action and physical action).
- Skill in using environmental action strategies.
- Internal locus of control (i.e. the belief that by working alone or with others, an individual can influence or bring about the desired outcomes).

By teaching citizen action skills, educators can help build up student's locus of control. Of course, without a desire to act, there will be no action. We can add strength to a student's locus of control by using positive reinforcement engaging hiking groups in leadership and empowerment activities that allow them to be more self sufficient and telling them stories of other young students who have made a positive difference in the world.

Locus of control was significantly associated with environmental activism and willingness to engage in personal conservation and anti-pollution activities (Robert and Mark, 1981). A person with internal locus of control has belief in his own attempts and efforts and thus he believes in changing the world and solving the environmental problems by his own efforts (Rothbaum,1982). Internals' approach towards solving environmental problems was also found to be positive (Findley and Cooper, 1983). Individuals with a stronger internal locus of control are more likely to participate in environmentally responsible behaviour because they believe their actions can help precipitate change (Newhouse, 1990). There was a significant correlation between a person's belief that they can influence the environment and that person's environmentally responsible behaviour (Smith-Sebasto and Fruntiner, 1994). There is a positive relationship between internality and pro-environmental orientation (Osama, 2000). People started taking interest in the problems concerned with the environment and their possible solutions .with change in their locus of control (Harris and Case, 2001). The students with marked changes in their locus of control showed more belief, more control over their own efforts and showed the tendency to solve the environmental problems and to work over their solutions willingly (Thielker, 2004). Internals exhibited better in their environmental sensitivity than externals (Devender, 2007). Behavioural intentions, environmental affects and locus of control could be accounted as significant predictors of self-reported environmentally friendly behaviour (Alp et al, 2008).

Rationale of the Study

Children's and adolescent's opinion and knowledge concerning the environment have been under research although children's environmental education has existed for many years. However, from educational point of view, attitudes and perceptions of the future generation are crucially important. Their views and awareness should be understood as they will be responsible for demands on the remaining natural resources (Karhonen, 2004).

Young people comprise nearly 30 per cent of the global population and will be the decision-makers of the future. Their way of thinking about the environment is already shaping the world of tomorrow. The involvement of today's youth in environment and development, decision-making and in the implementation of programmes has been internationally recognised as critical to sustainable development (UNEP).

Today's young children are tomorrow's leaders. It seems logical that the behavioural changes towards environment will be easier and more effective if students are environmentally sensitive.

The younger one starts, the better it is. Children are the future of the world so it is important to investigate their sensitivity related to the environment.

So the investigators proposed to investigate the environmental sensitivity of primary school students of Rohtak with internal and external locus of control.

Objectives

Following objectives were framed to conduct the study:

- To study the environmental sensitivity of primary school students.
- To compare the environmental sensitivity of primary school students with internal and external locus of control.
- To compare the environmental sensitivity of boys and girls of primary school.
- To compare the environmental sensitivity of boys and girls with internal and external locus of control.

Hypotheses

Hypotheses of the study were as follows:

H_1 There is no significant difference between total environmental sensitivity mean scores of primary school students with internal and external locus of control.

There is no significant difference between environmental sensitivity mean scores of students with internal and external locus of control with respect to

$H_{1.1}$ Domain I - Empathy

$H_{1.2}$ Domain II - Responsible environmental behaviour

$H_{1.3}$ Domain III - Action strategies

$H_{1.4}$ Domain IV - Love for environment

H_2 There is no significant difference between total environmental sensitivity mean scores of boys and girls of primary school students.

There is no significant difference between environmental sensitivity mean scores of boys and girls of primary school with respect to

$H_{2.1}$ Domain I - Empathy
$H_{2.2}$ Domain II - Responsible environmental behaviour
$H_{2.3}$ Domain III - Action strategies
$H_{2.4}$ Domain IV - Love for environment
H_3 There is no significant interaction between gender and locus of control with regard to environmental sensitivity mean scores.

There is no significant interaction between gender and locus of control with respect to

$H_{3.1}$ Domain I - Empathy
$H_{3.2}$ Domain II - Responsible environmental behaviour
$H_{3.3}$ Domain III - Action strategies
$H_{3.4}$ Domain IV - Love for environment.

Tools Used

Following tools were used for investigation:

Environmental sensitivity scale (Developed by the authors)

The authors followed Likert's method of summated ratings for the construction of the environmental sensitivity scale. Statements formed were both positive and negative. Initially, the authors selected 70 statements, area-wise, with the help of certain books on environment, environmental education and various research papers related to environmental sensitivity. The language of the statements was kept simple and clear to avoid any type of confusion. As the main aim of the researcher was to know the environmental sensitivity of primary school students, too much technical and very specific terms were avoided. Following four areas for framing the statements were considered.

1. Empathy towards environment.
2. Responsible environmental behaviour.
3. Action strategies.
4. Love for environment.

Item analysis was carried out by employing the 't' test for each of the statements for the higher and lower groups. Only those statements which showed a significant difference between high and low groups at least at 0.05 levels, were selected for inclusion in the final form of the scale. The final draft of the scale of environmental sensitivity consisted of 54 statements in four domains. There were 33 positive

statements and 21 negative statements. Each item alternative was assigned a weightage ranging from 4 (Strongly Agree) to 0 (Strongly Disagree) for favourable items. In case of unfavourable items the scoring was reversed, i.e. from 0 (Strongly Agree) to 4 (Strongly Disagree). The score of an individual was the sum total of items scored in all the four areas. Thus, the range of scores was from 54 to 216 with higher score indicating more environmental sensitivity and vice versa. Reliability of the scale was found to be 0.738.

Locus of control scale developed by Dr. Roma Pal (1982) to assess the internal and external locus of control of primary school students

The test consists of 25 statements. The statements of this test have been chosen according to the mental level of children between the age of 5 to 11 years. Scores to be given to the extremely positive response in a statement is 5, to the positive response is 4, 3 to the moderate response, and 2 and 1 score to be given to the negative and extremely negative response of a statement respectively. As the total number of items included remains 25, which clearly indicates that the minimum possible score in the test is 25 and maximum possible score is 125. The reliability coefficient was found to be 0.75 (Split-half method) and 0.82 (Test- retest method). The validity coefficient was found to be 0.78.

Sample

Purposive sampling was employed to the present study. Primary school students were selected on the basis of their internal and external locus of control. Locus of control scale was administered to 650 students of six schools of Rohtak. The scores of the students on locus of control were arranged in an ascending order, in accordance with the manual, and students with internal and external locus of control, were identified. Thus, 200 students with external locus of control which had 123 boys and 77 girls, and 200 students with internal locus of control, which had 119 boys and 81 girls were selected. So, the final sample comprised 400 students.

Method of the Study

Descriptive survey method of research was employed for the present study. The two independent variables were — gender which was studied at two levels, viz. boys (G_1) and girls (G_2); the variable of locus of control was studied at two levels viz internal (L_1) and external (L_2). To study the main effects and interaction effects of boys and girls

with internal and external locus of control on dependent variable environmental sensitivity ANOVA was employed.

Data Collection

Environmental sensitivity scale was given to the selected sample of 400 students on the basis of internal and external locus of control. They were asked to follow instructions and to give response to each and every statement in the scale. Students were assured that their responses were needed just to check their views, not for examination purpose. Participants completed the questionnaire individually and were not permitted to consult anyone. However, they were allowed to ask questions to the researcher regarding the questionnaire items.

Data Analysis

The scores as measured by environmental sensitivity scale were calculated for students with internal and external locus of control for the total environmental sensitivity and all the domains involved were also calculated separately for each student and were subjected to the analysis of variance. Two-way analysis of variance was employed separately for all the four domains and for the total environmental sensitivity scores.

Means, SD's (Standard Deviation) of different sub samples and the summary of ANOVA for 2×2 design for scores of total environmental sensitivity as well as its four domains of different sub samples were calculated separately and have been presented in Tables 1 and 2.

Table 1
Means and SD's of Sub Samples of Scores on Total Environmental Sensitivity and its Various Domains

		G_1 Boys	G_2 Girls	Total
Total	L_1	M = 152.13 SD = 30.16 N = 119	M = 160.42 SD = 24.26 N = 81	M = 155.49 SD = 28.16 N = 200
	L_2	M = 131.94 SD = 23.33 N = 123	M = 146.88 SD = 25.54 N = 77	M = 137.69 SD = 25.22 N = 200
	Total	M = 141.87 SD = 28.69 N = 242	M = 153.82 SD = 25.73 N = 158	
Domain I	L_1	M = 25.34 SD = 5.4 N = 119	M = 26.64 SD = 4.72 N = 81	M = 25.87 SD = 5.16 N = 200

Note: L — Locus of control
G — Gender type

	L_2	M = 23.93 SD = 4.85 N = 123	M = 25.21 SD = 5.4 N = 77	M = 24.42 SD = 5.09 N = 200
	Total	M = 24.62 SD = 5.16 N = 242	M = 25.94 SD = 5.1 N = 158	
Domain II	L_1	M = 51.03 SD = 11.72 N = 119	M = 53.84 SD = 10.04 N = 81	M = 52.17 SD = 11.13 N = 200
	L_2	M = 44.2 SD = 9.31 N = 123	M = 48.17 SD = 10.54 N = 77	M = 45.72 SD = 9.97 N = 200
	Total	M = 47.56 SD = 11.09 N = 242	M = 51.08 SD = 10.64 N =158	
Domain III	L_1	M = 47.32 SD = 10.6 N = 119	M = 49.91 SD = 8.69 N = 81	M = 48.37 SD = 9.93 N = 200
	L_2	M = 40.63 SD = 9.12 N = 123	M = 46.53 SD = 9.12 N = 77	M = 42.9 SD = 9.54 N = 200
	Total	M = 43.92 SD = 10.41 N = 242	M = 48.27 SD = 9.03 N = 158	
Domain IV	L_1	M = 28.44 SD = 6.57 N = 119	M = 30.02 SD = 5.28 N = 81	M = 29.08 SD = 6.12 N = 200
	L_2	M = 23.19 SD = 6.27 N = 123	M = 26.97 SD = 5.96 N = 77	M = 24.64 SD = 6.41 N = 200
	Total	M = 25.77 SD = 6.93 N = 242	M = 28.54 SD = 5.81 N = 158	

Table 2
Summary of 2×2 ANOVA for Total Environmental Sensitivity Scores and its Various Domains

	Source of variance	df	Ss	Mss	F ratio	Level of significance
Total	L	1	26901.674	26901.674	39.536**	Significant at 0.01 level
	G	1	13071.445	13071.445	19.21**	Significant at 0.01 level
	L×G	1	1005.031	1005.031	1.477	Not significant
	Error	396	269452.144	680.435		

	L	1	194.269	194.269	7.472**	Significant at 0.01 level
Domain I	G	1	158.795	158.795	6.107*	Significant at 0.05 level
	L × G	1	6.48E-03	6.48E-03	0	Not significant
	Error	396	10296.508	26.001		
	L	1	3737.609	3737.609	34.186**	Significant at 0.01 level
Domain II	G	1	1097.856	1097.856	10.042**	Significant at 0.01 level
	L × G	1	32.575	32.575	0.298	Not significant
	Error	396	43294.901	109.331		
	L	1	2420.34	2420.34	26.787**	Significant at 0.01 level
Domain III	G	1	1722.724	1722.724	19.067**	Significant at 0.01 level
	L × G	1	260.757	260.757	2.886	Not significant
	Error	396	35779.966	90.353		
	L	1	1579.77	1579.77	43.815**	Significant at 0.01 level
Domain IV	G	1	733.835	733.835	20.353**	Significant at 0.01 level
	L × G	1	98.552	98.552	2.733	Not significant
	Error	396	14277.993	36.056		

** Significant at 0.01 level of significance
* Significant at 0.05 level of significance
NS Not significant

Main effects

Locus of control (L)

F ratio for the students with different locus of control was found to be significant for total scores on environmental sensitivity and for domain I, domain II, domain III and for domain IV at 0.01 level of significance. Hence H_1, $H_{1.1}$, $H_{1.2}$ $H_{1.3}$, and $H_{1.4}$ were rejected. Students with internal locus of control exhibited better scores on environmental sensitivity with respect to domain I, i.e., empathy, domain II responsible environmental behaviour, domain III, action strategies and domain IV, love for environment than students with external locus of control.

Gender type (G)

F ratio for the difference between gender was found to be significant

for total scores on environmental sensitivity and for domain II, domain III and domain IV at 0.01 level of confidence and for domain I at 0.05 level of confidence. Hence $H_{2,}$ $H_{2.1}$, $H_{2.2}$, $H_{2.3}$ and $H_{2.4}$ were rejected. Girls exhibited better total environmental sensitivity and sensitivity with respect to domain I (empathy) domain II (responsible environmental behaviour) domain III (action strategies) and domain IV (love for environment) than boys.

Interaction effect

Locus of control and gender

(L×G)

F ratio for the interaction between gender and locus of control was found to be not significant for total scores on environmental sensitivity, for domain I, domain II, domain III, and domain IV, even at 0.05 level of confidence. Hence H_3, $H_{3.1}$, $H_{3.2}$, $H_{3.3}$, $H_{3.4}$ all were retained.

Findings

- Primary school students with internal locus of control exhibited better environmental sensitivity than their counterparts with external locus of control.
- With respect to domain I, i.e. empathy towards environment, students with internal locus of control exhibited better environmental sensitivity than students with external locus of control.
- The internals exhibited better responsible environmental behaviour, i.e. domain II of environmental sensitivity than externals.
- Students with internal locus of control exhibited better sensitivity towards action strategies, i.e. domain III than students with external locus of control.
- Students with internal locus of control exhibited more love towards environment, i.e. domain-IV of environmental sensitivity than students with external locus of control.
- Girls of primary school exhibited better environmental sensitivity than boys of primary school.
- Girls of primary school exhibited better empathy towards environment, i.e. domain I of environmental sensitivity than boys.
- Better responsible environmental behaviour, i.e. domain II of environmental sensitivity was shown by girls than boys.

- With respect to domain III, i.e. action strategies, girls exhibited better environmental sensitivity than boys.
- Girls of primary school exhibited more love for environment, i.e. domain IV of environmental sensitivity than boys of primary school.
- There was found no significant interaction between gender and locus of control with regard to total environmental sensitivity.
- There was found no significant interaction between gender and locus of control with regard to domain I (empathy) domain II (responsible environment behaviour) domain III (action strategies) and domain IV (love for environment).

Educational Implications

The results of this study revealed that primary school students with internal locus of control exhibited better environmental sensitivity than externals.

A good educational programme with a power of changing external locus of control to internal locus of control can be of great help to solve such environmental problems existing at a global level.

Educators must realise that locus of control has major effect on action behaviour. So in the primary stage, when the children are in the process of building their locus of control, they need to be taught in this sphere by providing number of experiences.

Action-oriented curricula should be formed that can create shifts in student's locus of control. This internal mechanism can be enhanced by the cumulative and consistent influence of family, home, school and real life experiences that support the importance of individual action. Teachers can add strength to a student's locus of control by using positive reinforcement, engaging hiking groups in leadership and empowerment activities that allow them to be more self.

REFERENCES

ALP, E., ERTEPINAR H., TEKKAYA C. AND YILMAZ A. 2008. A survey on Turkish elementary school student's environmental friendly behaviours and associated variables. *Environmental Education Research,* Vol. 14 (2), 129–143.

BARBOS, T.A. PARASKEVOPOULAS, S. AND STAMOU, A. G. 2009. The effect of nature documentaries on student's environmental sensitivity: A case study. *Learning, Media and Technology,* Vol. 34(1), pp. 61-69.

CHAWLA, L. 1998. Significant life experiences revisited: a review of research on sources of environmental sensitivity. *Journal of Environmental Education,* 29(3). 11–21.

Devender. 2007. A study of environmental knowledge sensitivity attitudes and action strategies in relation to locus of control of prospective and in-service teachers. *Ph.D. Thesis,* Panjab University, Chandigarh.

Findley, M. and Copper, H. 1983. Locus of control and academic achievement: A literature review. *Journal of Personality and Social Psychology,* 44, 419–427.

Harjai, J. 2007. Effectiveness of experiential learning strategies for enhancing environmental awareness and sensitivity among primary school students with internal and external locus of control. *Ph.D. Thesis.* Panjab University, Chandigarh.

Harris, F. and Case, R. 2001. *Global environmental issues.* Robinson College, University of Cambridge, Wiley, UK.

Kalof, L., Dietz, T. and Stern, P.C. 2002. Race gender and environmentalism. *Journal of Environmental Education.* 29(3).

Newhouse, N. 1990. Implications of attitude and behaviour research for environmental conservation. *Journal of Environmental education.* 22(1), pp. 26–32.

Olson P.A. 1999. Over the river and through the woods. The exceptional value of outdoor experience for life enhancement. Prescott College. *MAI,* 38(02), p. 364.

Osama, I. 2000. Relationships of locus of control and noise sensitivity with pro-environmental orientation. *Environment and Behaviour,* 27(4) 187–189.

Palmberg, I. and Kuru, J. 2000. Outdoor activities as a basis for environmental responsibility. *Journal of Environmental Education,* 31(4), pp. 32–46

Ramsey, J. and Hungerford, H.R. 2002. Perspectives on Environmental Education in the United States. *New Tools for environmental protection : Education, Information and Voluntary Measures.* National Academy Press, Washington, D.C. pp.147–160.

Rausdeep, M. and Ojala, A. 2004. Culture and gender specific profiles of environmental sensitivity. *Journal of Environmental Education,* Vol. 56. pp.443–457.

Robert, B.H. and Mark, W.L. 1981. The Relationship of three measures of locus of control of environment activism. *Basic and Applied Social Psychology,* Vol. 2(1). pp. 45–58.

Rothbaum, R. 1982. Changing the world: A model of perceived control. *Journal on Personality and Social Psychology.* 42, pp. 5–37.

Sia. A., Hungerford H. and Tomera A. 1985–86. Predictors of environmentally responsible behaviour: An Analysis. *Journal of Environmental Education.* 17(2). pp.31–40.

Smith Sebasto, N.J. and Frontiner P. 1994. Study of relationship between locus of control and environmental responsible behaviour. *Journal of Environmental Education,* 20(3). pp.39–40.

Sward, L. 1999. Significant life experiences affecting the environmental sensitivity of EI salva dorun environmental professionals. *Environmental Education Research,* Vol 5. (2).

TANNER, T. 1980. Significant life Experiences: A new research area in environmental education. *Journal of Environmental Education,* Vol. 11(4). pp. 20–24

THIELKER, V., et al. 2004. The relationship between positive reinforcement and locus of control (Electronic version). Retrieved from http://www. Methoyoke.edu courses/lablain/ psych2000/ project/ fall01/ locus of control.htm.