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Environmental awareness level of secondary school students: A case study in Prayagraj City

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Abstract
In this study, secondary school students' awareness of environmental issues and problems and the level of their active participation in environmental activities have been identified, and the effects of some factors as family, school and media on their environmental awareness and active participation have been investigated. The study was carried out in Prayagraj city by conducting a online survey. The results of the study showed a high level of environmental awareness among participant students. However, it is understood that environmental disclosures made in schools are insufficient and the participation level of students to environmental activities is low. Students rather gain experiences in the field of environment from mass media (i.e. audio, printed and visual media). It is revealed that female students have a higher level of environmental awareness and active participation level. In addition, when family income and family education level increases, environmental awareness and active participation level of students also increases.

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I. Introduction

Individuals gain permanent environmental attitudes via environmental education. This leads to active participation in protection of the environment. Therefore, environmental education should not only inform and build a sense of responsibility, but also affect an individual's behaviours. However, this education can be effective when it is based on life experiences beginning in the early years of life. For this reason, experiences gained during school-age shape an individual's outlook on environment. Environmental education in India is generally given in Social Sciences lessons or Science and Technology lessons at primary schools. Especially Science and Technology lesson covers most of the environmental education. Related curriculum has been revised in 2013-2014 school year.

There are a limited number of researches in India about environmental interests, attitudes and awareness of students from different grades. Most of the studies have been carried out on primary school level or university level . It should be taken into account that every student is not able to complete university education. At this point, secondary level education appears to be essential in raising environmental awareness of students. In India, there is a two-stage secondary level education consisting of Secondary School and High School. Studies on environmental awareness mostly focus on high school students rather than secondary school students. Besides students' awareness of environmental issues and problems, their level of active participation in environmental activities has been identified. Also, the effects of some factors as family school and media on their environmental awareness and active participation have been investigated.

II. Methods

90 students participated in the study from three schools called A (30 students), B (30 students) and C (30 students) located in Prayagraj. The study was performed by conducting a online survey on students of class 6th from secondary schools which have different demographic structures and socio- economic levels. 6th grade students were chosen because the survey questioned their knowledge resulting from environmental education. Questions were prepared considering decision-making abilities and knowledge levels of students. The survey consisted of two parts. First part included personal questions. Second part was divided into two sections; first section was about school-media relationship on environmental awareness formation; whereas second section measured students' awareness to environmental problems and participation levels to environmental organizations/activities. There were 25 questions on the survey. First 8 questions were prepared to have personal information of students and their families. 6 questions were prepared to understand the importance of school and media on environmental awareness. Students' awareness to environmental problems and participation levels to environmental organizations/activities are investigated by 11 polytomous questions (Table 1).

Table 1. Environmental Awareness and Active Participation Scale questions

1)	Do you think that you have sufficient information about environmental problems?
2)	If people keep producing and consuming like this, would there be a serious raw material shortage?
3)	Have economic growth and technological developments damage the nature dangerously?
4)	Should there be limitations on economic growth in order to prevent destruction of the nature?
5)	Are developed countries more responsible for environmental pollution and destruction of the nature?
6)	Do you think this quote is true: "We do not inherit the earth from our ancestors; we borrow it from our children?"
7)	Is development of personal environmental awareness an important feature for protection of the environment?
8)	Are you aware of activities of environmental club of your school?
9)	Do you recognize environmental non-governmental organizations?
10)	Do you know government agencies that deal with protection of the environment?
11)	Have you ever participate in an environmentalist group or organization?

Students' environmental awareness and participation levels to environmental organizations/activities have been determined by Environmental Awareness and Active Participation Scale (EAAPS). EAAPS is a 5-point Likert-type scale consisting of 11 questions. First 7 questions of 11 measured environmental awareness of students whereas rest of the questions determined participation levels in environmental organizations/activities. Answers were arranged such that "Strongly Disagree " is 1 point and "Strongly Agree" is 5 point. In this case, 11 and 55 points are minimum and maximum points available in the survey.

III. Results and Discussion

Information about demographic family structures of students participating in the study is given in Table 2. As seen in Table 1, 53.33% of the students (48 student) are female and 46.67% of the students (42 students) are male. Parents of schools A and B have close income levels both surpassing parent income levels of school C. Parents of school C that have an annual income level lower than Rs 50,000 are classified as low-income families. 69% of families in school C are low- income families. Most of the families in the study consist of 4 or less family members. Parent educational levels of school B are highest as well as mother educational levels. 38.8% of mothers of school B are university graduate 50.7% of them are housewives. Mothers of school C do not have university education and 95.21% of them are housewives. Father educational levels of school A are highest. When occupations of parents are evaluated, it is seen that majority of parents of schools A and B are government officer or artisan. Parents of school C are mostly worker or artisan.

Table 2. Information about students and their families participating in the study.

	School A (%)	**School B (%)**	**School C (%)**	**Average**
Female	59	54	47	53.33
Male	41	46	53	46.67

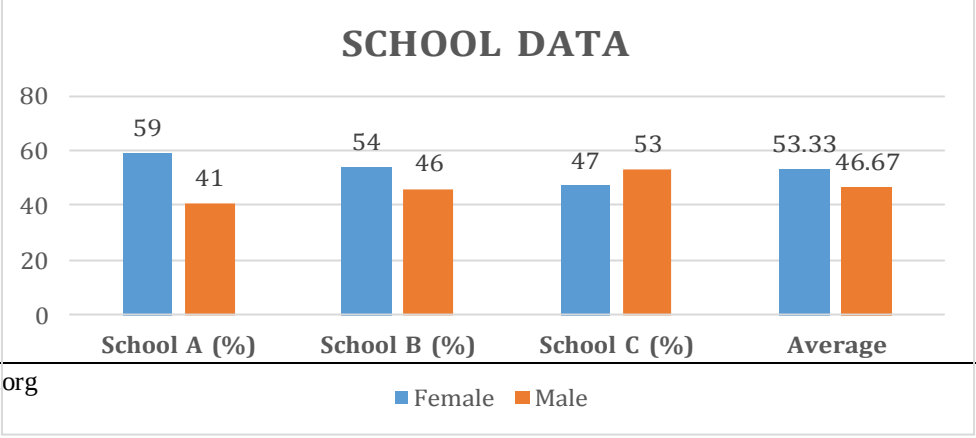


TABLE 2.1

Parental Income				
	School A (%)	**School B (%)**	**School C (%)**	**Average**
Low (≤50000 Rs/year)	4.5	5.7	69	26.4
Average (50000 - 200000)	32.6	37.2	20.5	30.1
High (≥200000 Rs/year)	62.9	57.1	10.5	43.5

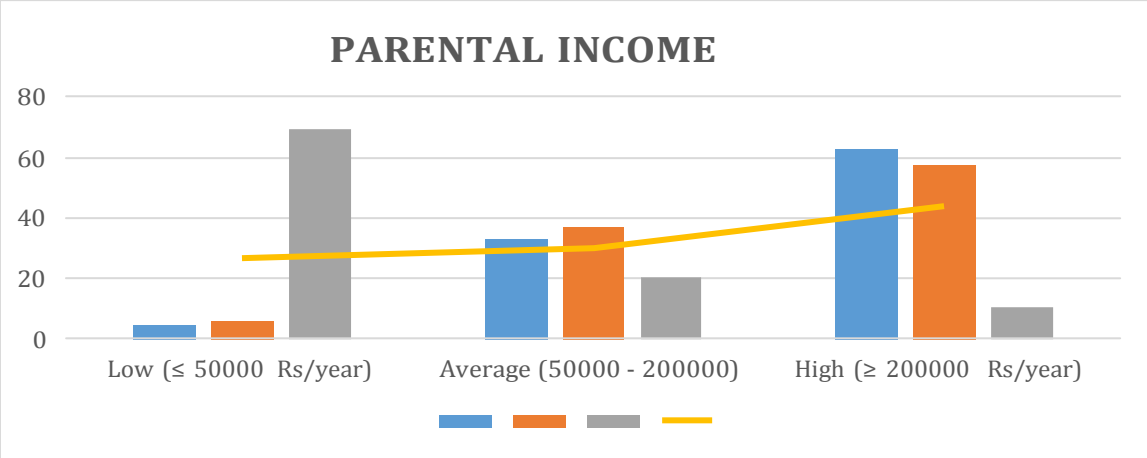


TABLE 2.2

Family Members				
	School A (%)	**School B (%)**	**School C (%)**	**Average**
≤ 4 member	47	87.2	59.2	64.47
5-6 member	47.6	10.4	34.5	30.83
≥7 member	5.4	2.4	6.3	4.70

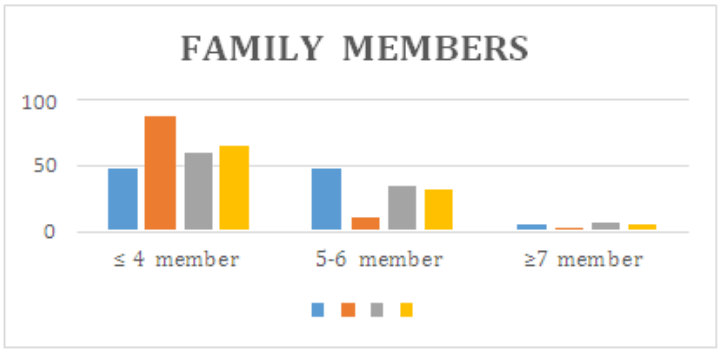


TABLE 2.3

Parent Education Levels								
	School A (%)		School B (%)		School C (%)		Average % (School A+B+C)	
	Mother	Father	Mother	Father	Mother	Father	Mother	Father
Uneducated	4.9	2.5	0	1.7	1.2	1.8	2.03	2.00
Literate	5.8	2.3	2.5	8	3.7	4.5	4.00	4.93
Primary Education	21.7	26.5	18	30.1	80.5	51.9	40.07	36.17
Secondary Education	38.2	68.7	40.7	60.2	14.6	38.3	31.17	55.73
University	29.4	0	38.8	0	0	3.5	22.73	1.17

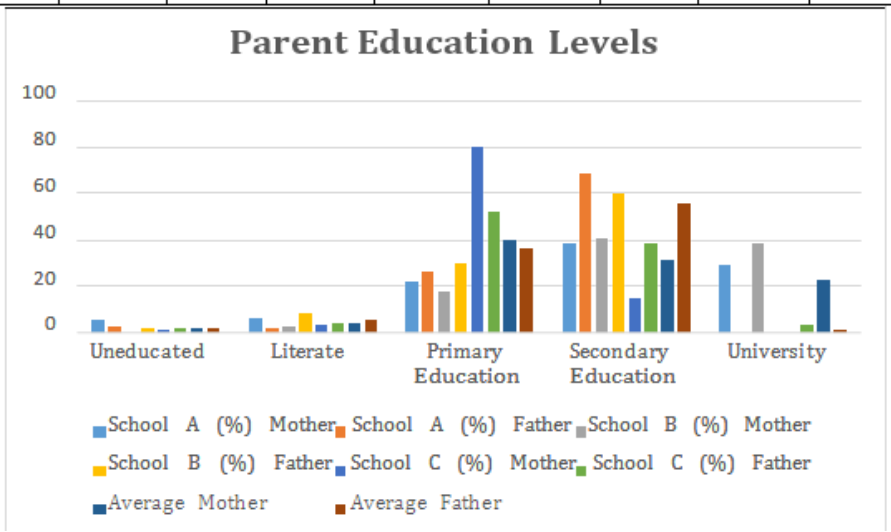
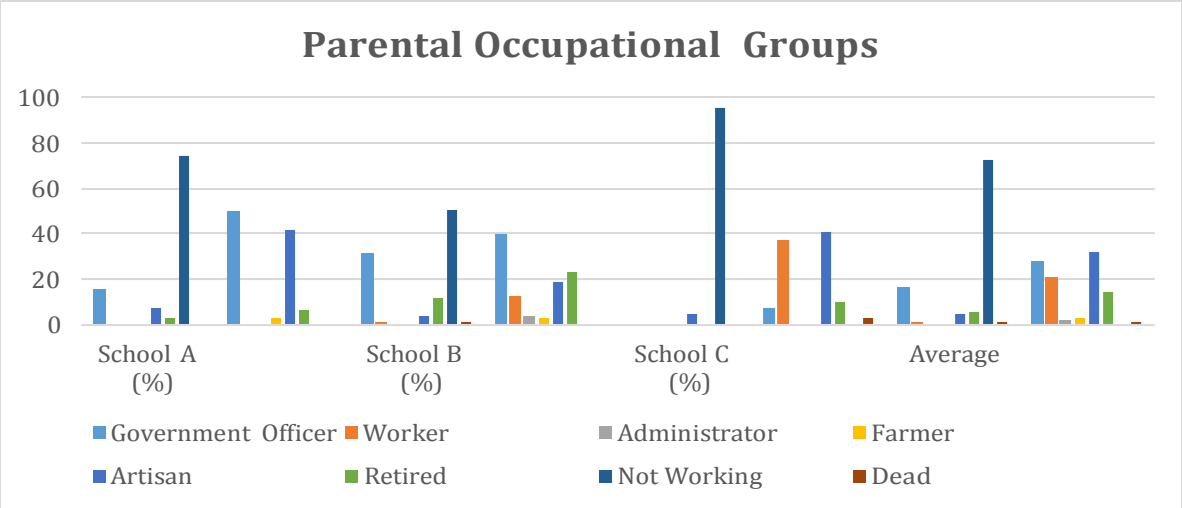


TABLE 2.4

Parental Occupational Groups								
	School A (%)		School B (%)		School C (%)		Average % (School A+B+C)	
	Mother	Father	Mother	Father	Mother	Father	Mother	Father
Government Officer	15	50	31.3	39.5	-	7.2	16	27.8
Worker	-	-	1.2	12.3	-	37.3	0.5	20.7
Administrator	-	-	-	3.7	-	-	0	1.5
Farmer	-	2.9	-	2.5	-	-	0	2.5
Artisan	7.6	41.4	3.6	18.5	4.8	40.9	5	31.9
Retired	2.7	5.9	12	23.5	-	9.6	5.5	14.6
Not Working	74.7	-	50.7	-	95.2	-	72.5	0
Dead	-	-	1.2	-	-	2.4	0.5	1



In this study, environmental education in schools, methods of education and how students make use of this education were investigated. Also it is questioned whether the schools have efforts to raise environmental awareness of local community. In this context, following questions were presented to students:

1. If there were an independent environmental course in your school, would you like it to beelective or compulsory?
2. What kind of techniques should be employed in your lessons in order to teach youenvironmental attitudes?
3. How well do you take advantage of environmental education in your school?
4. Are there any activities in your school aiming to inform local people about environmental problems (soil erosion, air pollution, solid wastes, radiation etc.) threatening natural structure of where you live?

Answers to these questions revealed that students were not eager for a compulsory environmental course. 69% of the students wanted an elective environmental course while37% of the students did not mention any opinion. Most popular teaching methods were "practice in environmental laboratory" and "discussion-presentation" among students. 67.5% of the students think that they never or barely make use of environmental education. Less than half of the answers (47.2%) mentioned efforts of schools to raise environmental awareness of local community. These results might indicate that these kinds of activities do not take place frequently or students are not informed or involved. The study included questions about students' relevance towards environmental problems. They were questioned about how they use mass media (i.e. audio, printed and visual media) to be aware of environmental issues. Role of mass media on building environmental awareness is analysed. In this context, following questions are presented:

- How many hours do you watch TV every day on average?
- Do you try to follow publications and broadcasts about environmental issues?
- Do you think that mass media (newspaper, radio, TV etc.) can sufficiently inform people about environmental problems?
- Do you think that mass media (newspaper, radio, TV etc.) has contributed to development of your environmental awareness?

Previous studies in India indicated that children are notably independent on watching TV. Same studies pointed out that children and adolescents at the ages of 6-17 watch an average of 3-4 hours of TV every day . Similar results are observed in this study. 47.9% of the students watch 1-2 hours, 33.2% of the students watch 2-3 hours of TV. 45% of the students think that they follow environmental issues on mass media "sufficiently". When answers of "a bit more" and "pretty much" are added, this ratio increased up to 71.5%. Students mentioned the importance of mass media on their experiences about environment. "Sufficiently", "a bit more" and "pretty much" answers given to last question (contribution of mass media to development of environmental awareness) summed up to 84.2%. EAAPS scores of the students' in the study are shown in Table 3.

Table 3. Environmental Awareness and Active Participate Scale (EAAPS) score distributions.

		Students	Score	Dev.
1	Do you think that you have sufficient information about environmental	89	2.45	1.26
2	If people keep producing and consuming like this. would there be a	88	4.1	1.25
3	Have economic growth and technological developments damage the	87	3.2	1.35
4	Should there be limitations on economic growth in order to prevent	86	3.26	1.45
5	Are developed countries more responsible for environmental pollution	89	3.24	1.45
6	Do you think this quote is true: "We do not inherit the earth from our	89	4.3	1.21
7	Is development of personal environmental awareness an important	90	4.1	1.21
8	Are you aware of activities of environmental club of your school?	87	1.56	1.11
9	Do you recognize environmental non-governmental organizations?	90	1.9	1.1
10	Do you know government agencies which deal with protection of the	88	2.45	1.21
11	Have you ever participate in an environmentalist group or organization?	90	1.79	1.1

EAAPS scores related with participation in environmental activities in schools and environmentalist groups outside school are below 2. Students do not take part in environmental organizations and they have limited information about them. Score from the phrase "Development of personal environmental awareness is an important feature for protection of the environment" is very high. Questions that are indicators of environmental awareness gave similar results which prove presence of a high level of environmental awareness. It is expected that individuals with a high level of environmental awareness will eagerly participate in environmental activities. However, same students in this study have a very low level of active participation. Thus, environmental awareness does not lead to active participation or in other words does not turn into environmental attitudes. Investigation of EAAPS scores relative to demographic and socio-economic levels of families will be helpful on interpretation of above mentioned results. Scores are calculated and presented in Table 4.

Table 4. EAAPS Scores of students according to demographic and socio- economic levels.

Parameters		No. of Students	AverageScore	StandardDeviation
Gender	Female	55	34.08	15.19
	Male	35	31.54	9.05
Parental Income	Low (≤ 50000 Rs/year)	23	32.85	7.75
	Average (50000 - 200000)	52	35.89	14.73
	High (≥ 200000 Rs/year)	10	34.68	4.59
Family Members	≤4 member	41	33.3	10.32
	5-6 member	39	33.29	10
	≥7 member	10	21.67	7.52
Mother Education	Uneducated	1	27	8.87
	Literate	2	28.57	7.98
	Primary Education	18	32.3	8.58
	Secondary Education	14	32.5	10
	University	10	36.33	11.23
Father Education	Uneducated	1	34	….
	Literate	2	33.17	10.1
	Primary Education	16	31.59	9.69
	Secondary Education	25	32.55	10.12
	University	1	34.41	10.64

Occupation of Mother	Government Officer	7	37.84	11.53
	Worker	0	36	….
	Artisan	2	26.33	8
	Retired	2	32.73	9.01
	Not Working	33	32.06	9.001
	Free Lancer	0	35.14	9.05
	Dead	0	15	
Occupation of Father	Government Officer	13	34.51	10.67
	Worker	9	33.73	10.32
	Administrator	1	36	11.23
	Farmer	1	29.67	8.96
	Artisan	14	35.2	10.93
	Retired	7	32.45	10.11
	Not Working	0	34.06	9
	Dead	0	33	….

As seen in Table 4, average EAAPS scores of girls are higher than scores of boys. It can be inferred that environmental awareness and active participation levels of girls are higher. Similar results have been obtained by several researchers.

In general, as family income increases, EAAPS scores increases. Yet families of average income level have slightly higher scores. There is not a significant relationship between number of family members and EAAPS scores (Scores of students having 7 or more family members are out of consideration because number of such students is very low). It is determined that as mother education level increases, EAAPS scores increase significantly. A previous study states a similar relationship between woman education level and environmental awareness level. Analogous results are also valid for father education level. In the meantime, average EAAPS score of students whose mother is a university graduate outnumbers average score of students whose father is a university graduate . This proves once again the influence of mother on attitudes and behaviours of children.
The number of parents from certain occupations are low (for mother: worker, self-employed, artisan, freelancer; for father: administrator and farmer) and they were left out of consideration. On this occasion, EAAPS scores of low status jobs appear to be low. Students living in the city centre have a higher level of environmental awareness as compared to students living in suburbs or rural areas. This can be interpreted as an expected result from the survey.

IV. CONCLUSION

Results of this research highlighted that although students had a high level of environmental awareness this gains did not turn into active participation and led them to environmental attitudes. In this context, education at school and mass media appear to be key tools. Environmental rights and responsibilities should be adopted at school and followed by applied training models aiming environmental attitudes and behaviours. Curriculum of schools must be arranged at this stage. These arrangements should be revised in case of unsuccessful results. Besides, visual media should be employed to effectively support curriculum of schools in imparting environmental education at every level.

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