

COMPREHENDING THE CONCEPT OF ENVIRONMENTAL POLLUTION AMONG PRIMARY GRADE STUDENTS....AN ANALYTICAL STUDY

*** MS. PREETI SAXENA**

Environmental Education became an integral component of the National policy on Education in 1986. Introduction of ten years school curriculum include teaching of Environmental Studies for the primary stage of schooling. At the upper primary stage Environmental Studies was introduced as a separate subject besides teaching of science and social studies. Study of environmental issue of our age includes the adverse effects of pollution, extinction of several species, wasteful consumption and adverse effects of consumerism.

Environmental pollution is a major problem in the metropolitan cities like Delhi, Mumbai, Calcutta and Bangalore. Gradually other cities are also being affected to a level, which is going to be harmful for the coming generation. The pollution of air, water, noise and disposal of solid waste is causing a serious for the civic and enforcement agencies. Almost all-human activities- Industrial, agricultural, mining and commercial activities cause water pollution. Air pollution is another major environmental problem, which cause impacts on human health and ecosystem. Marine pollution either by accident or deliberate discharge of wastewater into sea or lakes causes damage to aquatic life. Sharma and Tan (1990) have dealt with the harmful effects of pollution on human life and disturbance of ecosystem. It seems that the curriculum approach to the study of sanitation has not created the desired impact on the minds of children and adults. It was way back in 1986 that protection of environment was included as a core curriculum component up to high school stage. It is doubtful that the internalization of the environmental values is taking place in the minds of people in our country. Despite several educational projects on environmental sanitation, people have still not imbibed the spirit of cleanliness and conservation. The answer to the vital question can be found by making a study of the understanding of the concept among the learners. Thus students of class VI and VII were chosen for the present study.

The concept of pollution is currently a crucial issue. For some it is a simply blow down of trees during a stormy weather and mudslides taking place on the mountain slopes. Some view it as a negative impact on our lives in the content of its effect on

human beings. For example, depletion of ozone layer understood as an environmental crisis as it causes ailments like cancer of skin. Use of polythene bags and other disposable materials has increased enormously. One can easily recall that the surroundings which used to be clean are full of these degradable materials. A newspaper reported that 10 kgs. of polythene bags were removed from the stomach of a cow at Allahabad. There is adulteration in foodstuffs, medicines and milk. Conception of pollution ranges from dust and mud to the nuclear fallout from atomic weapons. Topic of pollution is selected for the present study, as it is a relevant environmental and educational issue on which students would have probably formed related concepts. The increasing water, air, noise pollution, the acid rain and depletion of ozone layer are some of the problems of common concern. Weather changes are causing atmospheric changes in the form of devastating cyclones and floods. Thus if necessary to create among the children an awareness of "Environmental pollution".

OBJECTIVES OF THE STUDY

- (i) To study students understanding of the concept of pollution.
- (ii) To study student understanding of pollution, in terms of gender differences and (iii) To identify misconceptions, if any, about "Pollution".

METHODOLOGY

Sample-For the present study 30 students who were willing to participate in the study were selected from the Government School, Bhopal. The other criterion for selecting the sample was that they came from identical educational and home environments.

Techniques used in data collection-Keeping in view the objectives of the study, a structured interview schedule was developed. For this research articles related to pollution were reviewed and textbooks of grades VI and VII were analyzed for the selection of items. The items of interview schedule were based on sources and causes of pollution, its harmful effects on environment and other living beings. Items related to acid rain, ozone hole, non-biodegradable materials, air, water and soil pollution were also included. Interview schedule also contained items on the control of pollution by different agencies from the finalized

*** Asst. Professor Career College, Bhopal**

concept map the content relating to pollution were taken as guidelines for structuring Items of the schedule. Pictures and some diagrams were also used for Interviewing the students.

Content principles relating to pollution-A. Pollution means harmful changes in the environment that effects the health and survival of living organism through physical, chemical and biological processes. B. Toxic effects can be acute and chronic as well. C. Pollution is caused by Industrial setups and excessive urbanization. D. Pollution disrupts our Eco-systems by adversely effecting the survival of living organisms, The quality of air, soil and water is effected. E. Human values are also influenced by the conception of pollution which people have formed and their efforts to maintain on acceptable quality of life. Data was collected by administering the Interview schedule on the learners. Time required for Interviewing one student was 50 minutes.

Scoring-for each item, expected answers were listed in advance by agreement. These answers were discussed with teachers teaching at the upper primary level and one subject expert. Students' responses were analyzed and scored at 5 different levels of understanding as suggested by William and Mark (1988). They scored the responses in categories (a) sound understanding: (b) partial understanding (c) partial understanding with misunderstanding: (d) complete misunderstanding and (e) no response. However It was found that no response reflected complete misunderstanding and students gave responses for each item. Hence finally responses were scored only for three levels of answers given by the respondent.

DELIMITATION -(i) The study was confined to Govt. Institution of Bhopal. (ii) The study was conducted in the selected students of VI & VII grade students.

RESULTS AND DISCUSSIONS -Understanding About Air and Water Pollution * Majority (87%) of grade VI students' posses sound understanding about the sources of air pollution. They pointed out that smoke from factories, vehicles and houses are the sources if air pollution. Whereas majority of VII grade students were at partial understanding level as they were expected to give additional response. *Ninty three percent of students partially knew about so urces of water pollution. *Majority of the students had sound understanding about the leakage of poisonous gas from the union carbide factory at Bhopal resulted in the death of thousan ds of people at Bhopal.* Majority of the students were at partial understanding level about deforestation effects the cycle of nature and hence our life, through rapid changes In weather.

They said that deforestation would' result In decreased amount of oxygen. * Majority of the students were partially correct that pesticides used for the protection of crops pollute water also only 20% of them knew that fertilizers used to increase production of food grains also pollute water. * Majority of the sixth grade students had sound understanding of the fact that air pollution effects lung. Among Seventh grade students, majority of them were at partial understanding level as they were expected to tell affect on eyes and skin. * Majority of the students was at partial understanding level about the diseases caused by water pollution.

Understanding About Soil Pollution- *Majority of the students was at partial understanding level and said that the "waste" thrown in the open space is a cause of soil pollution. * Seventy- percent girls and 22% of the boys of class six responded that the "Waste" should be dumped deep into the ground so that upper fertile soil is not damaged. * Majority of the students were at the partial understanding level about the concept of control of water and soil pollution.

Understanding About Noise Pollution- All the selected students said that sound causes irritation. It might lead to hearing Impairment too.

Understanding of Pollution Concept by Boys and Girls- Tables 1 and 2 report findings in terms of gender differences-

Data given in the above table show that there were marked difference in the percentage of girls and boys who were at sound and partial understanding levels. None of the boys responded that polluted air could cause Asthma also. Though they said that it would effect lungs. yet they were not specific in their responses.

Identification of Misconception-* Heat of the sun is responsible for the depletion of ozone layer. Few of them are unaware of the fact the CFC has caused ozone hole. * Deforestation and cutting of trees, causes soil pollution. But the fact is that deforestation results in erosion of soil. * Solid waste should be dumped deep into the ground so the upper fertile soil does not get polluted. These students do not know what dumps can do to underground water. The concept of "pollution" is Important, which is relevant in daily life and is of concern for every individual. The teachers should undertake field trips of the children to show them the following : (i) The discharge of pollutants and use of pesticides and illustrate their harmful effects. (ii) Avoiding contamination of the habitats of the threatened species due to pollution. (iii) Showing to the children the. release of toxic substances in large quantities into the natural sources of water and its after effects. (iv) Undertaking class projects on

monitoring of species that are found in the surroundings of the school and disappearance of birds, plants and other species as a result of other pollution.

The above activities enable the children to form an idea about the conservation of nature through first hand knowledge of environmental pollution and its after effects.

Table 1.1 Gender Differences related to Sound Understanding level of grade VI students:

S.No.	Components of pollution	Girls	Boys
1	Control of Pollution by factories	83%	22%
2	Air pollution causes Asthma also	60%	None
3	Water pollution affects all living beings	50%	None
4	The soil has become poisonous due to different types of pollution	50%	22%
5	Pollution being caused by the plastics	50%	33%

Table :- 1.2 Partial Understanding level of Boys and Girls :

S.No.	Components of pollution	Girls	Boys
1	How factories pollute air	83%	56%
2	Concept of acid rain	33%	None
3	How eruption of a volcano pollutes air	33%	67%

Table : 2.1 Gender difference related to Sound Understanding level of grade VII students :

S.No.	Pollution related concepts	% of Girls	% of Boys
1	Sources of air pollution	60%	56%
4	Pollution of air by vehicles.	40%	10%
5	Pollution of air by factories.	40%	10%
7	Diseases caused by air pollution	40%	10%
8	Effects of deforestation on environment.	40%	10%
12	Control of pollution around residential area.	100%	50%
29	Control of pollution by bio-gas stoves.	None	50%
29	Polythene which cannot decompose causes soil pollution.	20%	50%
38	Sources of knowledge about pollution.	80%	50%

Table : 2.2 Partial understanding level of Boys and Girls :

S.No.	Pollution related concepts	% of Girls	% of Boys
21	Pesticides pollute water	100%	60%
32	Soil pollution by factories	60%	20%

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