

Chapter 1

INTRODUCTION

CHAPTER - I

1.0 INTRODUCTION

In India introduction of ten years school curriculum envisages teaching of environmental studies from the beginning of school education (NCERT 1975 a) Introduction of environmental studies in curriculum has specific purpose during the present period of environmental crisis and deterioration. The primary education being the terminal stage for about 50% of the children of our country and nearly 67% of the children drop out before reaching Class-VIII. The main objective of introduction of environmental studies in school curriculum is to develop an awareness and understanding of environment related problems.

The framework suggested for 10 years schooling gives outline of the various subjects to be included at lower and upper primary stage and secondary stage. At lower primary stage during the first two years (classes I and II) study of science is visualized as Environmental studies (EVS), which is a composite course including both natural and social environment. In Classes III to V environmental studies is taught as two subjects EVS-I is devoted to natural science and EVS-II to social science. Science should help the child to discover and understand the scientific facts, concepts, principles, and processes underlying various phenomenon around them. Social studies at this stage should widen the child's mental horizon from his/her home, school and neighborhood to the state, country and the world.

At the upper primary stage (classes VI to VIII) environmental studies get separated into two subjects, one is science and other is social science. The objectives of teaching science at this stage are:

- To develop an understanding of nature of scientific knowledge.

- To develop understanding about certain physical, chemical and biological principles and their relationship to the operation of scientific principles in nature as well as in daily life.
- To develop scientific creativity and capability of using the processes of science in solving problems, making decisions and furthering his understanding about universe.
- It should highlight the measures for protection and care of the environment, prevention of pollution and conservation of energy.
- It should also highlight the interdependence between the material environment and the plants and animals (including human) life for survival, growth and development.
- To develop abilities in affective and psychomotor domain also
- To develop genuine concerns, sensitivity and ability necessary for the preservation and protection of physical and natural resources.
- To built a sense of values like equality of sexes, protection of environment, observance of small family norm and inculcation of scientific temper.

Science and environmental education can be taught as an integral unit to help students learn about environmental problems, appreciate complexity of these issues, and help overcome the popular belief that science is only for scientists. Scientific knowledge is an important part of our world. The incorporation of environmental issues into the present science curriculum can increase the relevance of science knowledge to everyday events.

The state of our environment is causing concern to all of us. "World Environment Day" is celebrated every year on June – 5th. The increasing water and air pollution, the acid rain, the noise pollution and the ozone hole are some problems of common concerns. Newspapers, periodicals and electronic media are playing increasing attention to educate the people about the environment. Printed media such as newspapers,

through their front page stories concerning local environmental issues and editorials related to environment reflect important knowledge about pollution. Television is also an important and common mass media of information related to pollution and other environmental issues. Government has also initiated different actions for the control of pollution. Delhi is one of the most polluted city. Supreme court has banned the use of small vehicles which are 15 years old as they cause too much air pollution. Maharashtra State is also planning to ban use of all small and big vehicles which are in bad condition and 15 years old. Do our students in the upper primary stage know about these important issues ?

Ausubel (1968) suggested that individual learn meaningfully by building knowledge on the basis of what they already know. Learning is the comprehension and acceptance of concepts that are intelligible to the learner. Learning is not considered as simply the acquisition of a set of conceptual change that occurs in a number of phases, including assimilation, accommodation and progressive differentiation (Novak 1977). Assimilation occurs when the learner uses existing concepts to deal with new phenomenon. Accommodation comes when the learner has existing concepts to deal with new phenomena (Piaget 1969). Therefore, a critical condition for meaningful learning is that teacher has to determine what the learner already knows. This can be achieved by using "concept map" as have been suggested by Novak and his team. Once the learner's relevant background knowledge and internal conceptual framework is obtained, teaching strategies may be based on what the learner knows in order to add new knowledge to the conceptual framework; existing concepts must be integrated with the new information and incorporated into the framework.

1.1 NEED OF THE STUDY:

Pollution has seeped into the very fibre of human society all over the world. One is reminded of Wordsworth's memorable words "what man has made of man!" The entire body of the earth is swilled today. The air we breathe in, the water we drink, the food we eat, the soil on which one sleeps contain some kind of poisonous chemicals which adversely affect the humans and the non-human on this boiling planet of ours. Every evening clouds of polluted smog born of used-up petrol, diesel, chemicals and such substances descend on our earthly planet when the sun disappears in the western horizon. We should really be aware of this hellish pollution. We should be sensitive enough to hear the stepping sounds of the oncoming doom days. A small step from each of us in eradicating evils of pollution would go a long way in making this world a beautiful place to live in. If we do not act now the future generations of mankind and the mute animal and vegetation worlds would never forgive us (Kudesia, 1989-90).

Ostman and Parker (1985) studied the impact of Education, Age, Newspapers and Television on Environmental knowledge, concerns and behaviours. William and Marck (1988) studied understanding and misconception of Biology concepts held by students attending small high schools and students attending large high schools. Brody, Marion and Chipman (1989-89) assessed level of scientific and natural resources knowledge that fourth, eighth, and eleventh, grade students in Maine possess concerning acidic deposition. Bou Jaoude (1991) studied the nature of student's understanding about the concept of burning. Westbrook and Marck (1991) made a cross-age study of students for their understanding about the concept of diffusion. Brody (1991) assessed 4th, 8th and 11th grade students' understanding of pollution.

The investigator did not come across any study where understanding of the concept of pollution has been studied in India. Hence, the present study has been planned. This study brings into focus the paramount need to create consciousness of the environment among all sections of the society. The dynamics of education makes it essential that the curriculum and process of education should continuously renewed in order to be in tune with the changing needs, aspirations and demands of the society.

1.2 STATEMENT OF THE PROBLEM:

Specifically the problem can be stated as how do children with different educational background, and other environmental conditions react to concepts of pollution introduced in the science curriculum? Except a few isolated studies, no comprehensive effort has been made to highlight these questions? The extend to which variations due to difference in educational level and gender, determine acquisition of environmental concepts may be examined. This study will help to bridge a gap between what the learner already knows and what he/she needs to know for a successful and meaningful learning. This study will investigate how the understanding about pollution may change from VI to VII grade levels common misconceptions were also noted.

The present problem may be stated as follows:

“Understanding of pollution among VI and VII grade students”

This study is valuable as it will provide understanding of students knowledge about pollution. Findings of the present study will have implications for teaching about pollution and the content of environmental education curriculum material based upon students knowledge. The information can help teachers in identifying teaching learning

activities/strategies for better instruction about current environmental problems. This will help learners gain an appreciation for the complex and multi-disciplinary nature of science and the environment.

1.3 CONCEPT OF POLLUTION:

The word pollution has been taken from the Latin word – pollutionem, meaning defilement from polluere, to soil or defile (make dirty). Later on Oxford English Dictionary used the word pollute with reference to physical contamination of terrestrial or aquatic environments in 19th century. In 20th century the word ‘pollution’ was used with reference to contamination of water, soil and air.

According to report of the Environmental Pollution Panel of the U.S. President’s Science Advisory Committee (1965):

“The Environmental Pollution is the unfavorable alternation of our surrounding wholly or largely as a bye-product of man’s action, through direct or indirect affects, of changes in energy patterns, radiation levels, chemical and physical constitution and abundance of organism:

In 1966 National Research Council Committee on Pollution defined Pollution as:

An undesirable change in the physical, chemical or biological characteristics of air, land and water that may or will harmfully affect human life or that of over desirably species, our industrial processes, living conditions and cultural assets or that may or will waste or deteriorate our raw material resources.

Kudesia (1989-90) in his study “Industrial Pollution” defined pollution as – The addition of any foreign material (inorganic, biological or radiological) or any physical change is natural water which may harmfully effecting the

living life (human, agricultural or biological) directly or indirectly, immediately, after some time or after a very long time.

1.4 VARIABLES OF THE STUDY

1.4.1 **INDEPENDENT VARIABLES** - The study has been conducted on a selected sample of VI and VII grade boys and girls, hence 'grade' and 'gender' are the independent variables.

1.4.1.1 **Grade** – Results of number of studies revealed that `children's attainment of environmental concepts increased along with their age and educational levels. Different studies also reflect that errors in concept attainment decreases in systematic way along with increase in age. 'Grade' or educational level is a significant variable in the present study also.

1.4.1.2 **Gender** – The investigator over the years have compiled results of research studies comparing the performance of males and females with reference to different variables. 'Gender' is an unavoidable variable in any study concerning concept of pollution also.

1.4.2 **DEPENDENT VARIABLE** - "Understanding of Pollution" is the dependent variable.

1.4.3 **CONTROLLED VARIABLE** – Researchers have conducted different studies to reflect that socio-economic differences affect children's performance on different cognitive tasks. In the present study the investigator selected a school where students have almost same socio-economic status.

1.5 OPERATIONAL DEFINITION OF THE VARIABLES UNDER STUDY:

1.5.1. **POLLUTION** – Pollution for the present study has been defined as – 'Any process which makes the air, water and soil harmful to the living beings is called pollution'. Noise is also a kind of pollution. If noises are too loud, they hurt the ears.

1.5.2 UNDERSTANDING – In the present study students understanding about pollution has been investigated. Understanding is a component of cognitive domain, as identified by Bloom. According to Bloom cognitive domain has six components. These include (i) Knowledge; (ii) Understanding; (iii) Application; (iv) Analysis; (v) Synthesis and (vi) Evaluation. In the present study certain situations and stimuli have been presented before the students. Students have to respond specifically keeping in view the stimuli presented to them. The students are not only required to recall information but they are required to visualize certain situations and respond as per their understanding about pollution. It was not simply recognition (or knowledge) but beyond this.

Understanding means – ‘to perceive the meaning or grasp the idea or to comprehend’. Understanding also involves seeing relationships, extrapolation and interpolation of data.

1.6 OBJECTIVES OF THE STUDY:

- i) To study VI and VII grade students understanding, of natural and social science concepts related to pollution
- ii) To study gender differences if any, related to the understanding about pollution, among students studying in grade VI and VII.
- iii) To identify misconceptions about pollution of VI and VII grade students.

1.7 DELIMITATIONS:

- i) This study has been confined to a sample drawn from a Model School, Piplani, Bhopal
- ii) The study was conducted on the selected students of VI and VII grades.
- iii) Only understanding of concept of pollution has been investigated in this study.

