



Development of Scientific Environmental Awareness Programme for School students

Abstract:

Environmental awareness comes from a result of general knowledge about environment, specialist knowledge of a particular problem and also sensitivity to and a sense of responsibility for the environment.

A study on previous related researches on environmental awareness shows that they laid more importance on imparting conceptual knowledge about environment, but did not emphasise on emotionally understanding the surrounding world creating sensitivity and responsibility towards preserving the environmental heritage.

The present study paper is made with an objective, which shows the pathway to develop a 'Scientific' i.e. systematic, methodical programme for enhancing environmental awareness of school students. The paper includes a list of guiding principles based on which effective teaching learning activities could be developed for all stages of school going students.

Introduction

Awareness of the environment means the ability to emotionally understand the surrounding world including the laws of natural environment, sensitivity to all the changes occurring in the environment, understanding of cause and effect relationship between the quality of the environment and human behaviour, understanding of how the environment works as a system and a sense of responsibility for the common heritage of the earth, such as natural resources – with the aim of preserving them for the future generations.

Environmental awareness comes from a result of general knowledge, specialist knowledge of a particular problem and also sensitivity to, and a sense of responsibility for the environment.

For the sake of our planet, obviously environmental education plays vital role for creating interest in environment. This is the crucial time that environmental awareness and environmental sensitivity should be cultivated among the masses particularly among the youths. For the awareness of society it is essential to work at a grass root level. So the whole society can work to save the environment. Environmental awareness should be the integral part of any environmental curriculum encouraging children to take an active role in the protection of their environment. If we want to generate the environmental values in our children we have to know the responsibility towards environment and also we have to show our behaviour as one like an eco-friendly person.

Justification of the study-

Any programme which is "Scientific" is based on or characterised by the method and principles of science. It is systematic, methodical, done in an organised way that agrees with the methods and principles of Science. Therefore, the main objective of this study is to develop a programme for school students which would enhance environmental awareness in a scientific, systematic way.

Some studies has been done previously, which have been a great contribution towards environmental education.

Such a study has been done by Basu, Rita. (2005), of Sardar Patel University, Vallabh Vidyanagar, Anand, Gujarat on "Environment education at the Mumbai University: An impact study". It has been done with the objective of evaluating the effectiveness of environment education in creating awareness among students. Secondly her objective of study includes to find out whether environment education has brought any change in life of students as well as to enumerate the challenges faced by

the students to put their ideas into action. The findings of the research shows that environment education is necessary in changing the mind-set of people and that such people feel empowered in tackling environmental problems. Results also indicate with the help of audio-video aids, case studies and visits to sites, the students learn to observe, interact and understand nature bringing about a great change in their environmental attitude, perception, values and actions.

Another related study done by Ramkumar, N. (2003), as a thesis submitted to the Maharaj Sayajirao University, Baroda, Gujarat under the title "Acquisition of process skills by IV standard pupil through an instructional programme in environmental studies", was done with a few objectives as to prepare and implement instructional programme in environment studies, to identify the acquisition of process skills by the pupils during the instructional programme.

A very relevant study done by Patel, Nayna A. (1997), as a part of thesis submitted to Sardar Patel University, Vallabh Vidyanagar, Anand, Gujarat, titled as "A Study of the effectiveness of environmental awareness programme on student teachers" stated important objectives of study as

i) To enumerate the various aspects of the ecological studies prescribed in secondary school syllabus reference to environmental education.

ii) To construct a reliable and valid tool to measure environmental awareness of the student teachers.

iii) To develop the environmental awareness programme and study the effect of environmental awareness programme on environmental awareness level of student teachers.

On the basis of statistical analysis the researcher found that there is no interactive effect of environmental awareness programme and on environmental awareness. Secondly it was concluded that there is no interactive effect of environmental awareness programme and educational qualifications on environmental awareness. It was also concluded that there is no interactive effect of environmental awareness programme on sex and educational qualifications on environmental awareness of student teachers.

However, in such researches programmes had been developed which laid more importance on imparting environmental education on particular area as ecosystem, pollution, conservation etc. These studies were successful in imparting knowledge about environmental facts but did not emphasise on creating environmental awareness, which actually means emotionally understanding the surrounding world creating sensitivity developing a sense of responsibility towards preserving the environmental heritage.

But in the present research problem taken in hand by the researcher aims at developing a holistic scientific programme, which would be activity based teaching learning programme to enhance environmental awareness and which would not just educate the pupils about some environmental concepts/ facts. Also the programme has to be developed according to the mental age of elementary, secondary or higher secondary students who have different maturity levels and knowledge about surrounding environment. Developing such a programme for environmental awareness could redesign the environmental setting to foster such teaching learning environment both in science courses and in other courses as well. Such a programme could also be significant for those NGOs which are working to spread awareness about environment in an informal way.

Basic guiding principles on which the programme "Scientific environmental awareness programme" could be based.

Environmental education is mostly considered as a process to develop awareness, knowledge and understanding about the environment, positive attitude towards it and commitment to protect and improve it.

To achieve this at primary level it requires assistance to gain and develop basics skills and concepts. Help is also required to stimulate creative work and to give opportunity for making first hand observations and their analysis. This approach results in the development of an awareness of personal environmental responsibilities. Thus it entails development of environmental awareness, skills, problem solving, value clarification, attitude and relating concepts to local environmental resources.

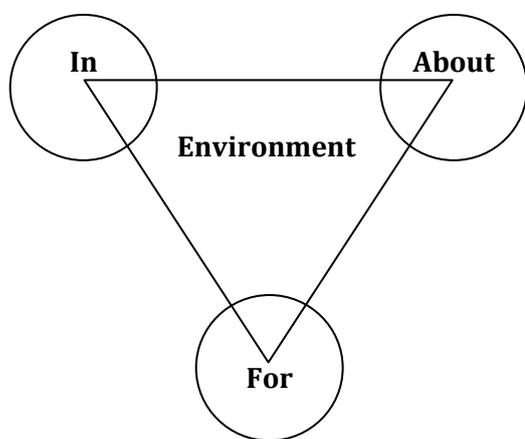


Figure-1: The relevant environmental awareness programme.

The programme for enhancing “Scientific environmental awareness” can be developed emphasising concept development activities. Development of skills i.e. Skill development activities, emphasis on problem solving and value clarification, emphasising on themes, on environment as medium of learning, emphasis on environmental encounters, occasional programmes etc.

(I) Concept development activities:

These activities could be developed for students to further their understanding of major concepts basic to the development of an environmentally literate citizenry. Environmental concepts can be majorly divided into concept ecosystem; economics and technology; environmental decisions and environmental ethics.

(II) Skill development activities:

Environmental education is often considered a medium for the development of information processing skills.

In this case the methods of recording first hand observations, recording of physical and social events, and conduction of physical and social experiments and communication of results are its main characteristics.

Basic scientific skills

Making sense of	Telling others about
Observing	Speaking
Manipulating	Writing
Collecting	Describing
Sorting	Recording
Comparing	Displaying
Ordering	Miming
Measuring	Simulating
Calculating	Drawing
Graphing	Making diagrams
Mapping	Modelling

Table - 1

For example, in Table-2 the concept of the topic “particles” and the related investigation skills to be developed are shown.

Topic	Concept “Particle”	Skill developed
Soil	• Soil runs through fingers.	Collecting.
	• Components are small and discrete.	Simple observing
Land forms and	• Particles are also present in rocks.	Manipulating.
	• Smoke has small particles.	Observing.

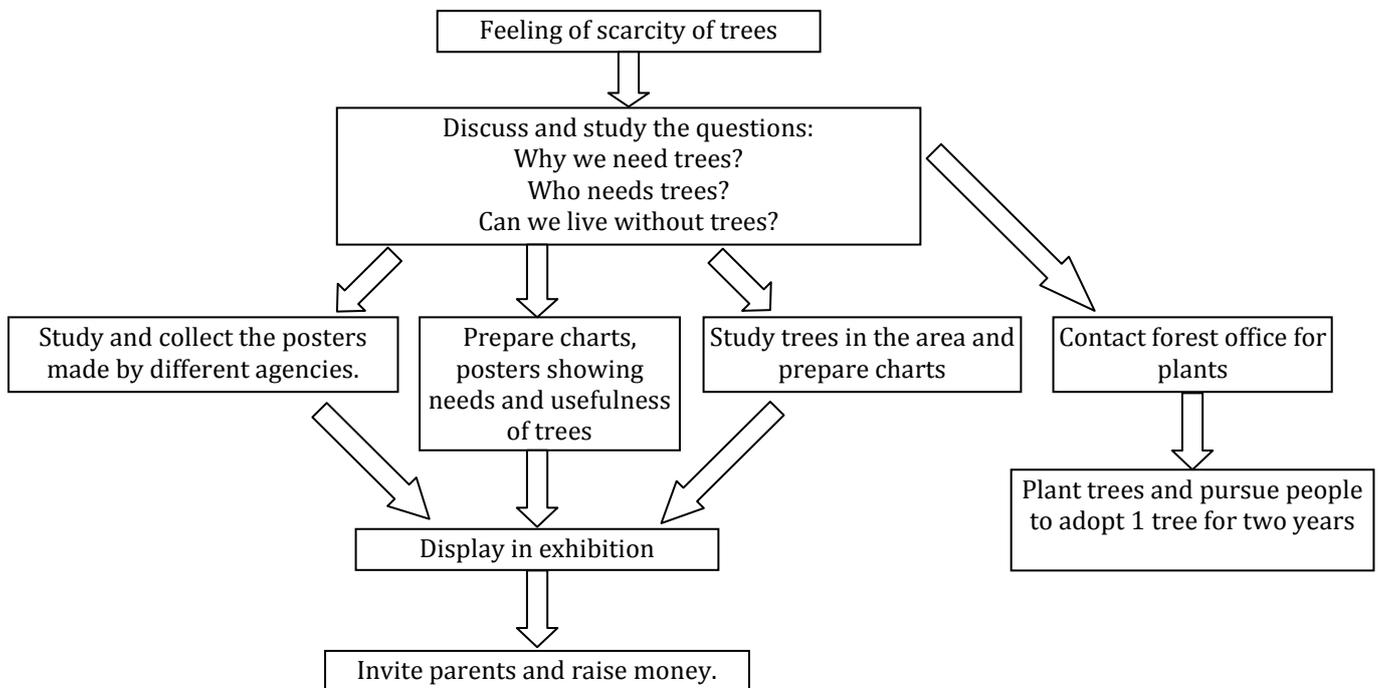
mineral pollution	• Particles may not dissolve and can be filtered out.	Setting up a simple system.
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Table - 2**(III) Problem solving activities:**

Problem solving is action based and community centred. The purpose of problem solving is to make aware of the problem, its existence and attempt to find solutions of a problem. The process of problem solving entails following eight steps-

- i. Recognising environmental problems.
- ii. Defining
- iii. Listing with comprehensions
- iv. Collecting information
- v. Analysing importance
- vi. Generating alternative solutions
- vii. Developing a plan of action

In problem solving the problem may be raised by the students, the teachers or may arise from social context.

**Figure-2:**

A possible activity which can be taken up to study the “Scarcity of trees in the locality” will hopefully generate problems solving capacity in people.

(IV) Value clarification activities:

Valuing becomes an integral part of problem solving. Making value judgement is based on evidence of available information. Ultimately valuing is for the purpose of helping children to recognise and become aware of their responsibilities towards environment.

The process of value clarification has the following five steps (Stapp & Cox, 1974).

- i. Students are presented with an issue.
- ii. Students suggest alternative solutions.
- iii. Students consider the consequences of each alternative.
- iv. Students express their feelings about each alternative.

- v. Students express to make a free choice.

Example-

The class could list 13 items they have purchased or been given (bicycle, watch, new clothes, books etc). Identifying the 3 items they would be most willing to give up, and the 3 items they would least like to give up.

Result:

1. identifying those items obtained within the past 3 years indicate personal trends in purchasing and consuming behaviour.
2. Looking at the items crossed out as non-essential, the students can begin to think how easy it is to stop using those items once they have identified them.

(V) Activities which emphasise on themes:

In this case, the concept of environmental awareness are generated from a common theme. The theme may be taken from social, religious or other contexts. Some available themes are 'Energy', 'Patterns', 'Evolution and adaptation', 'population', 'ecosystems'.

After selection of themes the concept can be identified according to the stage of mental development of the children and activities may be planned.

Age	Main themes	Possible lines of enquiry and techniques.
7 to 8 years old	Shapes	Simple plans and maps; directions; scales; mapping techniques.
	A shopping street	Mapping distribution of shops; simple classification; family shopping patterns.
8 to 9 years old	An old building of interest	History of building; comparison with modern buildings; usage; people who worked or lived there in the past.
	Where the summer holiday was spent	Exhibition of souvenirs and so on; map of the place visited; modes of travel.
9 to 10 years old	Weather records	Elements of the weather; measurement; making simple instruments; graphs; creative writing and art.
	Some local services	Study of services such as Postal, Police or Fire and Emergency services.
10 to 11 years old	Growth of industry	How jobs have changed; interviews with old inhabitants; changes in working conditions.
	Study of neighbouring environment.	Visit to another town; a village; a castle; or other place of interest; a short distance from town.

Table- 3

(VI) Activities involving environment as a medium of learning:

The environment is used to learn 'from' and 'about it'. This is also known as environmental approach and also includes the development of –

- i. Positive attitude towards environment.
- ii. Environmental awareness.

In this approach, environment serves as a laboratory and a resource centre. **Example-** Activities on classification consists the following-

- Suggested material needed; about 10 to 15 flowers for each child.
- Suggested class organisation; group 2 or 3.
- Suggested questions-

- Can you put the flowers into a group?
- Can you find another way to put your flower in groups?
- How many ways can you find to put your flowers into groups?

(VII) Activities emphasising environmental encounters:

This section would contain a series of sample school-community, environmental problem solving activities (environmental encounters). In these environmental encounters students actively become involved in exploring and critically evaluating their environment and existing environment problems.

The students may then begin to develop alternatives and plan of action for solving environmental problems. As students become actively involved in environmental problem solving they gain the opportunity to acquire both knowledge and skills necessary to deal with current and future environmental problems. The 'best' environmental encounters are ones jointly developed with our students around their environmental interests and concern.

Some of the topics for environmental encounters may be Ecology and Pesticides, water quality, Air pollution, recreation policy and planning (soil, land use, planning and environmental laws), school site development, transportation etc.

(VIII) Occasional programmes:

In this method of spreading environmental awareness, no extra subject is added to the curriculum, nor are the concepts of Environmental Education infused in to the existing subjects. Rather some extracurricular programmes are organised to serve the purpose. These programmes may be arranged on sequential basis or adhoc, depending upon the requirements of the environment and availability of time, money and other resources.

These programmes can be in form of projects, excursions, trails, games, camps and use of some educational materials developed by an independent agency.

Example-

The camping is for a week only but encompasses various aspects of life. It can be started with consumer education when children decide what to buy and where can they get best deals. It also includes 'orientteering', 'local history and exploration' and 'litter census'. The entire camping experience may help the children to develop the right social attitudes and skills.

If the programme is developed involving all the above described activities in an order then only a 'Scientific' programme would be successful in enhancing the environmental awareness of students.

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