Effect of Environmental Education for Sustainable Development on the development of Environmental Awareness among Secondary School Students

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Abstract

The aim of the present study was to examine the effect of Environmental Education for Sustainable Development on the development of Environmental Awareness among Secondary School Students. Keeping in view the purpose of the study, experimental method was used by the investigator. The study was conducted on a sample of 120 students studying in class IX of MDAV senior secondary school, Ambala. For the purpose of the study an intervention programme based on environmental education for sustainable development developed by the investigators and two parallel form of achievement test on environmental awareness developed by the investigators were used. t-test was used to compare pre-tests and post-tests of control and experimental groups. The results of the study revealed that before giving intervention programme both the groups were equivalent. There was a significant difference between environmental awareness of experimental group and control group after intervention programme and significant difference was also found between the environmental awareness of experimental group before and after intervention programme. It shows that the intervention programme was effective in developing the environmental awareness among secondary school students.

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INTRODUCTION

When human population was less and technology was in its infancy, environment could easily absorb human and industrial waste. But with the increase in human population and advancement in science and technology, number of problems like generation of waste, depletion of natural resources, wiping out of many species of wildlife, global warming, climate change, acid rain, ozone layer depletion have emerged before us. The solutions to these problems lies in education for sustainable development which is essential for improving the quality of life for the present and future generations by using perpetual availability of resources. For this it is necessary to change our outlook in this regard and adopt the programmes which protect, reclaim, and manage the land, water and the biological resources agriculture and animal husbandry. Today second major problem is Thrown Away Attitude as people have more purchasing power so they simply purchase, use and throw an object without giving it a second thought. They have forgotten the invaluable principles of reuse and recycling and this attitude is responsible for rise in the rate of resource consumption.

Besides these, other challenges are population explosion, socio-economic disparities, lack of environmental ethics, values and awareness, widespread inequalities of income and opportunity, political challenges like Local and Provincial policies, National policies, International co-operation etc. Thus, with so many challenges in its way, Sustainable Development at present seems to have a long way to go before it succeeds in ensuring a secure and comfortable human life on earth. Public awareness and participation for bringing about an attitudinal change and finally restricting them to further damage the environment is required. Among human resources of any nation, the vital chunk is considered to be its youth i.e., secondary school students. They possess the zeal and vigour necessary to create opportunities for national development. India is a land of youth. It is therefore essential that the youth at a growing age need to be taught such things which enables them to imbibe lot of enthusiasm with regards to awareness about the environment, its problems and its workable solutions. Thus, teachers should also help them to bring radical change in the way they think, live and work and raise collective voice and engage themselves in environmental stewardship.

RATIONALE OF THE STUDY

It is considered that **awareness leads to building in positive attitude and attitude leads to the action,** and the degree of an individual's involvement in actions depends upon largely the kind of attitude he develops towards the issues that are involved with action. Unless he acquires the required awareness and develop positive attitude towards the environment and its related problems, he will acquire actively caring responsible environmental behaviour and he will become the main facilitator and motivator. As youth is the vital element of any nation therefore, awareness about the environment and environment related problem and favorable attitudes of youth especially at growing age towards environmental awareness definitely would help to protect the environment more effectively. They can help the people to understand the underlying causes, the manifestations and impact of these problems, so that they may act in a concerned manner not only to alleviate and solve the existing problems but also to prevent their recurrence.

A large number of studies have been conducted in India and abroad on environmental awareness and attitude towards environmental education. **Erhabor & Don (2016)** revealed the high level of knowledge and positive attitude towards the environment among the students. They also found that the relationship between their knowledge and attitude towards the environment is a negative, little or no relationship. **Alexandar and Poyyamoli (2014)** found significant statistical difference between the overall pre and post test impacts on the level of environmental knowledge, behaviour, attitudes, and skills of the students from both the groups. In the post test result, the experimental group students scored significantly higher knowledge, attitudes, skills and behaviour on air, water, biodiversity conservation and solid waste management than the students who were exposed to the traditional teaching methods with existing curriculum. The researchers concluded that the active teaching learning approach is more effective in facilitating environmental education for sustainable development among school children. **Jannah, Halim, Mohd Meerah & Fairuz (2013)** found significant difference in the level of environmental literacy based on gender, whereas for class stream reveals no significant difference. It also was found that knowledge of and about the environment is at low level as compared to environment attitude, behavior, awareness and environment participation. **Singh (2008)** in a study of relationship between sex and attitude of Primary School teachers towards environmental education found no significant difference between male and female teachers on the attitude measure. **Kaur (2007)** revealed that in-service teacher have better environmental attitude than prospective teachers both with respect to internal and external locus of control. **Balakrishnan**

(2006) revealed that academic achievement is one of the variable that influence the environmental awareness and attitude towards environmental education in relation to socio-economic status of students and teachers**.**

It is clear from the studies that there is a distinct gap in information about the awareness level and attitude towards environmental education of students on one hand and teachers on the other. Moreover, there is a no such study which has been conducted on environment education on sustainable development in Haryana on secondary school students.

Keeping in view all these studies and discussions, the investigator thought deeply to take up the following research problem in hand.

OBJECTIVES OF THE STUDY

1. To study the environmental awareness of Secondary School Students.
2. To develop instructional programme for developing environmental awareness among Secondary School Students.
3. To study the effectiveness of instructional programme used for developing environmental awareness among Secondary School Students.

HYPOTHESES

1. There exists no significant difference between environmental awareness of experimental group and control group before intervention programme.
2. There exists no significant difference between environmental awareness of experimental group and control group after intervention programme.
3. There exists no significant difference between environmental awareness of experimental group before and after intervention programme.
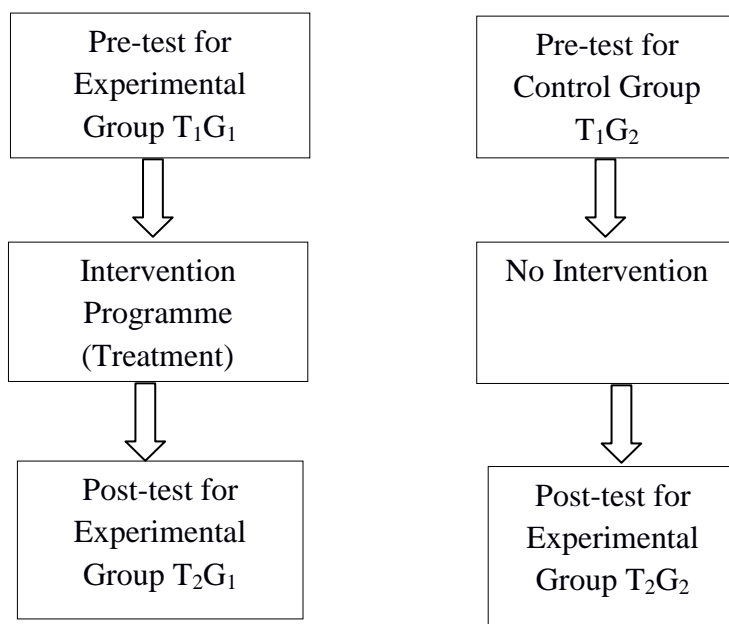
DESIGN OF THE STUDY

For the present study, pre-test post-test control group design was used. It involved two groups of students, experimental and control group. Intervention programme was given to experimental group, whereas no treatment was given to control group.

Table-1

Groups	Pre-test	Independent Variables	Post-test
Experimental Group (G1)	$T_1 G_1$	Intervention programme	$T_2 G_1$
Controlled Group (G2)	$T_1 G_2$	No treatment	$T_2 G_2$

The figurative representation of the design of the study is shown in figure 1.

Pre-test for Experimental Group T_1G_1	Pre-test for Control Group T_1G_2
⬇	⬇
Intervention Programme (Treatment)	No Intervention
⬇	⬇
Post-test for Experimental Group T_2G_1	Post-test for Experimental Group T_2G_2

Figure 1: Design of the Study

VARIABLES

Variables used by the investigator for the study were:

Independent Variable: Teaching through Instructional programme on environmental education for sustainable development was an independent variable.

Dependent Variable: In this study, Awareness about Environmental Issues on sustainable development was taken as the dependent variable. This variable was measured twice during the course of the study-first before beginning the experimental treatment, i.e., at the pre-test stage and then after completing the experimental treatment, i.e., at the post-test stage.

Intervening variables: In the study, there are many intervening variables that have been controlled by the investigator, e.g., age, class, teacher, intelligence and background of the students.

SAMPLE

In the study, a sample of 120 students studying in class IX in MDAV Senior Secondary School of Ambala was drawn randomly. Intelligence Test was administered on all 120 students and the students having comparable intelligence (80 students) were selected for experiment. A pre-achievement test on environmental awareness was administered on all 80 students. On the basis of the scores of pre achievement test, the students were divided into two groups i.e., experimental and control group consisting of 40 students in each group.

METHOD USED

The investigators aimed to study the effect of Environmental Education for Sustainable Development on the development of Environmental Awareness among Secondary School Students. Keeping in view the main purpose of the study experimental method was used by the investigator

TOOLS USED

In the present study the following tools were used

1. Tandon's group test of Intelligence for Children developed by Dr. R.K Tandon.
2. Instructional programme on environmental education for sustainable development
3. Two parallel achievement tests (with same difficulty level) developed by the investigators were used to test the performance of the students i.e. before the intervention programme, pre-test (T_1) and after the intervention programme post test (T_2).

STATISTICAL TECHNIQUES USED

The following statistical techniques were employed to analyze the data obtained from the experimental and control groups to test the hypotheses:

1. Descriptive statistics : Mean and Standard Deviation

2. Inferential Statistics: "t-test" for measuring the significance of difference between the performance of experimental and control groups.

RESULTS AND INTERPRETATION

Hypothesis-1: There exists no significant difference between environmental awareness of experimental group and control group before intervention programme.

Table -2

Table showing difference of means in the pre-test scores of experimental and control group students on environmental awareness.

Method	N	Mean	S.D.	$S.E_D$	t-Ratio	Level of Significance
Experimental Group (Pre-Test)	40	7.099	2.66	1.50	0.64	Not Significant at 0.05 Level
Control Group (Pre-Test)	40	7.735	2.78			

Df: $N_1 + N_2$-2=80-2=78
Tabular t value = (1.98 at 0.05 level of significance)
(2.58 at 0.01 level of significance)

Interpretation

As the calculated value of `t' i.e. 0.64 is less than the tabular value of `t' at 0.05 level of significance. So the calculated value of `t' is not significant. Hence the hypotheses-1 framed earlier was accepted. It means there is no significant difference between environmental awareness of experimental group and control group before intervention programme.

Hypothesis-2 There exists no significant difference between environmental awareness of experimental group and control group after intervention programme.

Table -3

Table showing difference of means in the post-test scores of experimental and control group students on environmental awareness.

Method	N	Mean	S.D.	S.E$_D$	t-Ratio	Level of Significance
Experimental Group (Post-Test)	40	66.51	8.15	4.51	4.15	Significant at 0.01 Level
Control Group (Post-Test)	40	14.93	3.83			

Df: $N_1 + N_2 - 2 = 80 - 2 = 78$
Tabular t value = (1.98 at 0.05 level of significance)
(2.58 at 0.01 level of significance)

Interpretation

As the calculated value of `t' i.e. 4.15 is greater than the tabular value of `t' at 0.01 level of significance. So the calculated value of `t' is significant. Hence the hypotheses-2 framed earlier was rejected. It means there exist a significant difference between environmental awareness of experimental group and control group after intervention programme. The mean of experimental group is (66.51) which is far more than the control group (14.93), this show that experimental group have better environmental awareness than control group after the intervention programme.

Hypotheses-3 There exists no significant difference between environmental awareness of experimental group before and after intervention programme.

Table- 4

Table showing difference of means in the pre-test and post-test scores of experimental group on environmental awareness.

Method	N	Mean	S.D.	$S.E_D$	t-Ratio	Level of Significance
Experimental Group (Pre-Test)	40	7.099	2.66	4.45	4.49	Significant at 0.01 Level
Experimental Group (Post-Test)	40	66.514	8.15			

Df: $N_1 + N_2 - 2 = 80 - 2 = 78$

Tabular t value = (1.98 at 0.05 level of significance)

(2.58 at 0.01 level of significance)

Interpretation

As the calculated value of `t' i.e. 4.49 is greater than the tabular value of `t' at 0.01 level of significance. So the calculated value of `t' is significant. Hence the hypotheses-3 framed earlier was rejected. It means there exist a significant difference between environmental awareness of experimental group before and after intervention programme. This shows the instructional material developed (Intervention programme) was effective in developing environmental awareness among the students.

MAJOR FINDINGS

1. From the analysis of results it is clear that before giving intervention programme to one of the group both the groups were equivalent. So the effectiveness of the intervention programme can be easily predicted.

2. There exists a significant difference between environmental awareness of experimental group and control group after intervention programme. It reflects that the intervention programme was effective.

3. There exists a significant difference between environmental awareness of experimental group before and after intervention programme. It shows that the intervention programme was effective.

EDUCATIONAL IMPLICATIONS

Today the ecosystem of our planet is facing the danger of destruction due to alarming on-going population explosion, rapid movement towards urbanization and industrialization, increasing needs of energy and fast scientific and technological advancement. This destruction cannot be reversed unless there is collective thinking, will and effort. All these need a call for public awareness and participation for bringing about an attitudinal change and finally restricting them to further damage the environment. Among human resources of any nation, the vital chunk is considered to be its youth. They have been playing quite a significant role in almost every country of the world as they possess the zeal and vigour necessary to create opportunities for national development. They shoulder responsibility for the future development of the country. They are considered as the leaders of tomorrow.

India is a land of youth. Therefore, the development and harnessing of their talents and energies towards constructive channels has always been needed. It is therefore essential that the youth at a growing age need to be taught such things which enables them to imbibe lot of enthusiasm with regards to awareness about the environment, its problems and its workable solutions. It may generate passion, genuine feeling and sensitivity in them and they may take their own decisions and initiative in solving the existing problems in their locality

As, it is concluded from the present investigation that interventional instructional treatment has significant impact upon cognitive level of learning. Students who have been taught different issues of environment education have attained high post-test scores than pre-test scores. This showed that instructional material has a significant effect in developing environmental awareness among students Thus, teachers should emphasize the use innovative

techniques to teach environmental studies and its related topics especially to students. These would help them to bring radical change in the way they think, live and work. It would also develop environment awareness required to deal with the environment related problems. These would also inculcate the concept of right & wrong and good & bad concerning environment and build a network of likeminded youth to ensure a collective voice and engage themselves in environmental stewardship and '**Kindle the light to save nature to save the future'**

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