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Ecological Approach's Impact On The Environmental Ethics And Achievement In Science

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ABSTRACT:
The purpose of this study was to look into how ecological approaches affect scientific accomplishment and environmental ethics. The study employed a randomized group pre-test post-test design. The sample was chosen from the CBSE schools in the Ferozepur area of Punjab, India, using multistage random selection. The researcher's Environmental Ethics scale and a Science Achievement Test were employed. Mixed approach method was employed, with the quantitative portion coming first and then the qualitative portion. The study's findings showed that the experimental group taught using an ecological approach outperformed the group taught using a traditional approach.

KEY WORDS: Ecological Approach, Traditional Approach, Environmental Ethics, Achievement in Science.

ECOLOGICAL APPROACH

A holistic, interdisciplinary approach to understanding how people interact with the natural world and the cosmos is known as an Ecological Approach to education (Hautecoeur, 2002). It entails using a strategy that considers the social, cultural and natural contexts in addition to the physical and natural ecosystems. All of these factors would need to be considered as parameters in order to direct the teaching and learning process and help curriculum designers create an Ecological learning environment.

According to Bronfenbrenner (1979) we contend that a more thorough integration of Social Ecological theories and concepts from education, developmental psychology and educational psychology that look at the effects of the school environment on youth development and wellbeing will advance the work of positive education researchers and practitioners.

According to Bronfenbrenner human beings cannot grow independently but rather within a network of interactions that includes family and society. The various levels used to express the relation of the child with the social system by Bronfenbrenner are :

Microsystem is the initial level of the Bronfenbrenner model. The microsystem according to the notion is where kids live in the smallest and closest surroundings. The children's daily environments at home, school or daycare, with their peers and in the community make up the microsystem. The interactions that take place within the microsystem frequently entail close bonds with loved ones, friends, teachers and caretakers. The children's development will be influenced by how these individuals or groups interact with them. The majority of direct contacts with social actors occur. The person participates in creating these environments rather than being a passive recipient of experiences there.

Mesosystem is the second level of the Bronfenbrenner model. It includes the interaction of the various microsystems that kids encounter. In essence, it is a system of microsystems and as

such links between the home and the school, the peer group and the family, and the family and the community are all present. According to Bronfenbrenner's model a child's development is positively impacted by harmony and similarity if their parents are actively involved in their friendships such as by often inviting their child's friends over to their home and spending time with them. Children who have experienced parental rejection for instance could struggle to establish trusting bonds with teachers.

Ecosystems make up the third level of the Bronfenbrenner paradigm. This system relates to connections that might be made between two or more contexts, one of which might not directly involve developing children but has an impact on them anyway. According to Bronfenbrenner's research, even those who don't actively engage with kids can still have an effect on their life. The children's neighbourhood, the parent's place of employment and other family members are examples of such locations and individuals. For instance, a father's experiences at work could affect how her wife or child feels at home. The mother might get a promotion that forces her to work later hours which could cause friction with her family and alter her child-interaction habits.

Macrosystem is the fourth level of the Bronfenbrenner model. It is the biggest and most spread-out assemblage of individuals and locations. The political and economic structures, as well as the cultural patterns and values that the children hold most dear make up this ecological system.

The Bronfenbrenner model's next level is chronosystem. The chronosystem adds the useful dimension of time and shows how both change and consistency have an impact on children's environments. A change in the family structure, address or work status of a parent may be included in the chronosystem as well as significant societal shifts like economic cycles and wars.

Thus, the Ecological Approach places a strong emphasis on diversity, social interactions at all scales and the environment which is the planet's fundamental reality. Everybody should employ such creative methods in the teaching and learning process since they have always yielded excellent results. It promotes the development of different competences and helps the students become more prepared for professional activities within the multilevel environment of a school. It also enables successful adaptation into the educational environment of a specific school and helps one become aware of themselves as an integral part of the environment within the interaction system.

ENVIRONMENTAL ETHICS

Environmental Ethics are crucial in present situation to safeguard both our environment and ourselves. The study of the moral connection between people and the environment is known as Environmental Ethics. It is a subfield of environmental philosophy. When it comes to influencing people's mindsets Environmental Ethics are crucial. It tries to alter public perceptions of the environment and create a harmonious coexistence of humans and their natural surroundings. Environmental Ethics gives people a clear understanding of what is right and wrong.

Dhar (2007) "Environmental Ethics is in fact a branch of applied Ethics which tries to protect, restore and preserve the dignity and sanctity of all the species of the biotic community animate as well as inanimate".

Rani (2017) "Environmental Ethics makes a re-evaluation of human attitudes and values that influence individual behaviour, societal attitude and even government policies toward nature and environment".

Ethics is therefore the rule that a social system gives us. They advise us to base our actions on a set of moral principles that govern how we interact with other living things in nature. Environmental Ethics looks into the question of what moral standards are appropriate for regulating how people interact with the environment. Environmental Ethics is the study of how to include both human and non-human rights into our moral and ethical principles.

ACHIEVEMENT IN SCIENCE

Achievement means the amount of knowledge gained by students. The term "achievement" describes the marks, degree of proficiency or grade a student achieves in a given topic. It gauges how well students have learned, understood, applied and improved their skills as a result of receiving instruction on a particular subject from a teacher.

Crow and Crow (1969) defined Academic achievement as the degree to which a student is benefiting from teaching in a certain area of learning, or the event to which a skill or knowledge has been transferred.

Thus, In order to foster a thorough comprehension of fundamental concepts, the development of analytical and problem solving skills, the spirit of inquiry and experimentation, the quality of Science instruction needs to be significantly improved.

OBJECTIVES **OF THE STUDY**

1. To compare the Environmental Ethics of the groups taught through Ecological and Traditional (Lecture Method) Approach.
2. To compare the Achievement in Science of the groups taught through Ecological and Traditional (Lecture Method) Approach.

HYPOTHESES OF THE STUDY

In the light of above formulated objectives, following hypotheses were formulated in the present study:

1. There will be no significant difference in the Environmental Ethics of the groups taught through Ecological and Traditional (Lecture Method) Approach.
2. There will be no significant difference in the Achievement in Science of the groups taught through Ecological and Traditional (Lecture Method) Approach.

DESIGN

To study the Effect of Ecological Approach to Science on Environmental Ethics and Achievement in Science a Mixed Method Approach was used.

Table 1: Variables in the research study is given as under:

Independent Variable	Dependent Variable
Ecological Approach	Achievement in Science

Traditional (Lecture Method) Approach	Environmental Ethics

PROCEDURE

There were three main stages in the procedure of the given study. The two main stages of quantitative phase were as follows:

1. Selection of the sample
2. Conducting the experiment

Stage 1: Selection of the sample: For the study, sample of 120 students of VIII class affiliated to CBSE schools from Firozpur district of Punjab were selected through the randomization technique.

Stage 2: Conducting the experiment: The experiment was conducted in steps as below:

Step 1: Administration of Pre-test

- Achievement Test in Science
- Environmental Ethics Scale

Step 2: Conducting the Instructional Program: The two groups formed on the basis of pre-test were taught through different methods. The experimental group was taught through the Ecological Approach and control group was taught through Traditional (Lecture Method) Approach.

Step 3: Administration of Post-test: After teaching the groups through different approaches the following tests as post-test were administered immediately:

- Achievement Test in Science
- Environmental Ethics Scale

STATISTICAL TECHNIQUES USED

Following statistical techniques used for the analysis of data:

(i) Descriptive and Inferential Statistics such as mean, median, standard deviation, skewness and kurtosis were used to ascertain the nature of distribution of scores.

(ii) A Two Way Analysis of Variance (2×2) was employed on the gain Environmental Ethics scores and Achievement scores in Science of the students as:

- Factorial design (2×2) mean gain scores on Environmental Ethics.
- Factorial design (2×2) mean gain scores on Achievement in Science.

RESULTS OF THE STUDY

1. The gain mean score in Science of students taught through Ecological Approach to Science is higher as compared to the students taught through Traditional (Lecture method) approach of teaching. Thus, It may be inferred that Ecological Approach to Science plays a significant role in achievement in Science as compared to Traditional (Lecture method) approach of teaching.

2. The gain mean score in Science of students taught through Ecological Approach to Science is higher as compared to the students taught through Traditional (Lecture method) approach of teaching. It may be inferred that Ecological Approach to Science plays a significant role in inducing Environmental Ethics among students as compared to Traditional (Lecture method) approach of teaching.

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