ROLE OF SCIENCE CLUB IN DEVELOPING ENVIRONMENTAL AWARENESS OF SECONDARY SCHOOL STUDENTS

***Neena Thankappan**
*Asst. Professor, MES Training College,
Marampally, Kerala.

Abstract

Environmental education may be defined as the education about the environment, from the environment through the environment and for the environment. The proper conservation and management of natural resources would be an important factor for the safety and survival of mankind. The guiding principle and pedagogical ideal of environmental education is the environmentally responsible consumer, industrial producer, employee, citizen, policy maker, traveller, athlete, tourists and farmer. The best way to bring about a change in the attitudes in the society is through children. The present study has a far reaching effect on the practical dimension of education. The objective of the study was to find out difference between members and non-members of science club in environmental awareness. The result shows that the participation in Science club enhances the environmental awareness of the students.

Keywords : *Environmental Science, Science Club, Environmental Awareness*

Introduction

Etymologically environment means surroundings. It is the natural world of land, sea, air, plants and animals that exist around us. Environment is the surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.

Every advancement in science not only depends on our understanding of nature but it also heightens the sense of ignorance. The enormous growth of science and technology demands different types of adjustment by the individual so that he can function properly with changing environment. Therefore, learning of science is essential for children in order to increase essential knowledge for a healthy life in future.

To quote Einstein, "The world we have created today has problems which cannot be solved by thinking the way we thought when we created them".The proper conservation and management of natural resources would be an important factor for the

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safety and survival of mankind. It is essential that man must realize his status in the biosphere and give due importance to the status of other ecosystems on the earth. The principle of interdependence in nature and knowledge of natures functioning should make man function as a part of nature and not the master of nature. Concern for the environment has increased significantly during the past few decades and at the same time peoples values and attitudes towards nature have changed substantially.

Environmental studies should taughtas compulsory subject at all levels of education in the country. Environmental education may be defined as the education about the environment, from the environment through the environment and for the environment. It is the new area of the study of the discipline of education. With recent development and advances, environmental education is virtually a new source of concern for educator, teachers and students.

Environmental education seeks to develop the ability to assess environmental situations among social, economic and physical factors, mutually related and overlapping developments, network and feedback, responsibility for future generations economy and care in the use of all natural resources, respect of revolutionary nature of life, recognition of the limits of nature, human action and self restriction and reacquiring the ability to perceive nature.

The guiding principle and pedagogical ideal of environmental education is the environmentally responsible consumer, industrial producer, employee, citizen, policy maker, traveller, athlete, tourists and farmer. Every human who is aware of nature and lives in harmony with it who even learns about ecology develops problem oriented and action oriented capabilities and insights.

We are part of environment we live in and in the solution for the environmental problem is to keep our surroundings clean. The best way to bring about a changing is starting with educating students. They have no vested interests and are impressionable. They are our future and they are single most important influence in any family. With this realization the ministry of environment and forests, Government of India has decided to launch the National Green Corps Program Eco-clubs in all districts of our vast country.

Some efforts have already been taken by way of curricular reforms and specialized programs. At the university stage, the university grant commission has taken initiatives to finance courses in environmental sciences at undergraduate and post graduate level.

Attempts are being made make such courses compulsory for all learners. However, there is still much to be done in the field in order to save biodiversity.

The study on Environmental Awareness in Germany in 2008 uses for the first time milieu models. These models generate information which may helps to improve environmental communication with specific target groups.

"Environmental Awareness is that which provides power and understanding to take decisions individually and collectively and initiate actions for social, cultural, and economic survival, growth and development and for conservation of nature and natural resources" –Belgrade International Workshop (1975).

The awareness towards environment should be aroused from childhood, as children are the future decision makers. They should be aware of their responsibilities and duties towards the social and ecological environment.

Theoretical overview on science club

The present age is the age of science and technology. The progress and development of the society is now closely linked with the progress and development in the field of sciences which in turn depends upon the quality of science education imparted to the youngsters in school. Consequently, it needs the inculcation of genuine interest towards the study of sciences, development of scientific attitude and nurturing of the creative and inventive faculties of the students.

Children are naturally inclined towards activities that involve making articles of various kinds to give expression to their thoughts and feelings. The school curriculum however hardly provides such as opportunity are outlet for the natural instincts of their students. Therefore is a need for the organization of science clubs to foster environmental responsibility among the students.

Science club works to promote an increased awareness and understanding of environmental issues as they relate to the role of the individual. The purpose of the club is to create awareness on environmental issues such as conservation , preservation and restoration.

A new approach to the address environmental issues at school is the science club scheme that aims to bring NGO's more closely to the school system. It has been introduce in 2001 and up to now coverage of 100 high schools chosen by the district administration in each of India's 559 districts (coverage of 100 high schools per district results in coverage of all high school on 40% of the districts).

Ministry of environment and forests launch the projects range from campaigns like 'say no to plastic bags' against the use of natural colors at holy to efforts in creating green and clean surrounding of the school by collecting waste and planting trees and flowers , poster painting, essay writing or debates were conducted.

Despite great efforts to spread environment awareness by the ministry through several schemes, it is felt that a large population especially in rural areas is still left out. The best way to reach out to them and make them aware of the environmental problems is through media, particularly the electronic media.

"Mass Awareness" has therefore been identified as one of the thrust areas of the ministry, not only to intensify the efforts already being made in this direction but also to launch new initiatives. The Doordarshan and few other television channels are proposed to be extensively used for telecasting environment based programmes and infomercials.

To encourage individual efforts in producing films and documentaries on environment and wildlife related themes in the country, the ministry has sponsored organization of a film festival "Vatavaran -2001" by center for media studies , Delhi in April 2002.

An international written Environmental Quiz program known as Green Olympaid conducted and students participated in this competition. The regional winners were selected for the televised quiz program named TERRA QUIZ which was telecast on National Channel of Doordarshan. It was a great success in sensitizing the children about environmental issues.

Science club play an important role in creating environmental awareness amongst the future generation. 2000 science club have been established in Government , aided, private, private schools and colleges.

a. Activities suggested for science club

- Organize Seminars, lectures, Quiz, debates etc.,
- Science Day Celebration
- Organising Science exhibition and fair
- Celebrating birth days of Indian and Foreign Scientists
- Conducting Technical and Non-Technical Events
- Preparing mini projects, charts, science models, postures etc.,

- Displaying science news
- Demonstrations of experiments and talks by visiting scientists
- Brainstorming sessions/forum discussions for eager young scientists
- Bridge building competitions
- Inter-school project exhibitions or science fairs
- Problem-solving challenge

b. Organizing Science Club

For science clubs, announcing club activities not only to keeps members informed about upcoming activities, but it promotes an awareness on environmental issues. The popularization of activities can be promoted through the year book, a school news paper column, club news letter, create posters, send press releases to local newspaper and circulate to school.

Organization like science club will partly answer question of developing pupil's free and manipulative skills.

Science club forms the back bone of all the school sponsored cocurricular activities. The science club presents a less formal atmosphere. It helps to fit the learning.

Through science club each member gets opportunity to handle apparatus and to conduct experiments independently. That will help to develop in free thinking and for the development of motor skills and positive attitude towards science.

In the present study the investigator wants to compare the manipulative skills developed in science club members with those of non- members. It is presumed that there is ample chance for the development of motor skills in science club members, since they get enough time for experimentation through science club activities.

Science club can play a vital role in the development of a child. Identification and development of science talents is of vital importance in a country like India. This identification can be done through science club. It is important to identify the potentially talented students at the secondary school stage through science talent research, since failure to identify a child may get wrong training and enter into wrong vocation, thereby causing not only a personal but also a national wastage.

Through science club activities we can encourage the pursuit of science as a hobby and stimulate pupil's participation in learning science. It will also encourage critical thinking, ability to improvise apparatus and group experimentation.

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School science club can be a means of promoting environmental literacy. Clubs provide an avenue for students to acquire skills needed to identify, investigate and experience the resolution of environmental education beyond what is infused into the curriculum.

Review of Literature

Meaning of the term environment is very wide in the sense that it is taken into account of all those factors which directly or indirectly have a hearing upon the natural surroundings of human beings. The encyclopedia Britannica defines environmental education as "the entire range of external influence acting on an organism, both the physical and biological that is Other organisms, forces of nature surrounding an individual.

Marc (2017) In a study titled Examination of a Successful and Active Science Club: A Case Study, mentions that the activities done by teachers like (a) the teachers established goals and a philosophy concerning science club, (b) the science club was based on activities, (c) the social aspects of science club were nurtured, and (d) there was a connection between the informal (science club) learning and the formal (classroom) learning. The results of the study informs that the understanding of how an active, strong science club may be structured and managed, and the study tangentially illustrates the benefits that a well-run science club may provide to the student membership as well as the overall science program at the school.

Potter (2009) examined that the national environmental education act is outdated and was not written to provide for systematic change. With increased attention to global warming and climate change man in the environmental education is a critical tool for engaging the publicand those opportunities exist to increase resources.

Welbacher (2009) investigated that the goal of environmental education to create a citizen groupthat is knowledgeable about the biophysical environment, aware of ways to help solve problems, and motivated to work towards their solution.

According to National curriculum Council (NCC) (1990) the objective of environmental education is to increase the public awareness of the problems in the field of environment and to suggest possible solutions to these problems. It also aims o lay foundations for fully informed and active participation of the individual in the protection of the environment and rational use of natural resources.

United States environmental education act (1990) policy of the United States to establish and support a program me of education of the environment for students a

personal working with students. Through activities in schools. institutions of higher education and related

Springer (2009) examined how influence from various stake holders is related to awareness of environmental issues and how this awareness relates to actions taken within the businesses to reduce the environmental impact of their operations. The results indicate that legislation does result in general environmental awareness and that organizations are then willing to change their business processes and environmental strategies.

Lee (2008) attempted to determine the everyday environmental behaviors such as recycling and conservation and investigated major information sources for local, national and international environmental issues.

Crim (2008) describes how one large, urban university teacher preparation program

addressed the issue of preparing teachers of young children to be effective environmental educators through an integrated partnership called strengthening awareness and valuing the environment.

Michael (2008) study argues that the cognitive and affective domains need to be explicitly integrated in a science education as a sense of relationship is essential for environmental care and responsibility leading to informed action.

Objectives of the Study

To compare the Mean Environmental Awareness Scores of Members and Non-Members of science club.

Hypotheses of the study

H. There is significant difference between mean scores of Environmental Awareness among secondary school students with respect to members and non-members in the science club.

Methodology

Normative survey method was adopted for collecting data for the present study. A sample of 400 secondary students were selected for the study by using stratified random sampling technique. The tool used for the study was Environmental Awareness questionnaire. The Environmental Awareness questionnaire prepared by the investigator was used to measure the Environmental Awareness of secondary school students. The major components of Environmental Awareness Questionnaire are

1. Use of environment friendly products,
2. Participation in activities to save the environment,
3. Economic use of natural resources, prevention of pollution,
4. Awareness on environmental issues,
5. Saving green trees and vegetation and ecological concern.
6. Awareness on environment friendly waste management

The investigator personally administered the questionnaire to the secondary school students. The data collected from the students were analyzed using appropriate statistical techniques and interpreted accordingly. To find out the objectives of the present study , the statistical techniques were employed are Arithmetic mean, Standard deviation, Quartile deviation, Skewness, kurtosis and t-test.

Major Findings of the Study

The major findings of the study gained as a result of analysis and interpretation of the data are listed below with the formulated hypothesis.

Findings based on the Environmental Awareness of Members in Science club of secondary school students.

Findings

Table 1 :Statistical level of environmental awareness scores among secondary school students.

The scores obtained for mean, SD, and QD of the total samples are 24.79, 2.942 and 25respectively. The subsample of members and members of science club were having

Sample	N	M	SD	QD	SK	KU
Total	400	24.79	2.94	25	-0.442	-0.163
Members in science club	186	25.59	2.85	26	-0.597	0.088
Non-members	214	24.10	2.85	24	-0.405	-0.194

mean score of 25.59 and SD with 2.85. The non members of science club is having the Mean score of 24.10 and SD with 2,85 respectively.

Table 2: Comparison of Mean scores of Environmental awareness of Members and non members of science Club

Sample	N	M	SD	Critical Ratio
Members in science club	186	25.59	2.85	**3.96**
Non Members of Science Club	214	24.10	2.85	

Table 2 shows that the calculated 't' value 3.690 is greater than that of the table value 2.59 of significant at 0.01 level. So there is significant difference between the Environmental Awareness scores of mean scores of Members and Non-members of secondary school students.

There is significant difference in the mean scores of environmental awareness among secondary school students with respect to members and non-members of science club.
Tenability of hypothesis

H. There is significant difference between mean scores of Environmental Awareness among secondary school students with respect to members and non-members in the science club.

The mean scores environmental Awareness vary significantly among secondary school students with respect to members and non- members in the science club is fully accepted.

Conclusion

The 21st century is the age of computer, internet, and new technologies. Today all persons whether it is belonging to rural or urban areas or having different caste have equal right to educate in his progressive era.

Everyone should show his responsibility towards environment. To fulfil this objective we should educate our children through environmental education. The teacher use videos, field trips, documentary films and environmental magazines to built environmental awareness among students.\

The present study has a far reaching effect on the practical dimensions of education. This study may enrich the educators in the field of education and findings of this study serve as a database for the further research.

The findings of any research work leads to develop new insight into educational practices. These innovations if properly applied in the classroom would make remarkable difference in this field. The present study has a far reaching effect on the practical dimension of education. This study may enrich the educators in the field of education.

Educational Implications

The present study makes an attempt to understand the Environmental Awareness of secondary school students of Ernakulam district. The result of the study demands the need for creating greater Environmental Awareness among students. Today's isolation

between environment and daily life must be removed. These two aspects must be linked together. It also demands the necessity of imparting knowledge to students.

There is lack of adequate Environmental Awareness among students with respect to certain environmental aspects such as beneficial use of bio fuels, using of plastics, recycling etc. So there is a need for inculcating greater Environmental Awareness among secondary school students.

- Environmental education should be implemented as a compulsory subject in the curriculum at all levels.
- There should be adequate weightage to environmental education at all levels.
- Science Club should be compulsorily included in all schools to increase Environmental Awareness.
- The advancement in computer, communication, satellite and other technological developments have enabled to gather relevant information about environment. So these facilities must be provided by the schools.
- Symposium, seminars, debates, essay writing, field trips, elocution competitions on environment should be conducted in the school settings.
- Organise meetings and village conventions to create awareness about environment among people.
- Encourage students to discuss problems pertaining to environment in the school.

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