Status and Evolution of Environmental Education at School Level in Delhi, India

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Abstract: The need for imparting environmental education in school students has been well understood in Delhi, India and efforts have been made to incorporate environmental education (EE) in the curriculum. At the same time, increasing interest in the protection and conservation of environment, nature and natural resources has led to the initiation and adoption of several campaigns, programmes and projects by various schools. Consequently, the integration of EE in the curriculum as well as through extra-curricular activities is exposing the school students to contemporary environmental challenges and their solutions. This research work is an attempt at exploring the various measures being taken to promote environmental awareness and create better attitude towards the environment in the schools in Delhi, India.

Keywords: environmental education, school level, education policy, India.

1. Introduction

Environment is an essential entity of life in the sense that the survival of life depends on it in one way or the other. However, man and his activities have led to the present deteriorating condition of the environment. There is an increasing need to ameliorate the situation which makes it extremely essential to promote Environmental Education as a tool for life and learning right from childhood. Environmental Education (EE) can be defined as the process of recognising values and clarifying concepts in order to develop skills and attitude necessary to understand and appreciate the inter-relatedness among humans, their culture and their bio-physical surroundings (IUCN, 1970). It is a process of developing a world population that is aware of and is concerned about the total environment and its associated problems and which has the knowledge, attitudes, commitments and skills to work individually and collectively towards ameliorating the current problems and preventing the creation of new ones.

Growing evidence of the nature and scale of global environmental change, which particularly is a result of technological growth and its application, is provoking concern in places across the world. Questions about global inequalities, the vulnerability of ecosystems and sustainability of existing lifestyles are at the forefront of national and international agendas. Hence, in order to create an environmentally aware population, well equipped with the most comprehensive knowledge and understanding of the environment and a will or attitude to make a difference, EE is being considered and promoted as an integral part of education and being incorporated in the structure, pedagogy and curriculum of academic institutions. This need for incorporating EE at the school level is even more important and therefore EE needs to begin from a primary level to generate sensitivity towards the environment in young minds.

2. Origin of Modern Environmental Education

Efforts to define and adopt environmental education as a specific endeavour began in 1960s and were given international support at the United Nations Conference on the Human Environment (UNCHE) held in Stockholm in 1972. At the Stockholm Conference, participating governments recommended that EE be recognized and promoted on an international scale through the United Nations. One of the initial tasks undertaken as part of the Stockholm Conference was to develop a consensus on what environmental education could and should become, and to assist governments in implementing relevant programmes as soon as practicable. Subsequent to the Stockholm Conference, two major conferences, supported by regional meetings of experts, were hosted by the then newly formed UNESCO-UNEP International

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Environmental Education Programme. The purpose of the first conference was to draft concepts and a vision for environmental education (in Belgrade in 1975). The second conference, an Intergovernmental Conference on Environmental Education, formally approved the scope and action plans put forward from the previous conference (in Tbilisi in 1977). The second conference concluded with the 'Tbilisi Declaration on the role, objectives and characteristics of environmental education'. The provisions of this Declaration remain in wide international use even today and have sustained their role as a guiding influence over the past two decades. Another major milestone with respect to promoting and adopting EE was the IUCN World Conservation Strategy (1980). The latter suggested requirements for human survival and prosperity, putting forward the conservationist concept of sustainable development.

Prior to the declaration of the IUCN World Conservation Strategy (1980), a UNESCO-Thessaloniki Declaration (1997) took place which was an umbrella document under the title, 'Educating for a Viable Future: a Multidisciplinary Vision for Concerted Action'. The UNESCO-Thessaloniki Declaration sought to further clarify the concept of Education for Sustainable Development. It presented sustainability as an ethical and moral imperative and the objective to which education should devote itself as an instrument of choice. It also declared that Education is described as an ongoing process aimed at developing the capability of adapting to rapid changes in the world, but first and foremost as a process of transmitting knowledge and information to make the public understand the problems and to stimulate awareness.

The United Nations Intergovernmental Conference on Environmental Education held at Tbilisi, Georgia, in the former USSR, in the year 1977 developed a series of fundamental concepts which EE organizations and institutions have accepted as their definition of EE. A single goal statement written in Belgrade, Yugoslavia in 1975 has been adopted as a widely accepted goal statement for EE according to the North American Association for Environmental Education (NAAEE, 1996; UNESCO, 1978; Athman and Monroe, 2000).

Environmental education is a process of developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones. According to Gough (1997), the work done by Harvey (1976) in synthesizing a definition from many professional papers, defines the term EE as: *the process of developing an environmentally literate, competent, and dedicated citizenry which actively strives to resolve values conflicts in the man-environment relationship, in a manner which is ecologically and humanistically sound, in order to reach the superordinate goal of a homeostasis between quality of life and quality of environment* (Gough, 1997).

This definition ultimately formed the basis for the declaration at Tbilisi and was the ultimate goal for curriculum development in EE proposed in the landmark publication Goals for curriculum development in environmental education (Hungerford et al., 1980). It is important here to mention the goals and objectives of EE recommended at the UNESCO-UNEP Tbilisi intergovernmental conference on EE. The goals are as following:

1. Goals of environmental education are:
   - To foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;
   - To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;
   - To create new patterns of behaviour of individuals, groups and society as a whole towards the environment.

2. Categories of environmental education objectives are:
   - Awareness: to help social groups and individuals acquire an awareness of and sensitivity to the total environment and its allied problems
   - Knowledge: to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associate problems
   - Attitude: to help social groups and individuals acquire a set of values and feelings of concern for the environment, and the motivation for actively participating in environmental improvement and protection
   - Skills: to help social groups and individuals acquire the skills for identifying and solving environmental problems
   - Participation: to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems (UNESCO, 1978).

Fishbein and Ajzen (1975) defined attitude as an evaluative mediating response, predisposing the individual to display various overt behaviour. Attitudes are formed and changed by the continuous process of having a concrete experience, making observations and reflecting on that experience, then forming abstract concepts and generalisations based on these reflections (Lewin, 1947).

Within the environmental education research there is a long tradition of addressing individuals' attitude towards the environment where, in general, students' environmental attitudes have been examined in regards to environmental knowledge, behaviour and socio-economic variables (Cavas et al., 2009; Hens et al., 2010; Kullmuss and Agyeman, 2002). Some examples of these approaches include: how to increase awareness in the class room (Chapman and Sharma, 2001; Madruga and da Silveira, 2003; Yilmaz et al., 2000) the association for positive environmental attitudes regarding personal environmentally responsible behaviour (Scott and Gough, 2003) and environmental sensitivity as an important issue of environmental awareness (Chawla, 1992; Chawla, 1999).

Madsen (1996) emphasized the concept that awareness is the ultimate driving force that stimulates knowledge. He emphasized the power behind the awareness factor by categorizing three levels of awareness as: basic belief of an environmental problem, factual and scientific knowledge, and a commitment to solve environmental problems. Awareness was studied along with environmental knowledge and concern by Hausbeck et al. (1992). In this study, the authors concluded that awareness and concern scores were significantly higher than knowledge levels in high school students. They linked this result with the fact that a primary source of environmental information is electronic media (NEETF, 1998), whereas awareness and concern can be picked up with little substantive knowledge.

Studies have also shown that environmental education must be implemented on a profound level in the pre-school and primary level of education wherein the prime objective should be to awaken the sensibility of the child to the environment (Caciuc, 2013). A study in North Bengal on the evaluation of EE in higher school education system has emphasized upon the importance of EE as a key to solve environmental problems and to maintain sustainability globally (Halder and Somenath, 2012). EE has a significant contribution to increasing awareness and knowledge and in shaping attitudes among students. A study on environmental knowledge, attitudes, consumer behaviour and pro-environmental activities of Hungarian high school students, which explores the relationship strength between environmental education and knowledge and attitude, have shown a strong correlation between intensity of environmental education and environmental knowledge of students (Zsoka et al., 2012).

3. Environmental Education in India

In India, social values and attitudes have, historically and culturally been in harmony with the environment. One can find this in the classical literatures, the writings of sages, the religious texts, all of these reflect the recognition that all life forms on earth - human life include is intimately dependent on the quality of the environment as well as the need and responsibility to protect it.

The Constitution of India captured much of these deep-rooted values and further strengthened them by giving responsibility to its citizens to protect the environment. The constitution enjoins the "state to take measures to protect and improve the environment and to safeguard the forests and wildlife of the country" (Article 48-A) (Joshi, 1975). It also makes it a "Fundamental Duty of every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have ecological compassion for living creatures" (Article 519).

While India is fortunate in its sheer beauty, it is also replete with natural resource issues across the country. Ranging from a rapidly growing population and deforestation to soil erosion and water pollution, overall environmental degradation continues to worsen. Rapid industrialization and urbanization in India is booming, as the middle classes are also expanding. Urban communities are draining the limits of municipal services and causing severe air pollution problems. All this, and more, has placed significant pressure on India's infrastructure and natural resources contributing to ongoing efforts towards education and seeking overall pro-environmental behaviors (India Together, www.indiatogether.org/environment). The general rationale for providing environmental education programmes in India includes helping school children develop environmental awareness such that they grow up to be citizens who are conscious and sensitive to threats being faced by the environment (Dhavse, 2003).

India has always recognized the beneficial effects of environmentally-focused instructional programs as an essential part of education. According to Sarabhai et al. (2002), with over a billion people and at least 17 major languages, the diversity of India in terms of culture and

biological wealth is enormous. In spite of rapidly changing lifestyles, the traditions of living in harmony with nature and of environmentally sound practices underpin the lives of most people. It is against this backdrop that the country's environmental education strategy has evolved. India has always had a rich and inspiring history of environmental activism, the Chipko Movement (1970) being the most influential among them. In contrast, at the formal level however, schools, colleges and universities have only recently taken up environmental education. Teacher training with an environmental orientation began to emerge across India in the early 1990s, under the aegis of the Ministry of Human Resources Development.

The concept and substance of environmental education, as well as the need for revised curricula and teaching methodologies, was the subject of a study conducted by the Pune-based Bharati Vidyapeeth Institute for Environmental Education and Research (BVIEER) in 1999. The two-year long study led to observations on the efficacy of the then school environment education curricula at the state and national level. Another focus of the study was the issue of motivating students to care about environmental preservation. Once existing environmental concepts in school curricula were identified and major gaps found, a pilot study was launched with textbook revisions made in 800 schools in eight states, to ensure that the concept of the environment and its preservation were taught to students. BVIEER's recommended programme was subsequently implemented in 100 schools in Maharashtra, Goa, Andhra Pradesh, Assam, Jammu and Kashmir, Punjab, Orissa and Uttaranachal (now Uttarakhand). The situation has changed in recent times with the directive of the Supreme Court of India on the matter of implementing compulsory EE at the formal school education system.

3.1 EE and India's National Policy of Education

The concept of EE is now widely spreading in India as more emphasis is given on spreading the importance of an environmentally aware and sensitive young generation which is well equipped with the requisite knowledge and skills to cope with the ever-rising environmental concerns. Taking motivation from the Stockholm Summit 1972, India incorporated environmental concern in the Constitution through the 42nd Amendment in 1976. Environment has become a priority in policy statements, plans and strategies especially after 1980 with the establishment of a full-fledged Ministry of Environment and Forests (MoEF) (now renamed Ministry of Environment, Forest and Climate Change). Subsequently, the need for implementing EE in India has gained consistent momentum and its importance was recognized by the Government and policy was planned subsequently to introduce EE in schools.

EE has always been a part of the school curriculum for several years. However, the present status of EE in school education system has had its genesis in the National Policy of Education (NPE) 1986 (modified in 1992), in which 'Protection of the Environment' is stated as a common core around which a National Curriculum Framework (NCF) has been woven. The national system of education, The NPE 1986, states that "Protection of the environment" is a value which, along with certain other values, must form an integral part of curriculum at all stages of education. Para 8.15 of the policy states: "There is a paramount need to create awareness of environmental concerns by integrating it in the educational process at all stages of education and for all sections of the society beginning with the child" (DoE-MHRD, 1998). According to the National Curriculum for Elementary and Secondary Education: A Framework (1988): "the school curriculum should highlight the measures for protection and care of the environment, prevention of pollution and conservation of energy". In consonance with these documents, Environmental Studies was introduced as a subject at the primary level. As per the National Curriculum Framework 2000, understanding the environment, both natural and social and their interactive processes, the problems as well as means and solutions to preserve the environment was one of the General Objectives of Education as per NCF 2000.

EE at primary and upper primary stages: At the primary stages, environmental concepts have been integrated into different subjects like Mathematics and Language courses. In the NCERT curriculum, the teaching of Language and Mathematics has been woven around the children's immediate environment in classes I–II and EE has been reinforced as a component of the Art of Healthy and Productive Living (AHPL). In classes III-V however, separate textbooks for environmental studies have been provided instead of separate subjects like Science and Social Studies.

EE at the secondary stage: The concept of EE has been prescribed in the textbooks through Science and the Social Sciences whether taught as integrated or separate subjects. NCERT textbooks of Science and Technology and Social Sciences include various concepts of EE. EE at higher secondary stage: A majority of concepts related to EE are found in the textbooks of Biology, Chemistry, Physics, Geography, Economics, Sociology and Political Science in the NCERT curriculum.

3.2 The NCERT Approach

Despite the initiatives mentioned above, there are several shortcomings in the proposed curriculum. The National Council of Educational Research and Training (NCERT) has, since then, gone ahead to create a new syllabi for EE which was later reviewed and revised in the light of the National Curriculum Framework of 2005. This was a result of a Public Interest Litigation (PIL) initiated by Shri M.C. Mehta and subsequent directive of the Supreme Court (SC). The latter was a big leap forward as it helped attract attention of the public to the importance of EE and helped in structuring the implementation of EE in formal education. On 18 December 2003, the SC directed the NCERT to prepare a module syllabus for enforcing compulsory education on environment for creating awareness. Further on 13 of July 2004, the SC directed that "the syllabus prepared by NCERT for classes I to XII shall be adopted by every state in their respective schools". It further appointed NCERT as the nodal agency to supervise the implementation of the Court's order.

In December 2010, the final pronouncements on the matter of the writ petition was given by the SC after NCERT filed an affidavit stating in detail, the approach which it had identified for implementing EE in the school education system. In the document submitted to the SC, the NCERT explained in detail the infusion approach, which meant that an environmental perspective was to be added to all subjects, from standards I to XII, compulsory evaluation of EE content with at least 10% of the total marks devoted to EE, no written exams for XII standard and major emphasis on project-based learning. NCERT clarified that in order to have compliance, a separate subject was not necessary. It further stated that infusion of EE would be done with subjects like Science, Social Science, Mathematics, Language and other subjects, and/ or through a separate subject. Following the acceptance of the affidavit, NCERT published the 'Handbook on Environmental Education' which provides source material for the core course at the XI and XII standards. Project books were also been developed for standards VI to X.

3.3 Sequence of Events

A. Writ Petition, 1991: In 1991, Shri M C Mehta filed an application in the public interest (Writ Petition (Civil) No. 860 of 1991), requesting the Supreme Court to:

- Issue direction to cinema halls that they show slides with information on the environment;
- Issue direction for spread of information relating to the environment on All India Radio and
- Issue direction that the study of the environment becomes a compulsory subject in schools and colleges. This consequent order of the Supreme Court was dated 22 Nov1991.

B. Directive to NCERT to Prepare EE Syllabus, 2003: On 18 December 2003, the Hon'ble Supreme Court ordered, "We also direct the NCERT…to prepare a module (model) syllabus and directed that "We accept on principle that through the medium of education awareness of the environment and its problems related to pollution should be taught as a compulsory subject. The University Grants Commission (UGC) will take appropriate steps immediately to give effect to what we have said, i.e. requiring the Universities to prescribe a course on environment. So far as education up to the college level is concerned, we would require every State Government and every Education Board connected with education up to the matriculation stage or even intermediate college to immediately take steps to enforce compulsory education on environment in a graded way". Subsequent to that, the NCERT developed a graded syllabus for Environment Education for 1 to 12 standards, which was accepted by the SC (the syllabus has subsequently been revised for Standards XI and XII to incorporate contemporary environmental issues).

C. NCERT as Nodal Agency for EE, 2004

On 13 July 2004, the SC directed that "the syllabus prepared by the NCERT for Class I to XII shall be adopted by every state in their respective schools". It further directed that "NCERT be appointed as a nodal agency to supervise the implementation of this Court's order". Compliance to Supreme Court order is mandatory and desirable, and applies to all states and Union Territories (in fact, it is one of the few things that apply to education uniformly all over India)

D. EE and the National Curriculum Framework, 2005

In 2004, MHRD set up a nationwide process towards the development of the National Curriculum Framework 2005. This included the setting-up of a national steering committee and 21 national focus groups. One of these was a Focus Group on Habitat and Learning. In substance and spirit, this group was to look into the area of EE. The group delineated the objective as, 'The main focus of EE should be to expose students to the real-life world, natural and social, in which they live; to enable them to analyze, evaluate, and draw inferences about problems and concerns related to the environment; to add, where possible, to our understanding of environmental issues; and to promote positive environmental actions in order to facilitate the move towards sustainable development. The Group recommended a systematic infusion of components of EE into the curricula of all disciplines

while ensuring that adequate time is earmarked for pertinent activities. The NCERT prepared its new syllabi and textbooks in accordance with the NCF 2005.

E: NCERT Affidavit, 2007

The NCERT submitted an Affidavit in October 2007 to the Supreme Court describing the spirit of the NCF 2005 and clarifying that to have compliance with the earlier order of the Supreme Court, a separate subject for EE is not a necessity. It can be done through infusion, in Science, Social Studies, Mathematics, language and other subjects, and/ or through a separate subject. It does, however, have to be part of the compulsory curriculum. This Affidavit is a key document outlining the sequence of relevant events subsequent to the PIL up to the proposal for how EE may be transacted from Standards I and XII. It was drafted after detailed discussions between the petitioner (Shri MC Mehta), the respondent (NCERT), and the experts appointed by the petitioner and NCERT (Menon, 2013).

F. Acceptance of Affidavit, December 2010

The Affidavit was accepted by the SC on 3 December 2010 and the writ petition WPC 860/1991 has been disposed of. Now, all school education boards are expected to follow the approach to EE described in the Affidavit. NCERT is coordinating the effort to enhance implementation EE in the spirit of the NCF 2005 as it is the basis of the affidavit.

G. New Approach to EE Implementation - NCF 2005

Classes I and II – EE concerns are transacted through activities; Classes III to V – EE is being imparted through a subject namely EVS (Environmental Studies); Classes VI to X – Follows infusion approach for EE. 10 percent of assessment of grand total is based on EE besides project and field work in separate time carved out from existing timetable; Classes XI and XII – Besides infusion in electives, a separate compulsory course 50 marks based on core syllabus and projects work is for all. Marks to be reflected/ added to the total marks. Time to be carved out of existing time table (such as time allocated to General Studies).

It is important to note that the infusion approach has many advantages since EE draws from the different subjects of Science, Social Sciences, Geography, Mathematics, etc. However there are indeed a number of constraints in infusion as well, the main being the lack of opportunities for synthesis of the learning that may take place in different subjects. Another limitation is the absence of a common course at the higher secondary level into which EE content can be induced. To add to its existing constraints, there also appears an urgent need to discuss the amount of time and space for EE along with the infusion approach.

There is a need to provide for a strengthening of this approach where content on Environment in different subjects can be dealt meaningfully thereby avoiding a dilution of focus. Instead of conducting unconnected project-based activities and routine teaching of a set of materials to be memorized in class, there is a need to shift the focus to a more meaningful approach, one which inspires a sense of awareness and sensitivity towards the environment in totality. Furthermore, exclusive time and space should be built in the school time table to translate the EE content into EE experience, using observations, project based activities and going out in nature; thus allowing learning beyond what textbooks have to offer. Moreover, measures also need to be developed to determine the effectiveness of infusion and projects, quality of teaching and learning. The strategy to succeed needs capacity building of the whole school through trainings and materials.

H. Expert Viewpoint:

This research contribution would like to bring forth some of the viewpoints of experts in the field of Education and Environment. Prof. Krishna Kumar, Former Director of NCERT is of the belief that a fresh approach needs to be taken up wherein the text books of all classes have to be revised to plug the gaps which existed in the earlier models. This has been done and a link between the different components of environment with real life has been lucidly explained in the chapters. He has also clarified that for Classes IX to XII, a separate issue based project guide is being provided and that project-work had been made compulsory for the students which will be graded. M.C Mehta, Environmental lawyer, strongly believes that unless and until a discipline is recognized it remains on the sidelines with very few serious takers. He has also emphasized the importance of the state to recognize the subject for the citizens to realize its importance. (Source: multiple pages from cseindia.org, Accessed on 23 April, 2016).

According to an interview by Dr. Jaishree Sharma, Nodal Officer for Environment Education at NCERT, following the NCF 2005, a workshop was held to orient textbook writers of the NCERT Textbook on how to approach to EE and the syllabus. Detailed discussions were done on how infusion may take place. Subsequently, a report was also prepared on how the infusion has been done (Source: http://education-for-change.blogspot.in/2012/06/ncert-

approach-dr-jaishree-sharma-nodal, Accessed on 23 April, 2016).

The Ministry of Environment and Forestry (MoEF) also has key stake in EE, with more than 27 years of experience that has engaged state Nodal agencies, Centres of excellence and various associated expert institutions. It has a stake in keeping the priorities of environment and sustainable development at the core of education systems in order to keep the citizens aware of the concerns and actions required to resolve them. MoEF is providing the expertise gained over the years particularly with school systems, through programmes like Environmental Education in the School System (EESS) and Strengthening Environmental Education in the School System (SrEESS). The EESS targets capacity building of teacher trainers, textbook writers and curriculum development. The flagship programmes of the MoEF like National Green Corps (Co-Curricular Eco Club approach), offer great insights and opportunities to support universalisation of EE.

4. Environmental Education Beyond Curriculum

In 1990, Hungerford and Volk presented a benchmark paper on Changing Learner Behavior through Environmental Education which affirms the convictions of many Children's Environment readers/ books that vital environmental learning takes place outside the classroom in children's homes and neighborhoods. Studies widely done across the world have repeatedly shown that knowledge about ecology and environmental problems, the main content of school curricula is not enough to produce environmentally responsible behaviour.

Hungerford and Volk note the paradox that most environmental education modules focus on imparting information; a strategy that tends to be ineffective by itself in changing behavior. In contrast, committed environmental action depends on a combination of factors that are usually acquired outside of school rather than in the classroom. Environmental sensitivity, defined as an empathetic connection with the environment, strongly correlates with behavior; and several studies suggest that children acquire sensitivity through positive outdoor experiences over extended periods of time in wild or semi-wild places, either during solitary play or activities with friends or family. Thus, it is necessary to recognize the importance of imparting EE outside the confines of the classroom in order to impart a deeper and more meaningful insight into the immediate environment of a student, while simultaneously promoting awareness and encouraging participation for its protection and maintenance.

4.1 National Green Corps (Eco Clubs)

India's National Green Corps (NGC) or the Eco Clubs Scheme is a unique opportunity to educate the youth on environmental issues. It is a national programme across India conceptualized and initiated by the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India. The MoEFCC is 'the nodal agency in the administrative structure of the central government, for planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programs' (www.envfor.nic.in). The four major objectives for Eco-Clubs are to: (1) educate children about their immediate environment by increasing awareness; (2) impart knowledge about eco-systems, their interdependence and need for survival, through visits and demonstrations; (3) mobilize youth by instilling a spirit of scientific inquiry into environmental problems; and (4) involve youth in active environmental preservation efforts.

In 2001, the National Green Corps (NGC) programme was developed and provided the framework needed for the Eco Clubs to succeed. The NGC is implemented countrywide with an overall goal of 'spreading environmental awareness among school children'. Five years after the NGC program's launch in 2001, during the academic year 2005-2006, Eco-Clubs existed in nearly 68,000 schools across India, representing 150 Eco-Clubs per district. The goal for the MoEFCC in subsequent years was to reach an even higher participation level of 90,000 schools. This goal was reached in 2007, when the NGC Eco Clubs operated in 91,447 schools, engaging thousands of committed teachers and more than three million students in conservation efforts, making this one of the MoEFCC's most successful programs (MoEF Annual Report, 2007). In case of the NCT of Delhi, more than 2,000 Eco Clubs have been established in Government, Aided, Private and Public schools since its inception (personal communication with Department of Environment, Government of NCT of Delhi).

More specifically, the aim of the NGC is: 'to impart environmental education and to encourage and mobilize participation of school children in various environment education activities in their localities' (MoEF Annual Report, 2007). Furthermore, pursuant to this purpose, the following statement about NGC provides support for the MoEFCC initiatives for strengthening non-formal environmental education: "to educate children about their immediate environment and impart knowledge about the eco-systems, their inter-dependence and their need for survival, through visits and demonstrations and to mobilise youngsters by instilling in them the spirit of scientific inquiry into environmental problems and

involving them in the efforts of environmental preservation" (Source: envfor.nic.in/divisions/ee/ngc Accessed on 23 April, 2014).

This aforementioned goal is being achieved by establishing Eco-Clubs in every district across India with an emphasis on action-oriented environmental programs. The respective governments are free to set up as many Eco-Clubs as desired, yet financial assistance is only provided by the MoEFCC to a certain number of Clubs per district. The NGC-Eco Club scheme, as originally developed, operated through Eco Clubs formed in participating schools as follows:

- Each Eco Club needs to have 30–50 children expressing interest in environment-related issues.
- Each Eco Club is supervised by a teacher-in-charge (TIC), who is selected from among the teachers of the member school, based on interest in environment-related issues (or through appointment by the school Principal).
- Each Eco Club should be provided with resource material in the preferred language apart from a small monetary grant (seed allocation) of 2,500 Rupees per annum beginning from school year 2005–2006 (this amount in Delhi in the ongoing year is Rs. 20,000/- per Eco Club per year).
- A district implementation and monitoring committee supervises the programme, organizes training for TICs and periodically monitors the implementation of the scheme at district level. There are one or two master trainers in each district to assist TICs for smooth functioning of the Eco Club activities.
- A state steering committee oversees the implementation of the scheme.
- The state nodal agency coordinates the scheme's implementation in the state and organizes related activities (e.g., training for master trainers).
- The national steering committee gives overall direction to the program and ensures linkages at all levels.

4.2 Vasundhara – A Lead Eco Club

To understand the functioning of an Eco Club, Vasundhara, the Eco Club of Kulachi Hansraj Model School (KHMS), located in Ashok Vihar, Phase III, Delhi, was extensively studied. Vasundhara is one of the lead Eco Club Schools in Delhi as selected by the Department of Environment, Government of NCT of Delhi (DoE, GNCTD). The School in which is located is one of the first EMS 14001-2004 certified school of Delhi. There are 17 other schools attached to this Eco Club and together they constantly works towards protection of the environment and achieving a sustainable future through awareness generation and participation.

The Vasundhara Eco Club, led by KHMS, has been working meticulously in collaboration with various organizations/ NGOs. A key initiative by the Vasundhara Eco Club is the campaign on awareness about electronic waste recycling and management, setting up of waste collection bins in the offices nearby areas as well as in the school. The focus here has been to collect e-waste and prevent it from entering landfills. A total of 135 kg of e-waste was collected by the Eco Club in 2014, which was given to NOKIA for safe handling and disposal of this otherwise hazardous waste. Other projects of Vasundhara include practicing of composting wherein a sizeable compost pit has been prepared in the school nursery where dried leaves and grasses from the school lawn and vegetable peels from the canteen and home science lab are regularly fed. Vasundhara, along with the students of Manovikas Kendra, a Centre for the specially-abled children of the school and in collaboration with DEEKSHA NGO, maintain a herbal garden in which different varieties of herbal plants are grown and maintained by students.

As a lead Eco Club, Vasundhara conducts training programmes for teachers and students of all other 17 schools attached to it. Recycling of paper, rainwater harvesting, installation of wind-powered exhaust fans in the school to save electricity, segregation of wastes, R.O water purification plant wherein waste water from the plant is recycled and used in toilets and watering plants and use of Micro-Analysis Kits in labs to reduce the usage and release of chemicals into the environment are some other initiative of the Vasundhara Eco Club. In addition, tree plantation drives, adoption of a park, nature and biodiversity trails and celebration of significant environmental days are some other regular features of Vasundhara Eco Club.

Based on the interview conducted with the representative of the Eco Club as well as the students involved, it can positively be concluded that the students and the teachers were very proud of all their contribution towards the environment. The students of the school were also found to be effectively engaging in the activities of the Eco Club and displayed a responsible behavior towards the environment as they took care of the gardens in the school, looked after the work of composting and even conducted studies to find solutions to environmental issues. For example, students of IX grade of the school conducted a study to identify the principal sources of noise pollution in three countries namely India, Australia

and some parts of UK and did a comparative study by exploring the laws and policies set by the governments of the respective countries to regulate this problem. The results of the survey were presented in the school followed by an awareness campaign focused on making the world noise pollution-free.

It is clear that at least in the case of KHMS, students have been made considerably more awareness about environmental issues due to the presence of a functioning Eco Club. It can certainly be said with absolute surety that the adoption of the Eco Club scheme by Kulachi Hansraj Model School has been a positive step in ensuring consistent and long-term awareness generation on environmental issues in the students of this school.

5. Conclusion

With the introduction of formal Environmental Education at the School Level, and the simultaneous implementation of the NGC/ Eco Club Scheme, the Government of India has played its part in promoting and raising environmental awareness and sensitivity among the students. The implementation of EE in schools needs further research and improvement as it can be made better through further improvements in the syllabuses and branching out on the kinds of issues/ challenges taught in schools. Furthermore, to shape responsible attitudes of students towards the environment, compulsory field projects to environmentally sensitive sites may be taken up at the classroom level to introduce the students to the actual scenario of the environment. It is also felt that there may be a separate slot in the time-table for work solely dedicated to the environment in which discussions and debates on environmental issues can be taken up. In this way, every student can be sensitized and inspired to act responsibly towards the environment.

While a lot more can be done to encourage school students to work towards the protection of the environment, the first steps in this direction have been taken. Further research in this direction could shed light on the role of teachers as well as peers and projects, all of which could help foster a deeper understanding about the importance of nurturing and caring for 'our common environment' by students who are the future citizens and leaders of tomorrow.

6. Acknowledgement

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