



GREENING OF SCHOOL EDUCATION: A CASE STUDY

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ABSTRACT

Education is considered as an important tool to achieve the sustainable development goals. To educate the young minds on sustainable development an ideal setting is essential. World over many countries and organisation have worked on education for sustainable development since the decade of education for sustainable development had been announced in 2005. In India the approach to ESD has been much different. In this research has focused on the dynamics of sustainable education in a green school setting. When the schools go through the process of greening not only the students and school community but also the community at large is influenced. This article also brings out that the greening of school though primarily aims to deliver sustainable infrastructure such as sustainable campus with focus on renewable energy, water management, green campus, adequate sports facility but during the process there have been greening of curriculum which instilled the strong attitude in the entire school community towards sustainable development. Thus, this paper argues in favor of green school to deliver ESD as the sustainable school can teach the concept of sustainable development well.

Key Words: Education for sustainable development, green school, green education, green curriculum and green practices

INTRODUCTION

Indian schools enrol over 260 million students in 1.5 million schools spread across the country. Thus, over 20% of the population of our country which goes to the school spends substantial part of the waking period in the school premises. Therefore, almost entire future citizens of our country are in the school building and classrooms for their learning lasting over 1200 hours in a year. The 8.7 million faculty and staff also spend equal amount of time in the school along with the students. Therefore, the school environment comprising of facilities, process of teaching and learning need to focus on the objective of Education for sustainable development (from now onwards, ESD) which aims to provide a holistic and transformational education and address quality education on Sustainable Development (SD) at all levels and in all social contexts. One of the many outcomes from the further development of ESD was the establishment of schools that embrace sustainable approaches because schools are the ideal platform as the young minds are more receptive and resistant to be proactive contributors to take informed decision and responsible action for environmental integrity

and economic viability. Further, ESD had given stress on reorienting education and empowering people to develop knowledge, skill, values and behaviour needed for SD. The responses toward approach to ESD from the educational institutions had given rise to the notion of Green School Movement.

Background

To respond to Decade (2005-2014) of Education for Sustainable Development (DESD), in India, there have been initiatives from government, NGOs and other organisations. In 2010 Ministry of Environment and Forest (MoEF) along with Centre of Environment Education (CEE) launched 'Paryavaran Mitra' program in the schools. Schools have to involve students in the class rooms, in eco-clubs, and in the whole school in action-oriented activities and carry out projects under five themes: Water, Waste Management, Energy, Biodiversity, Culture and Heritage. A 'Paryavaran Mitra' school provides support, time, and space for students and teachers to be actively participate in learning by doing. In other words, it is a school that promotes exploration, discovery, thinking, and action. It targeted school children

between standard 6 to 8 through curriculum program and higher classes through club activity. This program is voluntary and modification of school environment and process is to some extent as extra-curricular activity. In 2015, NCERT has brought out a resource book titled 'Towards Green School on education for sustainable development for elementary school', which outlines the essence of a green school and its link with education for sustainable development. It takes a thread from various recommendations and whole school development plan (WSDP) envisaged in Sarva Sikhya Abhiyan (SSA) to develop the concept of a green school. The green school is visualised on the principles of environmental sustainability which seeks to provide clean, green, healthy surroundings, suitable infrastructure for all children, effective learning and involve all stakeholders. The green school seek to promote green practices within and beyond the school and provide the right setting for greening the curriculum. The education for sustainable Development demands an infused approach, of both green school and whole school to accomplish the desired goals and objectives. There is no fixed framework for curriculum or pedagogy to make a green school. There are organisations such as Indian Green Building Council (IGBC), LEED India, GRIHA who provide leadership in green building and school movement in the country. The main aim is to encourage the school to give awareness for environmental security through practice and use of green equipment to make the school sustainable. The schools have to meet criteria for green school rating system laid down by these organisations. The green school concepts vary from region to region as per the understanding and interpretation. Based on the popularity the green schools are known in various names such as Eco-Schools, Sustainable Schools, Green School-Building, Green School-Environment, and Green School-Curriculum etc.

Case Study of Green School

With this background I have undertaken a pilot study in two schools certified by Indian Green Building Council (IGBC), which is one of the agency involved in certification of green buildings and green schools. During my pilot study I found it significant to take this as study area because it is a conglomeration of five different schools and different board under the umbrella of one management. ICF group of schools are such schools which not only obtained platinum rating for green school but also got ISO 9001:2015 quality system certifications. These schools thus have addressed both ESD and quality education which is part of sustainable development

goals. Thus, the selection of study universe was purposive. However, the universe was identified through secondary data from internet resources and websites of schools. The ICF group of schools comprise of two primary schools: ICF silver jubilee school primary school (ICFSJNPS) from I to V (self financing), Colony Primary School (CPS) from I to V (Govt. aided). Under the same management there are two high schools :The silver jubilee matriculation and higher secondary school(ICFSJMHSS)(self financing)and ICF Higher secondary school(ICFHSS) (Govt. aided) and the CBSE school, ICF Vidya Niketan. Two of the schools have been certified platinum rating green school certification where others were in the process of implementation.

The objective of pilot study was to explore the role of green school in achieving 'Education for Sustainable Development', to assess the process of green certification, to explore additional resources requirements for the schools for conversion into green school, to know the role of managements, teachers and students in greening the school ,to explore and assess the unique pedagogical process adopted in the schools and to assess the community impact of the green school.

Study Design

This was a mixed method investigation using a triangulation design. A triangulation design is a type of mixed methods research wherein both qualitative and quantitative data collection are conducted concurrently and findings from both are integrated and conclusions drawn.

Quantitative Component

A survey (n=100) was conducted in every school using a face to face structured closed ended questionnaire among teachers, students. A stratified random sampling was adopted. Students were stratified to two sections: primary and high school. Simple percentage was taken for the data analysis.

Qualitative Component

Ten focus group discussion and ten in-depth interviews with all stakeholders: management team, principals/HMs, teachers, parents and students were conducted. Focus group discussions (FGD) were conducted using a semi structured open-ended interview guide. Separate FGD will be held for various groups. The topics of the discussion were overall experience in green school, pedagogy and their impacts but not limited to them.

Green School: Insight from Existing Studies

Although there was no specific mention of the green school connotation in the outcome documents ‘the future we want’, it provided a passive contextualisation of the notion of green school. To quote from (para 234) ‘... strongly encourage educational institutions to consider adopting good practices in sustainability management on their campuses and in their communities, with the active participation of, inter alia, students, teachers and local partners, and teaching sustainable development as an integrated component across disciplines’. One could take a thread to understand green school could be an ideal setting for ESD.

There is no universal standard or framework to provide a standard definition for green school. The concept of a Green School is contested, negotiable and complex. That stated Green Schools are perceived as an educational vehicle that carries the mission of ESD. Such an understanding positions Green Schools as the type of school that presumably supports the 17 Goals for Sustainable Development (United Nations 2015). USGBC defined it as ‘a school that support global sustainability in every way. Green school begins with the future in mind, designing a learning experience for students that will prepare them to lead the world towards a healthier, cleaner, more sustainable future’. (<https://www.centerforgreenschools.org>). US Green Building Council (USGBC) in 2000 have described green school as healthy environment that is conducive for learning while saving energy and resources and money. In accordance to ESD, NCERT(www.ncert.nic.in) defined green school as ‘a school that engages the school community, especially children, in critical thinking and learning by adopting participatory, practical and collaborative approaches to work together and make the school environment healthier for students and staff by involving the whole community to work towards a sustainable future’.

Green curriculum, green education and green practices are various indicators for the green school connotation. Each offers methodological tools for school and community to evaluate their own challenges assess risk and develop solution. Green is not just a mere colour but a concept, in which all indicators intended for- sustainability. Sustainability is not a single point agenda rather an integrated approach. It is not a singular rather a plural phenomena. It is not a noun rather a verb, which has persistent effort. However one cannot argue that green school focus on a single point, rather it is integration.

Various literatures claimed that the green school as a concept has been introduced in some schools Europe in 1990s even before the Rio Earth summit. There are few popular schools in the world that have provided leadership in eco education in US, China and Bali in Indonesia.

The responses toward the ESD’s direction from the educational field was immediate, with the launching of Eco-Schools by the Foundation for Environmental Education (FEE) in Europe in 1994 and the establishment of the United States Green Building Council in 1993. The later created the USGBC’s centre for Green School in 2000 (Center for Green School 2016). Established in 1981 to serve the European continent, the FEE expanded its scope to be a global NGO when it simplified its acronym to FEE in 2001. The USGBC also expanded its scope by pioneering the establishment of the World Green Building Council (World GBC) in 2002.

The FEE and World GBC have become the two major pioneering international ‘green’ NGOs. The FEE Global focuses on the educational aspect of ESD and the World GBC on building and environment aspects of ESD. The FEE continues with its Eco-School program, which today claims to have 49,000 school participants in 64 countries. The USGBC’s Centre for Green Schools provided the major resources for the establishment of the Global Coalition for Green Schools in 2013, a subsidiary chapter of the World GBC. The Green School movement has also been promoted by other institutions and some countries have developed their own versions of Green Schools reflecting their interpretations of this concept.

Greening of ICF Schools

ICF had embarked upon green initiatives since 2009 with setting up of windmills to meet 100 percent of its industrial energy requirement. In following years ICF has adopted green in all areas of operation. In 2015 the administrative office was converted into a Platinum rated green building. ICF group of schools also adopted green for the school buildings and surrounding since 2016. In this process the schools actively pursued implementation of environmental sustainability designs and programs into these schools. However the schools approached IGBC for certification in the year 2017 for the first school and obtained Platinum rating thus becoming first Railway school in the country to get Platinum in February 2018 and 6th school in the state of Tamil Nadu do so. Following this the second school also

went ahead for certification and obtained the Platinum rating in November 2018. The process of greening has been a remarkable journey for students, teachers and community in delivering message of sustainability to entire stake holders.

Design of School Facilities

Greening the school embodies the aspects of green space, green practices and the green pedagogy with green curriculum. Primarily the study focused on two aspects i.e., greening the school and its impact on all the stakeholders. It is observed that both these elements are complimenting to each other. The green infrastructure includes sustainable management system related to energy water, waste and the green space: classroom dynamics, playground, garden. It was observed that green infrastructure was strategically designed in the spirit of a 'green' approach complying objective of ESD. Here green is not merely a colour indication but a process of evolution for sustainability. Green infrastructure and green practices and green education are entwined with each other and bound with the theory of cause and effect relationship.

Bond with Nature

Greening the school is a systematic longitudinal intervention. It acts as a tool for experiential education. Researches show that greening the school has an positive impact with the emotional, psychological and physical wellbeing of the student. School gardens may improve students' attitudes toward school itself and Gardens also may help students develop observational skills, and simultaneously provide an opportunity for students to integrate interdisciplinary content in the context of a living laboratory. Teachers who use school gardens in a more specific subject-based approach have helped students improve science and math scores and have helped students develop positive attitudes toward the environment. With this background the greening intervention was taken place. The process embodies with vegetable gardens, medicinal plant plantation, turf, flowering garden and trees. ICF group of schools have enriching empirical experience to be worth documenting.

Every month end a mass birthday celebration has been conducted in which everyone join together irrespective of teaches and students and staff to celebrate birthday but with a difference. It is a cross curricular which enhances the tangible and intangible aspects of the schools. Tangible interms of strenghtening, maintaining gardens, learning about environment and learn the method of plantation. Intangible growth in terms of the valus: the feeling of togetherness and

oneness among the students and teachers, feeling of belongingness and ownership of the school premises and learning the art of giving and sharing. Celebrating birthdays together in the school with friends and teachers is a moment to cherish. In order to make plantations sustainable in the school it is a method of plantation of saplings every month on last day of the month by students and teachers whose birthday falls on that month. Experiential learning for sustainable development was another objective for seed sowing. This innovative method not only inculcates the habit of growing plants at home or at school, it enhances the interaction of parents and teachers for co-operation and friendship. The program was launched with a methodical, systematic and educative manner under the guidance of an expert. Parents were also allowed to participate and learn art of plant growing in pouches. Programs were designed where a child would learn the evolution of plant. To support the idea all weather green house was established for the compatibility of weather condition.

Sustainable Resource Management

Let us take examples of green infrastructures such as installation of solar energy, rainwater harvesting and various equipment for water conservation etc., do not merely make the school environmentally sustainable and give zero carbon footprint. Energy management offers a practical means of achieving development goals which enhances the international competitiveness of industry in world markets by reducing the cost of production. Energy management can be administered through increased efficient energy use in conjunction with decreased energy consumption or reduced consumption from conventional energy sources. The schools have adopted 100% LED lights and star rated fans for energy efficiency. The trained leaders on energy conservations are called Urja Raskyaks who shoulder higher responsibility of energy conservation in the school. The schools have opted for 33KW of on grid solar power plants to meet the entire energy requirement. Sustainable Water practice has been an important component for green certification process. The various features of water management in the ICF group of schools are Conservation of water, efficient use of water, prevention of wastage of water associated with water recycling and rainwater harvesting. The cycle of sustainable water practice revolves around these basic concepts. Different components of 'sustainable water practices' in ICF school include rain water harvesting (RWH), water efficient plumbing fixtures, water use monitoring, water efficient

irrigation system such sprinkling and drift and water efficient landscaping.

Green Education, Creative Pedagogy

The school remains a demonstrator to promote effective teaching, learning and practicing for conservation of water, energy as well as issues on environmental security. It was observed that the process of greening promote a new paradigm of pedagogy that stimulate a curriculum of its own with a multidisciplinary and multisource approach. It emphasizes on learning rather than teaching; building capacity for critical thinking and problem solving; sensitivity to diversity and equity; focused on empowerment rather than indoctrination; purely knowledge generating. It has translated environmental problem from knowledge-based to fact-based as well as environmentally friendly value based sphere. For instance environmental education through experimental learning (project, exhibition, model, activities) in green school setting was a dynamic experience rather than mechanical accumulation.

It was found that the pedagogy goes beyond the formal curriculum to a holistic education, where the student's learning experiences are no longer confined to the class room but extend outside the field as well. It brought the learner closer to the environment and respond to her social-cultural context and emotional needs. Engaging in the process of project; of undertaking first hand observation of fact; of observing the linkage between environment with different disciplines; of enhancing the critical thinking and problem solving abilities; of creating the sense of togetherness and leadership qualities- this is by best way of imbibing values in the spirit of sustainable development. It is observed that the green education in a green school setting provided children many opportunities to develop curiosity, creativity, communication skills, confidence, co-operation, competence, care and concern. It was quite noticeable that during the process of greening, cross-cutting teams are established. This team approach generates the sense of synergism, leadership qualities, co-learning, sharing, and ownership and promoted capacity-building for sustainability by disseminating those values of sustainable practices to other stakeholders.

Community Transformation

It was quite conspicuous that school-parents relationship was fortified in the green education spirits. A coherent, consistent continuous involvement created a comprehensible and decipherable communication between all the agents and

fortified the Socio culturally green environment. Communication with the community through a variety of channels with a clear and consistent message was observed through different green activities. Actions always speak louder than the word. The message of green practices through the behavioural changes of the students was reflected on the parents which is major element of ESD goal. In this greening process the desired change is clearly defined & tangible. Parents learnt how to conduct themselves by watching the behaviours of children. Everyone in a school, especially leaders, communicates the vision through their actions; they walk the talk by modelling the behaviours they desire to see. When actions accurately reflect the vision, change efforts are more successful.

Conditioning Green Values

When the green practices becomes a social norm then it will become a societal condition behaviour and action. The conduct of peers or neighbours is contagious. This study observed these green practice behaviour in the school, classrooms or individuals had become the motivating factor to establish social norms for green practices. Green education with its interdisciplinary and multi disciplinary approach has become an transforming agent for sustainable development by increasing people's capacity to transform their vision from society into reality. This study had presented a scrupulous observation on the holistic approach of a 'whole environment' concept in a green school setting. Here the content of environment is not just confine to environmental education by learning through the environment, by the environment, with the environment and for the environment and socio and economic pillars of SD. Here Environment development elaborates another arena: individual consciousness and its impact to societal affinity. It is not just a separate entity rather a pluralistic approach to move on towards the spirits of ESD. Individual consciousness refers to one's body mind and intellect through values and ethics and directly proportional to societal upliftment. In this line it was observed that when the children unleashed their liberated thoughts, it enhanced the capacity of cognitive, kinaesthetic, interpersonal personal intelligence and ensure the overall development of the students. It helps students to gain understanding of environmental process, acquire life skills and helped foster attitude, values and sensitivity towards environmental concern. Neither individual consciousness nor social awareness exists separately. The inculcation of strong and positive value was disseminated to the community.

Conclusion

Green school movement is the need of an hour. A collaborative effort is required from transnational and national agencies and the government to encourage all the educational institutions to develop into a green school setting. Green school award is a tool for measuring greening the school. A comprehensive, inclusive award criterion is required to encourage educators, volunteers and advocates working toward healthy and efficient school environments to drive transformation. The award must focus on three indicators; Zero carbon footprints, green education and positive impact on health and socio cultural affinity. The green school create the conditions necessary to journey towards ESD. In this line the introduction of a framework to complement and encourage and enhance the on-going efforts is quite substantial efforts to make sure all of our children attend schools that are healthy, safe and efficient and inspire great learning in accordance to ESD. Orientation for training for green school approach from national and international agency is recommended. Creating appropriate enabling environment and training teachers on ESD contextualizing and the implementation of green curriculum will have a lasting effect on ESD. These findings can be transferred to other green school while contextualizing the detailed analysis according to different cultures and geographical boundaries.

Green school in ICF promoted a 'whole environmental action' in order to facilitate the move towards sustainable development. The green school have given a clear picture about activities it adopted for infusion of environmental development and whole environmental components in all levels and all aspects. The developmental paradigm in the spirit of green school helped demonstrate the sustainable practices; help development of those practices and build capacity of communities to elaborate a vision and participate in pursuit of whole environmental sustainability. Strategic planning and monitoring from management help strengthening greening process. The school management as leader and catalytic communicator has immense role in establishing process for continuous improvement. Constant support from school management for green infrastructure development; empowering teaching community for liberating their ideas and activities; transparency in decision making; orienting the educators for integral growth of pupils; encouraging the teachers to render the innovative ways of green practices and its dissemination to community were the major role for the ongoing evolution for the green school.

Way forward

Policy makers and investigators may prioritise resources for future development of green school to develop green curriculum instead of simply pushing the agenda to construct a green building. It is ideal to construct green building and also to incorporate green curriculum. When green curriculum and green building coexist children get the best of both worlds because they are not only learning inside healthy buildings but also green buildings can be used as extension of visible evidence of the green curriculum. This should be understood that greening is not a onetime phenomena but a continuous and synergistic effort from all stakeholders required for practicing and disseminating green values to spread to every child who attends a green school.

To successfully deliver the message of ESD, an integrated sustainable approach in green school setting must align with every organisation's mission. Demonstrating the vision through action is as important as communicating it with words. Once a school adopts sustainability as a vision, students and teachers will see and suggest new opportunities for sustainability and thus a sustainable school will propel the objective of Samagra Sikhya.

Bibliography

- Ghanchi, D.A. 2013. Sustainable development through designated research: An innovative mission for Indian Higher Education System, *University News*, 51, 89-97.
- Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972 (A/CONF.48/14/Rev.1), part one, chap. I.
- Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992, vol. I, Resolutions Adopted by the Conference (United Nations publication, Sales No. E.93.I.8 and corrigendum), resolution 1, annex I.
- Report of the Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown, Barbados, 25 April-6 May 1994 (United Nations publication, SalesNo. E.94.I.18 and corrigenda), chap. I, resolution 1, annex II.
- Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002 (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2.

- Report of the International Ministerial Conference of Landlocked and Transit Developing Countries and Donor Countries and International Financial and Development Institutions on Transit Transport Cooperation, Almaty, Kazakhstan, 28 and 29 August 2003 (A/CONF.202/3).
- Report of the International Meeting to Review the Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States, Port Louis, Mauritius, 10-14 January 2005 (United Nations publication, Sales No. E.05.II.A.4 and corrigendum), chap. I, resolution 1, annex II.
- Report of DAAD/UNU-ViE joint workshops on the occasion of the UNESCO World Conference on Education for Sustainable Development. Cleveland, C. J. and Kubiszewski, I., (2007).
- Towards Sustainable Development in Higher Education – Reflections. 2007. Department for Education and Science Policy, Ministry of Education, Finland, p.6. 122.
- Sustainable Development: An Introduction, Internship Series, Volume-1 (2007). Centre for Environment Education, Ahmadabad.
- United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, Brazil, 2007 Encyclopaedia of Earth, [cited April 2, 2013]. Available from [http://www.eoearth.org/article/United_Nations_Conference_on_Environment_and_Development_\(UNCED\),_Rio_de_Janeiro,_Brazil#gen0](http://www.eoearth.org/article/United_Nations_Conference_on_Environment_and_Development_(UNCED),_Rio_de_Janeiro,_Brazil#gen0).
- American Journal of Educational Research. 2009. The Role of Education for Sustainable Development in Higher Education.
- Report of the Fourth United Nations Conference on the Least Developed Countries, Istanbul, Turkey, 9-13 May 2011 (A/CONF.219/7), chap. II.
- Report of the United Nations Conference on Sustainable Development, Rio de Janeiro, Brazil 20-22 June 2012.