

## EDUCATING FOR SUSTAINABLE DEVELOPMENT AT PRIMARY SCHOOLS

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**Abstract** :Education of 21<sup>st</sup> century can't be simply limited to the development of disciplinary knowledge, skills and attitudes. With the ever-increasing concerns of sustainable development across the globe, it is mandatory to rethink about curriculum at all the levels- be it higher education or secondary or primary education. All the important education commissions and policies in India have iterated the need to integrate EE (Environmental Education) in the entire educational process so as to realise the global aim of sustainable development. The present National Curriculum Framework (NCF-2005) for school education has already proposed the guidelines for infusing environmental education into school curriculum. Still it is found to be a challenge for school teachers to practice it given the school related constraints. This paper has presented the findings and reflections of a primary school teacher on her efforts and experiences for promoting ESD (Education for Sustainable Development) through her pedagogical interventions during a school based Action Research.

**Key words** : Education for Sustainable Development (ESD), Environmental Education (EE), Teaching of Environmental Studies (EVS)

### Introduction

Sustainability is a paradigm for thinking about a future in which environmental, social and economic considerations are balanced in the pursuit of development and an improved quality of life. (UNESCO, 2012).

As indicated by this statement, UNESCO has very well conceptualised the idea of sustainability that guides the designing of ESD (Education for Sustainable Development) curriculum for our learners. It demands the identification of knowledge, skills and values central to sustainable development in each of the three components of sustainability (i.e. environment, society and economy) and then integrating them into the curriculum. The decision regarding issues of sustainable development may be based on the contextual relevance, locale specificity and cultural appropriateness. India, being a land of enormous diversity, is struggling with number of sustainability issues of national as well as global significance; including population growth, threats to biodiversity, deforestation,

pollution, energy crisis, waste management, climate change, equity, Poverty, food security and so on.

All the important education commissions and policies in India have iterated the need to integrate EE (Environmental Education) in the entire educational process so as to realise the global aim of sustainable development. Kidwai (2002) pointed out few concerns suitable for Indian contexts that can be addressed through ESD curriculum. That included - protection and conservation of environment; a balanced consumerism; appreciation for the needs governed by resources available locally; removal of poverty through availability of adequate nutritious food, medical facilities and education; use of indigenous methods in agriculture; maintaining a balance among technological advancement, population growth and increase in production; and, women education for sustainability.

It becomes much more necessary to start EE from primary school curriculum itself in our country owing to the concern that large number of children in India gets education up

to primary school only. NCERT's present curriculum framework for school education (NCERT, 2005b) has ensured integration of EE from class 1 to 12 across different school subjects. Guidelines for Environmental Education based on NCF 2005 state that the present NCERT syllabus is aimed at generating among young learners an awareness of and sensitivity to the total environment in a holistic manner and the problems associated with it. It has been advocated that integrating EE with school curriculum would equip the future custodians of the earth with the requisite knowledge of the total environment, natural and social, the problems associated with it and the necessary skills for solving these in a positive and sustainable manner.

#### **EE in school curriculum for promoting sustainable development**

Present National Curriculum Framework (NCERT, 2005) has special thrust on new paradigm for educating young generation for sustainable development. As specified in the Position Paper on 'Habitat and Learning' (NCERT, 2005, p.4), the major objectives of Environmental Education (EE) should be-

- to expose students to the real-life world, natural and social, in which they live;
- to enable them to analyse, 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.

Pedagogies associated with ESD stimulate pupils to ask questions, analyse contexts, discuss issues, think critically and make decisions. Such pedagogies are based on the shift from teacher-centred to learner centred activities and from rote- memorization to participatory learning. UNESCO sourcebook for ESD recommends drawing upon the arts using drama, play, music, design, and

drawing to stimulate creativity and imagine alternative futures in ESD pedagogies. Use of simulations, class discussions, issue analysis, and storytelling techniques can be employed in classrooms for ESD (UNESCO, 2012). Apart from these techniques, other recommended strategies for ESD include- problem- solving, investigations, projects, field visits, case studies, role plays, eco-clubs etc. through which a meaningful engagement of learners can be ensured while dealing with an issue of sustainable development. (Kidwai, 2002; Wadhwa & Kalyani,2008). The focus of these participatory teaching techniques is to help children develop a sense of social justice and self-efficacy as community members; that is also an important goal of ESD.

With such an understanding of ESD, NCF 2005 has introduced EVS (Environmental Studies) subject as an integrated perspective for the primary stage of schooling which draws upon insights from Sciences, Social Studies and Environmental Education. Young learners can be made aware of their environment and explore its different dimensions of sustainability through careful selection of themes which cut across different subject boundaries to enable them to look at the issues from multiple lenses. Pedagogy of EVS should essentially be at par with the pedagogies recommended for ESD. Only then such pedagogy can be thought of realising the goal of sustainable development through EVS curriculum.

However, it is often found that primary school teachers find it very challenging to incorporate in their regular teaching mainly due to system related constraints. The reasons for not doing justice with the pedagogy of EVS are often attributed to lack of time, paucity of resources, pattern of assessment, extra work assigned to teachers at schools and so on. But, it is also found that teachers are themselves not much aware of suitable strategies to deal with the ESD based content. With newer concerns in school curriculum, it

is imperative to bring innovations in age old techniques of teaching. They hardly wish to innovate in their teaching strategies and still seek to go with disciplinary orientation instead of integrated approach of EVS. Except few innovative schools, the situation is similar whether they are teaching in public schools or private schools.

The author of the paper started teaching in a well known 'innovative school' of East Delhi after successfully completing her intense training in elementary teacher education. She had already observed and experienced the way EVS is taught in our majority of schools through her training days' experiences. She believed that starting her professional journey with an innovative school will give wings to her imagination of being an innovative teacher. However, it proved to be far more challenging for her to create space for teaching EVS keeping goals of ESD in consideration. Next section of the paper discusses those challenges and her interventions that helped her to redefine EVS pedagogy in her school.

### **Teaching EVS for ESD: Experiences from Primary Classrooms**

The real stories of teachers in actual fields, that is, the classrooms, are not devoid of challenges. Soon after landing into the school, the author found that there were some limitations in the curriculum followed for Environmental Studies, like - dearth of integrated activities for teaching EVS, unavailability of resources and materials, teachers' limited understanding of EVS, working teachers' inclination towards disciplinary knowledge of 'Science', lack of activities promoting use of process skills, lack of innovation and other infrastructural limitations. She realized the need to revamp existing EVS curriculum at her school to redefine the objectives of teaching EVS and one of these would definitely be promoting knowledge, skills and values for sustainable development. It required constant negotiations

on her part with existing faculty and authorities. However, the strength of being in an innovative school was that she was not supposed to follow a prescribed textbook and hence, she could voice for designing EVS curriculum herself. She had to overcome such challenges to explore various possibilities that ESD can provide in primary classrooms.

### **Context of Action Research:**

The teacher (author) planned for an Action Research to understand role of ESD specific pedagogic interventions in developing positive attitudes, awareness and concerns for environmental issues. Gay & Airasian (2003, p.261) state that a school based action research is typically focused on a particular issue or concern that is examined in a single school. Faced with the gaps and inconsistencies in the existing Environmental Studies curriculum at the concerned school but with a willingness to bring the perspective of ESD into focus, the author made efforts to redesign the EVS curriculum and then planned the themes accordingly. Planning had ensured that ESD balances and integrates all the concerned elements of environment, society and economy to address sustainability and cuts across disciplines. The reflections on the interventions made by teacher (the author), as discussed in the subsequent part of paper, are about what she could do successfully within the given space and structure.

### **Interventions by Teacher (author):**

During her study, the researcher (author) planned for stimulating and motivating tasks for students so that they can engage actively and construct knowledge. She planned a comprehensive ESD based theme for EVS curriculum of grades 3 to 5- "Waste Management"- to be taught in a particular session. A variety of strategies was used by her - stories and narratives, poems, creative writing, role plays, discussions, designing posters, newspaper reports analysis, craft work, project works, movie/documentary

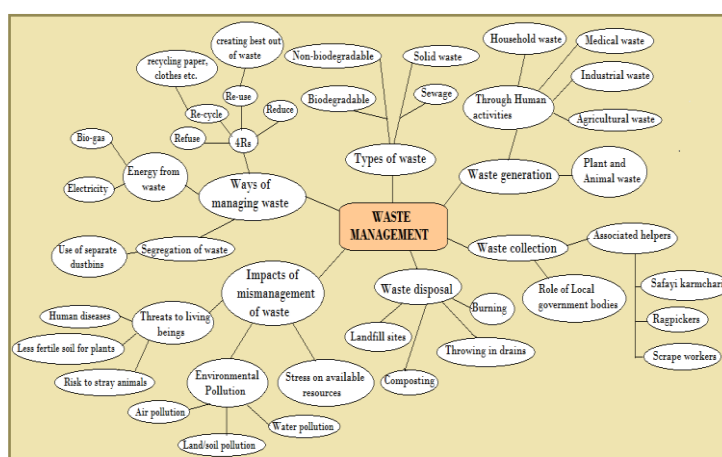
screenings, campaigning, etc. Employing multiple teaching techniques and organizing varied activities helped students engage in a wide range of learning processes suitable to their diverse learning styles and interests. Learners also got opportunities to nurture their skills and capacity to learn and think.

The theme on “Waste Management” was planned with following general objectives those were taken up with the young primary grade children easily-

- to minimize the use of non renewable resources
- to encourage judicious use of resources by producing less waste

- to improve the response time for environmental stress
- to motivate for participatory citizenship for resolving issues of sustainability

These objectives were specified in harmony with the conditions that are prerequisite for a sustainable society to exist. Hence, this theme was considered to be relevant and meaningful for the learners. It was planned as a comprehensive theme that cut across grades 3 to 5 and the teacher planned multitude of different activities under the theme appropriate for grade levels. Following is the comprehensive theme map developed for primary grades by the teacher-



(Figure 1-Theme map on Waste Management for primary classes 3 to 5)

**Findings and discussion** Following are the findings of some activities those were conducted with students of primary classes during the theme.

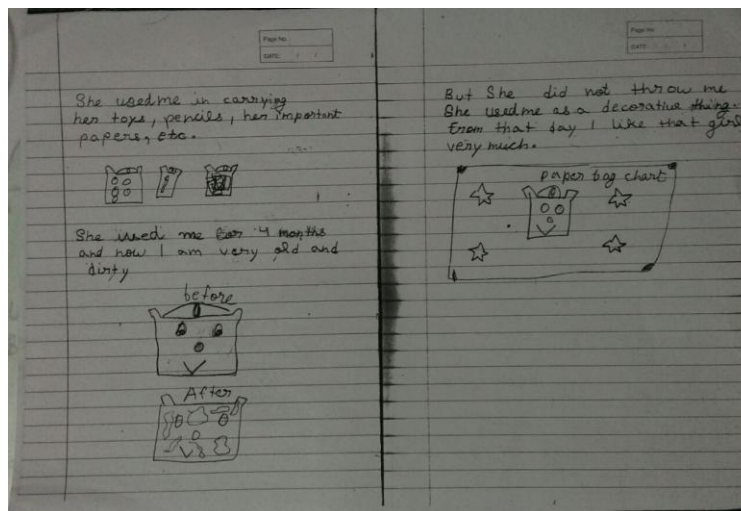
**Activity 1: Imaginary Writing**

Grade levels: 3<sup>rd</sup> and 4<sup>th</sup>

Objective: To suggest ways of management of waste (like reduce, reuse, recycle or recover) in daily lives.

The students were asked to imagine that they were a paper bag. Instead of being thrown away, they have been reused and/or recycled by different people. They had to write the story of their life with the help of drawing pictures. This activity helped the learners to express their ideas related to methods of

waste management in an interesting manner. One of those children could describe her own ideas creatively. She made an entry in the diary as “That time I was very scared because I thought that after using me (paper bag) she will throw me in the landfill.... She used me for four months and now I am very old and dirty. But she did not throw me. She used me as a decorative thing. From that day I like that girl very much.” Moreover she drew illustrations to trace the journey of a paper bag and showed how it is reused in various forms. Such kinds of varied creative expressions were obtained from children that reflected their awareness and concern for waste management.



(Figure 2- Sample of creative expression by a child of class 3<sup>rd</sup>)

#### Activity 2: Writing letter to gardener

Grade levels: 4<sup>th</sup>

Objective: To identify the activities (or practices) that may lead to waste mismanagement.

To suggest ways to manage biodegradable waste around us.

The students had to write a letter to the gardener of their school. The question read as: A Matter of Concern- 'Now, you have got to know much interesting information related to waste management. Write a letter to the gardener or helper of your school and suggest him or her ways to manage garbage of garden like leaves. Also, tell what he or she should not do to avoid polluting environment.' Addressing someone through letter and providing useful information enabled students to assume the responsibility of 'managing waste produced at a particular place close to them' and paved the way for participatory learning. The letters written by them pointed out that they could make use of their knowledge of different concepts like 'how to manage biodegradable waste', 'waste disposal' and 'impact of waste mismanagement on various elements of environment' etc. At the same time their writings highlighted the inter-linkages drawn among them. The students had a sense of audience as one of them wrote-

'You don't have to burn the leaves. Dig a pit. Put the leaves in it. Then cover it with soil....You don't have to burn the garbage.' Another child wrote- 'These wastes (like leaves, papers and flower petals in our school garden) can be kept around the trees along with some mud and water. After sometime, these will decompose and give nutrients to our plants for fast growth.'

#### Activity 3: Making Best out of Waste (Reusing waste)

Grade levels: 4<sup>th</sup> and 5<sup>th</sup>

Objective: To improvise with local materials and to reuse them.

Children were asked to create best out of waste articles they can gather from their household and school premises. Then they had to present them as an exhibition to spread awareness among rest of the school children. Children made and improvised with locally available waste materials (mostly non-biodegradable waste). To name a few, they made pen stands, pencil holders, flower vase, photo frame, puppets, paper lamp shade, letter box etc. This activity achieved the desired learning as children gave intelligent answers based on their keen observations and experiences and their knowledge of the

concept of 'reuse as a way of Waste Management'. It was heartening for the author to note that the students could suggest concrete ways to reuse the materials.

Along with making creative craft items, they could give examples of reusing materials at homes. For instance, children shared that sauce or pickle jars could be reused for storing rice, flour or pulses, while old newspapers could be pasted on windows to protect from the sunlight and to wrap things. Further, a girl suggested that one could use plastic beads for making an abacus for oneself. During their exhibition and presentation, the sense of achievement and happiness that they felt could be seen on their faces. One of the children even mentioned, "Ma'am, our class felt excited because we shared useful information with big (elder) children." when a follow up discussion was taken. Also, this particular task helped in

developing their skill and ability of experimentation like avoiding wastage of materials, trying to reuse and recycle and creating new things on their own.

Activity 4: Discussion on newspaper articles on e-waste

Grade levels: 5<sup>th</sup>

Objective: To identify hazardous e-waste in their local environment.

To analyze the impacts of e-waste on environment through reported news articles.

To appreciate the role of government in managing e-waste.

Some news reports and posters from various newspapers were given to the children for reading in smaller groups. These were selected on the basis of contextual relevance of the issue concerned. Example of such news report is shown below in Figure-3.



(Figure 3- News report on e- waste management)

After reading session, the discussion was built around following aspects-

- Types of e-waste generated in their households
- Common ways of e-waste disposal used by people
- Impacts of e-waste on environment
- Health hazards to the people who collect and dismantle e-waste
- Measures that can be taken to manage e-waste by citizens at individual level
- Role of Government policies and NGOs working for the cause of e-waste management

Students showed active participation and reflected on different aspects that were touched upon during discussion. They were able to question the ways of dumping e-waste by people without thinking of its consequences on environment. They showed their concerns towards adverse impacts on environment and health of living beings.

**Major Learnings**

The nature of students' work and field notes as emerged out of teachers' observations during the interventions revealed positive outcomes regarding integration of ESD at

primary grades. Data revealed that the varied kind of activities under the theme 'Waste Management' allowed children to express their knowledge, skills and values appropriate for ESD in different styles and formats. Children were found to be actively involved in the tasks performed during whole unit and learning went beyond the factual knowledge of different environmental issues. Students were able to take initiatives, plan out investigations and think of suitable actions in context of the core issues taken up in the theme. It can be said that the intervention allowed future citizens of our nation to develop practical skills such as the ability to think critically and the capacity to move from 'awareness' to 'knowledge' to 'action'. The findings and insights gained during this action research provided useful understanding for redesigning of Environmental Studies curriculum at the author's school. More such units were designed and incorporated in EVS curriculum, such as- water crisis, our forests, fuels,

managing food resources, and so on.

### Conclusions

ESD is challenging to implement in a conventional school curriculum with number of limitations. Engaging traditional disciplines in a trans- disciplinary framework with an emphasis on multiple perspectives requires creative and enthusiastic teachers who are comfortable and skilled at teaching across disciplines. It is perhaps due to the teachers' inclination towards disciplinary knowledge of 'Science' or 'Social Science' which was leading to ignorance of the component of social equity in teaching of EVS for goals of sustainable development. The teacher (or researcher) could feel the difference in her classrooms when ESD pedagogies were employed through her constant efforts and negotiations at the level of curriculum planning. This small classroom based action research enabled the author to relook at the given school curriculum and adapt it suitably to educate young minds for sustainable development.

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