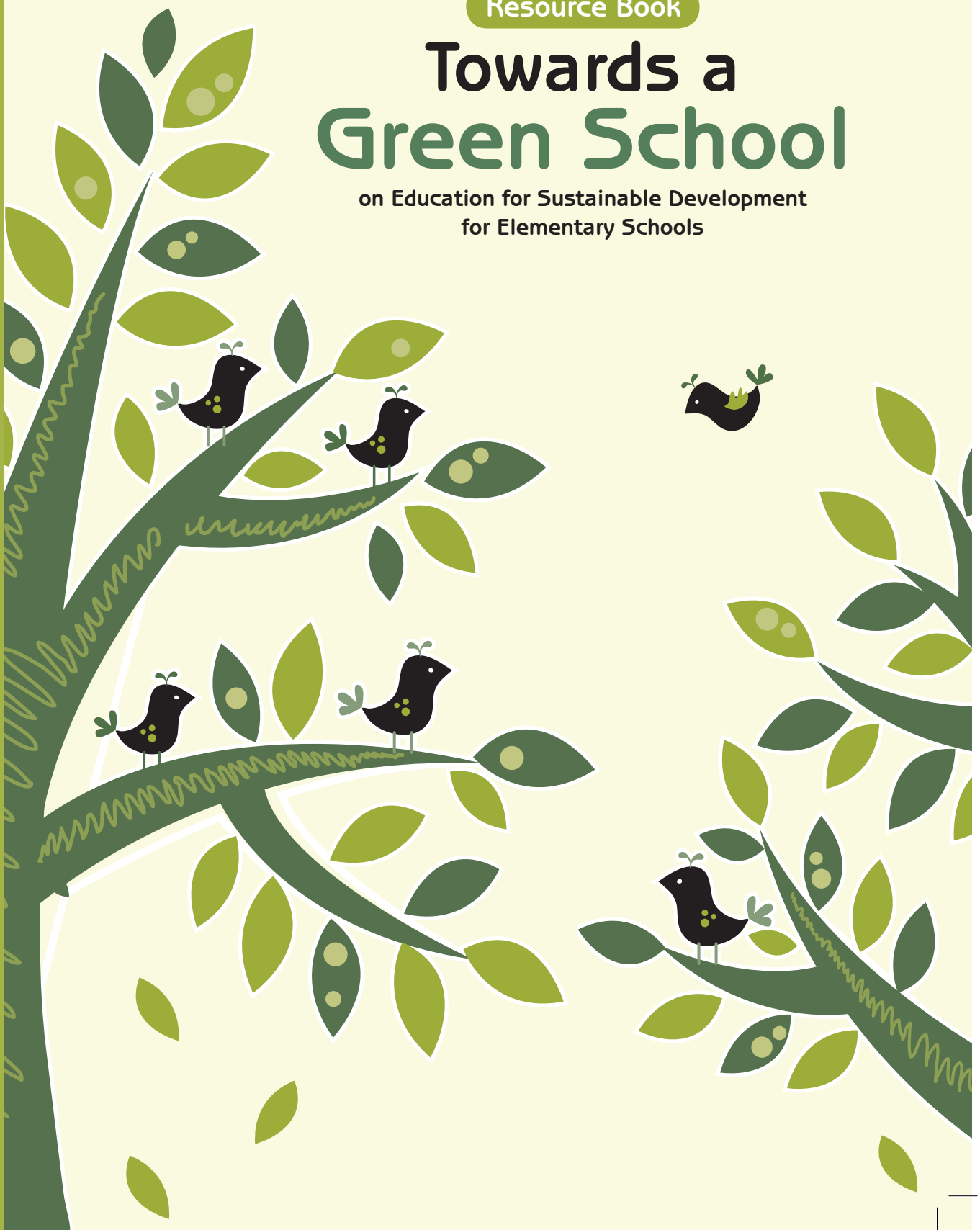
Resource Book

Towards a Green School

on Education for Sustainable Development
for Elementary Schools



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NCERT

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

Foreword

The Decade of Education for Sustainable Development (DESD) launched by the United Nations in 2005 aimed at integrating the principles, values and practices for nurturing sustainable development. This required infusing appropriate processes in the school curricula. Article 51A of the Constitution has made it a 'fundamental duty of every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife'. Various education commissions, besides the National Policy on Education-1986 and Programme of Action-1992, have reiterated the growing need to address the environmental concerns.

Keeping the wider perspective of the environment and as per the UNDESD-2005, the curriculum development at the national level took cognizance and Education for Sustainable Development (ESD) was the core of the curriculum for each subject area developed by NCERT. The concerns raised in the RTE Act-2009 for all round development of children through education are also in line with the objectives of ESD.

Continuing with the endeavours by NCERT in this direction, the present document is a step towards creating awareness about ESD among different stakeholders in school education. It focuses on how ESD should not be treated as a separate activity, but needs to be dealt with holistically, being integral to the school curriculum, teaching-learning practices and school and home environments of each learner. Being a joint responsibility of one and all, it aims to involve the entire school community (children, teachers, headteachers, support staff) and the neighbourhood to work together through participatory, practical and collaborative approaches. It will also help all stakeholders of school education to realise that it does not require additional physical or human resources to understand and practise the principles of sustainable development within the available resources.

We hope that this Resource Book, very innovatively created by Dr Kavita Sharma, Associate Professor, from the Department of Elementary Education, NIE, NCERT and her colleagues will be useful for teachers, headteachers and all other stakeholders of school education. Any comments or suggestions for its improvement may be sent to dee.ncert@nic.in.

B.K. Tripathi
Director
National Council of Educational
Research and Training

New Delhi
September 2015

Preface

As humanity endeavours towards sustainable development, educating each individual on mother earth to take good care of the environment that nurtures us, is the most significant concern of the new millennium. In view of this global concern the United Nations launched the Decade of Education for Sustainable Development (DESD) in 2005 which required the concerns on sustainable development to be inculcated through education. As per the National Policy on Education-1986 and the Programme of Action-1992, environmental education has been a priority area in all the curriculum development programmes at the national level and various initiatives were taken up to address its concerns through curricular and co-curricular interventions. The landmark judgement of the Supreme Court of India (2002) made it obligatory for the States and UTs to comply with the implementation of environmental aspects through education, wherein the strategies of infusion, integration or making it as a separate subject area were adopted by the States.

The National Curriculum Framework–2005 was in consonance with the principles of DESD–2005 and it recommended adopting a 'whole school' approach where the students' experiences are not confined to the classroom but are part of the learning in the school and the community. The learning is linked to real life and activities require application of knowledge and skills in real situations. Such an education places issues and concerns on sustainability at the heart of the 'whole school' policy planning and practice. However, in actual practice, a wide gap exists between planning and its implementation on the ground. Within a school, it gets limited to a subject-centric approach for giving a fair amount of information to children to get through the examination, for which the responsibility lies exclusively with teachers teaching environmental component.

The new paradigm of education as proposed by the Position Paper on National Focus Group on Habitat and Learning (2006), NCERT, advises to expose children to the real world to enable them to analyse, evaluate and draw inferences about problems and concerns related to the environment and take suitable action to facilitate and participate in the pursuit of sustainable development. The Whole School Development Plan (WSDP) under SSA envisions child-friendly schools, responsive

towards the needs of all children by ensuring safe, secure, clean and hygienic environment for all children with optimum resource utilisation through environmentally sustainable practices.

In view of the enormous physical, social and cultural diversity across the country and rationalising these in the Indian perspective, NCERT has developed a Resource Book on ESD for Elementary Schools which includes innovative ideas and strategies for achieving the objectives of ESD in the light of SSA and the RTE Act, 2009.

The Resource Book suggests ways to transform the schools through practices of ESD in order to enable the children to grow in an environment that helps imbibe awareness, sensitivity and the necessary skills to be environmentally responsible citizens of mother earth. It was sent to the MHRD and Ministry of Environment and Forest (MoEF) for dissemination to different organisations. It was also shared widely with all States/UTs across the country in both face-to-face as well as through distance mode by uploading it on the NCERT website. The feedback and suggestions obtained were suitably incorporated.

The document has four sections wherein the first section will help you to get an insight of ESD, 'Greening' and 'whole school' approach as per national and international outlook. The second section helps you understand ESD in the context of curriculum, whereas the third section gives different strategies to transact a Green Curriculum. It includes various case studies with examples of schools in reality that have done a lot in demonstrating practices for ESD. Right from the classroom to school corridors and other open spaces, it includes examples of learning opportunities provided by common school activities in and beyond school to build child-friendly and environmentally meaningful ethos with a physically safe, psychologically enabling and emotionally secure environment for children.

I hope that this Resource Book will be helpful to each stakeholder in school education to understand his/her role and contribute significantly and meaningfully towards education of the children of this country. Any suggestions for its improvement will be highly appreciated.

Kavita Sharma
Associate Professor
DEE, NCERT

Acknowledgements

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Acronyms

BaLA	Building as Learning Aid
CCHs	Cook-cum-Helpers
DDS	Deccan Development Society
DESD	Decade of Education for Sustainable Development
EE	Environmental Education
ESD	Education for Sustainable Development
EVS	Environmental Studies
GOI	Government of India
IAP	Indoor Air Pollution
ICT	Information and Communication Technology
IQ	Intelligence Quotient
LED	Light Emission Diode
LPG	Liquified Petroleum Gas
MDM	Mid Day Meal
MHRD	Ministry of Human Resource Development
NCERT	National Council of Educational Research and Training
NCF	National Curriculum Framework
NPE	National Policy on Education
NPNSPE	National Programme of Nutritional Support to Primary Education
POA	Programme of Action
SMCs	School Management Committees
SSA	*Sarva Shiksha Abhiyan*
TLM	Teaching Learning Natural
UN	United Nations
UNESCO	The United Nations Educational, Scientific and Cultural Organisation
VEC	Village Education Committee
WSSD	World Summit on Sustainable Development
WHO	World Health Organisation
WSDP	Whole School Development Plan

Contents

Navigating through this Resource Book

What do you understand by the term 'Green'?

What, according to you, is a Green School?

What are the different aspects that need Greening?

How can you make your school Green?

Before going through this Resource Book pick up a paper and a pen and write down your answers to the above. If you wish to add any other questions regarding a Green School, please do so. Fold this piece of paper and keep it at a safe place. You may reflect on it after you have gone through this manual, an endeavour to help you towards Greening of your school. It will facilitate you to open your minds to innovation and build your capacity to plan, create and introduce green practices in your teaching-learning, by engaging children in learning not only meaningfully but also by nurturing their curiosity and interest better.

This document is divided into four sections. Section I will introduce you to a Green School, its history, background and core aspects that promote Greening in the context of *Sarva Shiksha Abhiyan* (SSA) and the RTE Act, 2009. Section II will help you understand the intricacies of a Green Curriculum and Section III will enable you to enhance your abilities to discharge your duties as a Green Teacher/Practitioner irrespective of your subject background in an environmentally sustainable manner. It would help you to transact the Green Curriculum, leading to holistic learning and overall development of children while addressing sustainability concerns.

In a country like India where there is a wide gap between the rich and the poor, hunger continues to be a plaguing concern and people continue to subsist in extreme conditions of poverty. As a result, arranging even one meal a day is a challenge for many. It is the responsibility of the

government to ensure that no child is deprived of food which is the basic necessity of every living being. In this direction, Mid Day Meal (MDM) is a large-scale government initiative being implemented across all government and government-aided schools all over India, according to which students up to the elementary level are to be provided hot and nutritious meals in the school. The programme is founded on the idea that sound health is a precursor to providing education, so the State also has to take on responsibility for the all round development of children.

For its sheer significance, expanse and potentiality, possibilities of MDM as a teaching-learning and sensitivity-building opportunity has been explored intensively in 'Greening through MDM' as a separate unit. The situation in which all children sit down to eat together is unique because it provides an opportunity to engage them with many issues. These issues could be related to resource conservation (nature of fuels, cooking practices), pollution (type of *chullahs*), socio-cultural exchanges (types of food, taste), health, cooking technologies, etc. The fact that such a stimulating opportunity is uniformly available in such a large number of schools should encourage us to tap its academic potential and weave different conceptual understandings and sensitivities around it. This Resource Book is an attempt in this direction.

After going through the first three sections, you will be able to appreciate, be aware and be ready to adopt the processes and steps that need to be undertaken to transform your schools into a Green School. Section IV will help you to reflect and assess how Green is your school as per the broad indicators provided. You may also be able to build a profile of your own school to use it as a reference for improvement in the subsequent years. Some schools that have been successful in introducing Education for Sustainable Development (ESD) and in demonstrating such practices have been elicited in this section.

During the regional workshops conducted for sharing this Resource Book with States and UTs across the country, the following queries were raised. These could be your queries too. An attempt has been made to address them as follows:

Why this Resource Book?

Despite the policy emphasis on infusion approach of Environmental component at all levels of schooling and higher education, the area remains neglected or is at best given a symbolic treatment. However, the notion of 'sustainable development' envisages that it be dealt holistically on a cross-curricular manner through a whole-school approach. This Resource Book is an attempt in this direction.

Who can use it?

Education for Sustainable Development demands a Whole School Approach wherein participation of each stakeholder is crucial to the accomplishment of the desired goals and objectives of ESD. The Resource Book is intended to build the capacity of all stakeholders—teachers, students, staff, Head Teacher/Principal, School Management Committees, Cluster/Block/District/State Resource Coordinators, teacher trainers and the community.

How to use it?

This Resource Book is an examplar material providing ideas to help you initiate the process of Greening your schools. The suggested activities need to be adopted/adapted/contextualised as per your local situations. So feel free to add, elaborate, modify, or leave out ideas and suggestions listed here.

Are any additional resources needed?

No additinal financial and human resources are required for implementing this approach. Instead, the existing resources can be meaningfully used and can even help generate new resources.

Will it be additional activity besides the existing curriculum?

This Resource Book will help transact the curriculum and accomplish

the desired objectives of different curricular areas providing hands-on experience to children both inside and outside the classroom in real life situations. The activities are not in addition to the existing curriculum and are not to be carried in isolation, but these need to be made an integral part of the teaching-learning practices in School.

Is it the responsibility of any one particular teacher or component of a specific subject?

As we know that the environmental component is to be infused in all curricular areas, therefore, the suggested activities and approach need to be an integral component of all subjects and school activities and all teachers need to take appropriate measures to do so.

Is the Resource Book State or region specific?

The Resource material is not based on the syllabi and textbooks of any particular State/UT or any organisation but can be used by the stakeholders in schools across all regions of the country with appropriate contextualisation.

How will it contribute towards implemantation of the RTE Act– 2009?

The goals and objectives of ESD are in consonance with the RTE Act which aims at the all round development of children, i.e. developing their physical and mental potentialities to the fullest extent through education.

How can we evaluate children on sustainalbility concerns?

Evaluation of children's awareness, sensitivity and skills on sustainability concerns need to be observed holistically during the teaching-learning process, i.e. while they are involved in various activities. These may be reported qualitatively.

There are captions like To Do, Activity, Assignment, Projects. Are these for teachers or students?

This Resource Book is developed to help the schools and its students understand, imbibe and practice environmentally sustainable behaviour. All the activities are not to be carried out by students, however the enabling environment needs to be created by the teachers. To carry out the activities help teachers design appropiate learning situations. Activities and projects are suggested learning situations for students to carry out and work towards accomplishing the ESD objectives.

CHAPTER 1

Green School
An Introduction

How do you describe an event related to your school? You will obviously start with "In 'My' school this happened....."

What importance do you give to the word 'My'?

What is your role in your school?

> Where the quality of life goes down for the environment, the quality of life goes down for humans.
>
> —George Holland

The word 'My' suggests a sense of belonging that an individual has for the school which makes one fully responsible for its well-being and upkeep.

A school is more than a physical structure, the timetable or even the textbooks. It comes to life only when the students come and start interacting with their peers, the teachers, the curricular material and the school environment (physical, natural and socio-cultural). Children are natural learners, but this capacity to learn can be undermined and sometimes destroyed in an unfavourable environment. They spend about six to seven hours a day in school for about twelve early years of their childhood. The environment of the school plays a significant role in the lives of the students.

Schools can play a pivotal role in the development of not only knowledge and understanding but also in creating the foundation of environmental ethics among the students. It is well known that skills, habits, attitudes and values are inculcated from the early years in an individual's life. All these efforts are augmented if we have a sense of belonging towards the school and its surroundings. This sense of belonging comes when one actively engages with the school in many ways.

The school environment, therefore, should encourage, support and nurture students' growing capacities as learners through its Green environment, curriculum and teaching-learning. This will allow them to connect with their surroundings and attend to their health and safety needs, besides motivating them to learn and imbibe a sense of belongingness, sensitivity towards the school, society and eventually our planet.

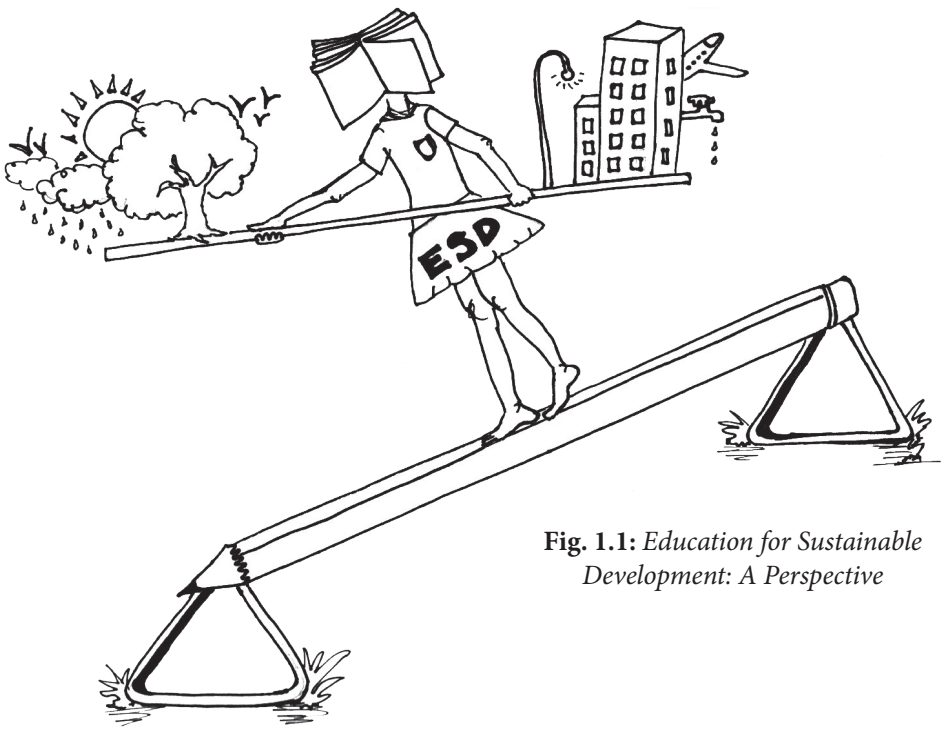
Does your school environment:

- offer appropriate opportunities, space and time for students to gather first-hand experience ?
- allow them to reflect on these experiences to make connections and inter-linkages?
- help students develop appropriate attitudes and behaviour?
- equip them to take positive actions for the environment?
- provide opportunities to take their experiences and learning from school to home and community?

Environmental issues and concerns can be effectively addressed when all efforts of the staff and students are geared towards adopting environmentally sustainable principles at all levels, from planning and decision-making to their execution in the school's functioning as a part of the daily routine, i.e. a Green School. You might be curious to know what that means.

1.1 Green School: The Concept and Background

The concept of Green School was introduced in Europe in the 1990s while the Rio Earth Summit of 1992 took cognizance of the need to take action in "every area in which human impacts on the environment". The World Summit on Sustainable Development (WSSD) in Johannesburg in 2002 catalysed the efforts to bring about a shift in 'educating about the environment' to 'educating for sustainability'. This shift reflected the international climate of thinking about Sustainable Development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". It was felt that there was an urgent need for everyone to be aware that as we continue to misuse and over exploit our natural resources in our quest for development, the future of humanity and our planet is at stake. In view of the crisis, there was an urgency to develop a deeper understanding to meet the environmental challenges that we face today. This can be done by enabling children to use appropriate skills to take necessary action on environmental, economic and social issues which are intertwined and need not be viewed in isolation. In other words, sustainable development needs to address all these in pursuit of a better quality of life.



Mansi Tejpal (2014)
The Mother International School

Fig. 1.1: *Education for Sustainable Development: A Perspective*

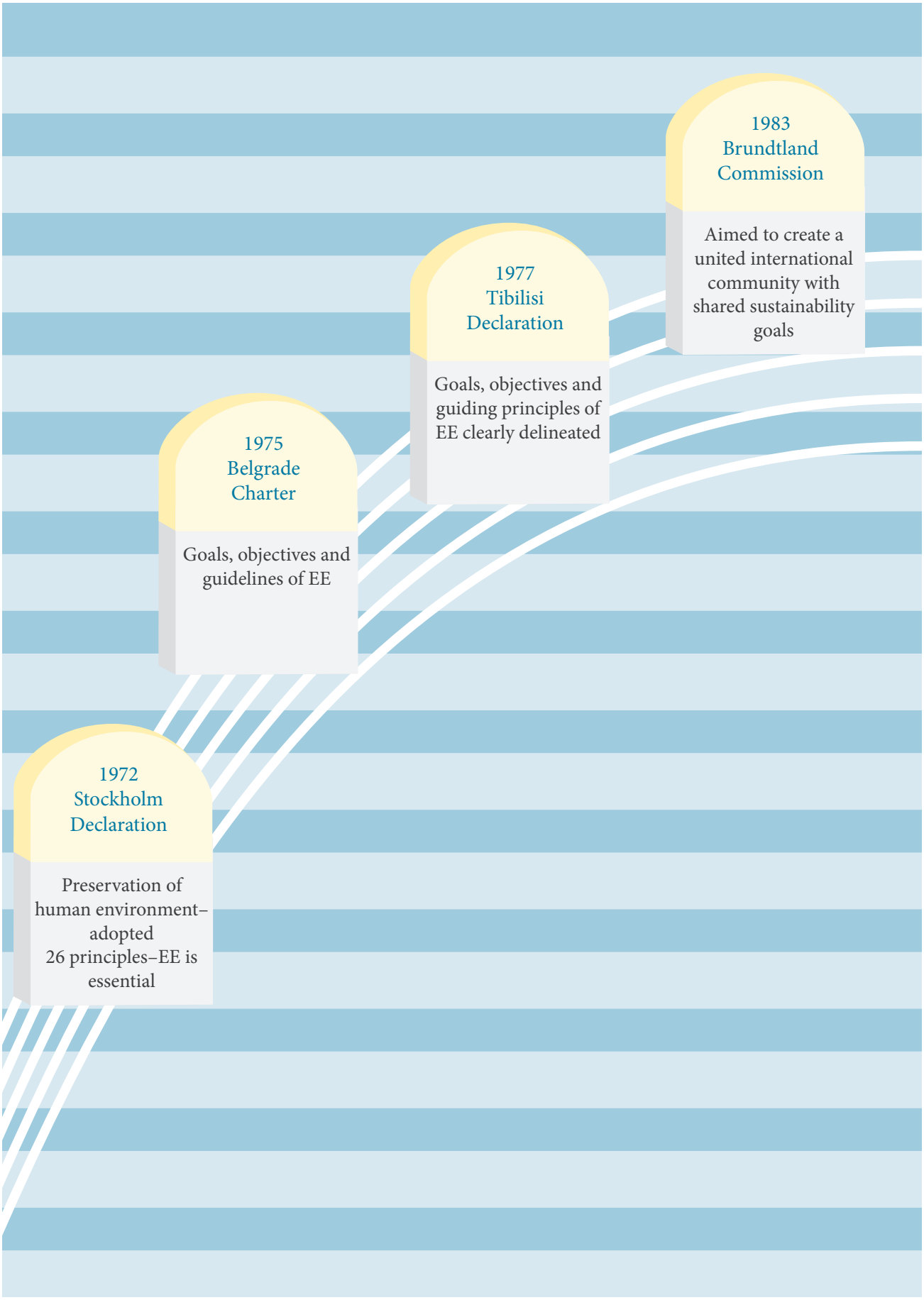
Recognising education as a critical means to achieve sustainability, the United Nations launched the 'Decade of Education for Sustainable Development (DESD)' in 2005. The goal of the Decade is to integrate the principles, values and practices of Sustainable Development into all aspects of education and learning in order to encourage behaviour that will create a more sustainable future in terms of environmental integrity, economic viability and a just society for present and future generations (UNESCO–2005). A key objective of the UNDESD is to foster better quality teaching and learning for ESD. This calls for a reorientation of the thinking and practice of formal education, including curriculum's teaching-learning approaches and assessment.

Such an education also goes beyond the formal curriculum to a holistic, i.e. 'whole school approach' where the students' experiences are not confined to the classroom but are part of the learning in the school and the community. The learning is linked to real life and activities require application of knowledge and skills in real situations. Such an education requires leadership that places sustainability at the heart of the whole school policy, planning and practice, and that engenders democratic and participatory decision-making process.

1.2 Green Schools and ESD

The Green School is visualised as a school guided by the principles of environmental sustainability. It seeks to create a conducive environment to fully utilise all resources and opportunities inside and outside the school to sensitise teachers and students for environmental sustainability through active involvement of the community. This is not a one-time phenomenon but demands on-going, continuous and synergistic efforts of all stakeholders towards improving the environment of the school and its surroundings.

In such an environment students' learning experiences are no longer confined to the classroom, but extend outside the classroom in the field as well. These sites are resources and used as opportunities for students


1983
Brundtland
Commission
Aimed to create a united international community with shared sustainability goals
1977
Tibilisi
Declaration
Goals, objectives and guiding principles of EE clearly delineated
1975
Belgrade
Charter
Goals, objectives and guidelines of EE
1972
Stockholm
Declaration
Preservation of human environment–adopted 26 principles–EE is essential

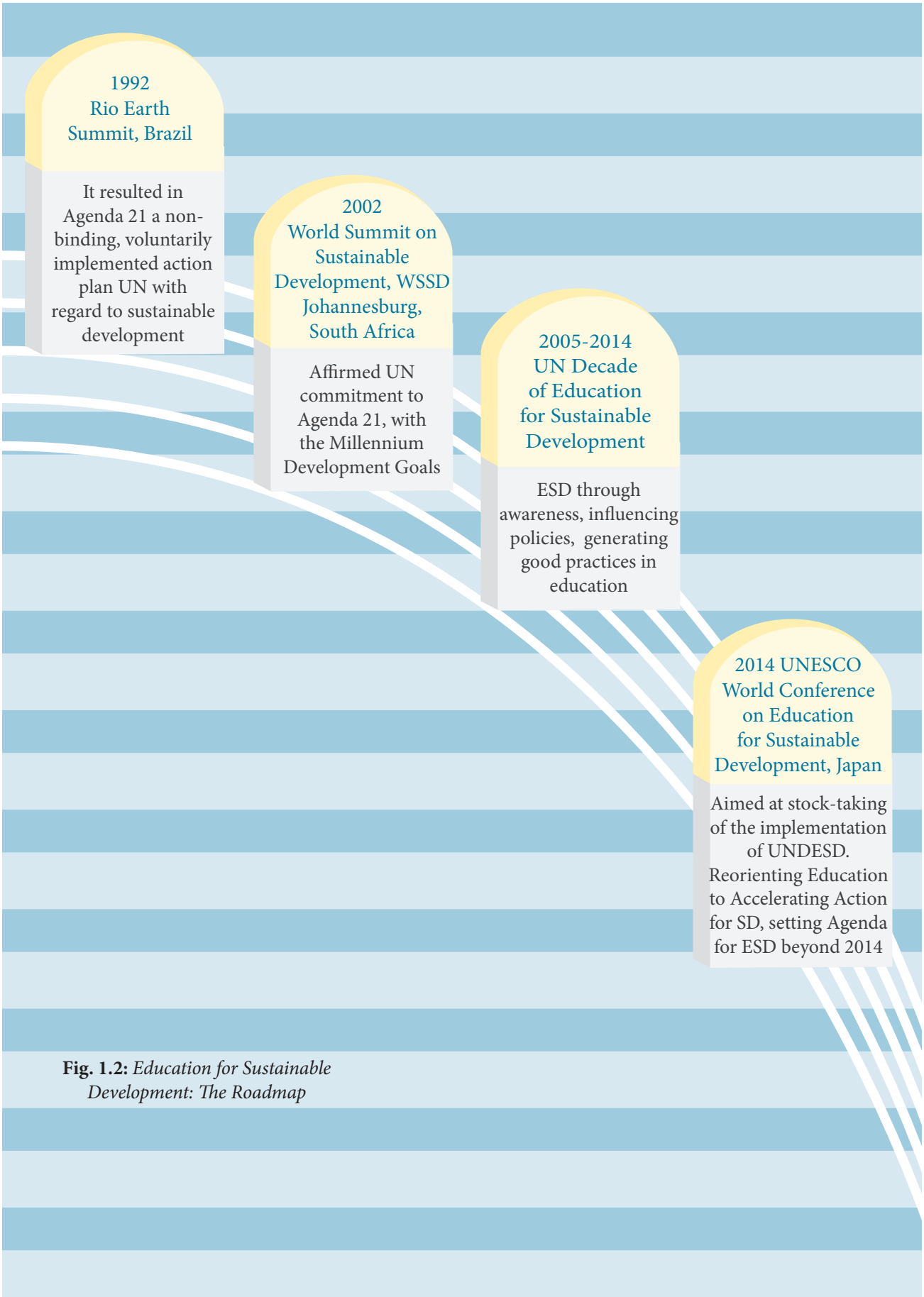


Fig. 1.2: *Education for Sustainable Development: The Roadmap*

to engage in direct and first-hand experiences. These help students to consolidate and apply knowledge, gain understanding of environmental processes, inter-relationships and issues, acquire a number of life skills and help foster attitudes, values and sensitivity towards environmental concerns. Such an education is holistic in nature and ensures the overall development of the students as it is integrated and embedded across all aspects of the school, encompassing formal and informal learning experiences inside and outside the school boundary.

Did You Know

A "Green School" is identified with those elements and practices that inculcate environmental sensitivity and promote environmental sustainability through various environment-friendly means that encourage judicious use of resources. It also caters to the physical, mental and emotional needs of a child by ensuring a school environment that is physically safe, emotionally secure and psychologically enabling.

Education for Sustainable Development (ESD): The Indian Context

Environmental consciousness has been a major theme of global discussions and deliberations. It is accepted that consciousness about the environment needs to prevail as a crucial imperative.

In today's context, the first major step in India to integrate environment and development was the establishment of National Council of Environmental Planning and Coordination, after the historic Conference on Human Environment, 1972, held at Stockholm in 1972. Thereafter, the Department for Environment was set up and converted into a full-fledged Ministry. Various enforceable and effective laws and regulations were made from 1972 onwards to provide the legal framework for environmental protection. The landmark National Forest Policy of 1988 was developed.

Along with this, the education system in India included efforts ranging from Mahatma Gandhi's Basic Education and recommendations by the Education Commission (1964-66) and the National Policy on Education, 1986 (including Programme of Action, POA–1992) emphasising on the need of addressing and including environmental concerns at all levels of schooling. The National Policy states 'There is a paramount need to create a consciousness of the environment. It must permeate all ages and sections of society, beginning with the child. Environmental

consciousness should inform teaching in schools and colleges. This aspect will be integrated in the entire educational process.' Consequently, Environmental Education (EE) has been one of the priority areas of concern in all the curriculum development programmes at the NCERT (1975, 1988, 2000 and 2005). The Supreme Court of India in its historic judgement of 18 December 2003 also directed that EE should be an integral and compulsory part of the school curriculum from classes I to XII.

National Curriculum Framework–2005 endorsed the infused and integrated approach to EE laying great emphasis on the habitat of students and its relation with learning. To quote from it "…today formal education has largely become alienated from the habitat of the students. But the environmental degradation proceeds at an unprecedented pace. We are beginning to realise the importance of taking good care of our habitat. Humankind must therefore make an attempt to comprehend its roots, to re-establish links with its habitat, and to understand and take good care of it. In substance and spirit, then the theme, 'Habitat and Learning' is equivalent to EE".

Did You Know

The Indian civilisation has had a strong connect with the environment since ancient times. As per our ancient scriptures, this cosmic world is composed of five basic elements khiti (earth), apah (water), teja (light/heat), marut (air) and vyom (space). These elements have been integral to our cultural practices and heritage. Societies and communities in the past were sensitive about nature and adopted environment-friendly conservation practices. The Indus Valley Civilisation that flourished about 5000 years ago, along the banks of the river Indus and other parts of western and northern India, had one of the most sophisticated urban water supply and sewage systems in the world. Conservation of water and a strong bond with nature continued to be way of life across different periods in India and the water harvesting systems of Baolis and Bawadis and the environment-friendly architecture are good examples of that.

However, as of now, we have not succeeded much to put this into practice. The reason may be as it requires a multifaceted and multipronged action with collaborated efforts of all stakeholders to generate a genuine concern that may lead to effective action for conserving and further improving the environment. In reality, at the school level the responsibility for

this lies exclusively with teachers teaching environmental component, thus limiting EE to a subject-centric level for giving a fair amount of information to children to get through the examination and little attention is paid to the practicality of such knowledge. Greater harm is being done when children are burdened with routine type projects which do not help them acquire the relevant skills and the desired attitude. The teachers are unable to plan in the context of the students' environment and instead look towards a Central/State boards to provide them with the list and procedure for carrying out such projects with them. Further, as part of their examination when it is made mandatory for them to submit these projects, students spend exorbitant money and outsource them to obtain decorative pieces of art in order to gain good marks.

In a nutshell, one may conclude that rigid curricula, absence of contextualised sources of information and over-emphasis on cognitive achievement in examination critically affect and limit the role of schools. These are barriers to comprehensive development of students (including physical and psycho-social besides cognitive) and inculcating a healthy attitude and positive concern towards environment and thus, addressing the issues related to it.

Did You Know

With the enforcement of the RTE Act, 2009, it is all the more important to introduce the educational practices that cater to the Constitutional values (related to social and natural environments) that help develop an overall personality of a child by nurturing her physical and mental abilities to the fullest extent without fear and anxiety.

Global awareness of environmental concerns has resulted in a demand for addressing these issues without adding to the curricular load. This requires action-oriented curriculum and syllabi that would proceed from acquiring knowledge to feeling concerned to developing environment-friendly habits from an early age.

The infused and integrated approach would aim at generating among young learners an awareness of and sensitivity to the environment in a holistic manner and the problems associated with it. It would also equip the future custodians of the earth with the requisite knowledge of the total environment, both natural and social, the problems associated with it and the necessary skills for solving these in a positive and sustainable manner.

The processes and strategies suggested in the Green School approach would help develop positive attitudes, social values and strong concern for sustainable development and further improvement of the environment. While learners would appreciate local wisdom through traditions and customs, they would also discover their linkages with both national and global concerns. In effect, such an approach would prepare them to initiate and carry on positive practical initiative at the individual, the group and the community level.

1.3 Essential Aspects of Green School Environment

The 'greenness' of a school finds expression in various aspects of its environment.

The Green School has **clean, healthy, protective and green surroundings.** It also:

- promotes both the physical and the psycho-social health of learners and others in school;
- ensures a healthy (provision of health services such as nutritional supplementation and counselling) and hygienic (safe drinking water, neat and clean classrooms, playground and parks, etc.) and safe learning environment, with healthy practices (e.g. a school free of drugs, corporal punishment and harassment); and
- brings children closer to nature as far as possible and involves them in taking care of it.

It is **inclusive** as it:

- has infrastructure suited to the requirement of all children including those with special needs, to facilitate their learning;
- encourages respect for each others' rights, dignity and fosters equality;
- does not exclude, discriminate, or stereotype on the basis of differences in caste, creed, gender, ethnicity, religion and abilities; and
- respects and responds to diversity by meeting the differing circumstances and needs of children (e.g. based on gender, social background, ethnicity and ability level).

It is **effective for learning** as it:

- promotes developmentally appropriate teaching and learning processes and encourages cooperative and democratic learning; and
- provides appropriate environment and opportunities (content, materials and resources) to the students.

It helps to **involve all stakeholders** as it:

- fosters symbiotic (mutually beneficial) relationship between the school and the stakeholders (children, families, School Management Committees (SMCs), Village Education Committees (VECs) and the community at large) by seeking their active involvement and ensuring their participation in different activities inside and outside the school.

Thus in brief, a Green School is 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.

To envisage such Green Schools turn into a reality, a paradigm shift is needed badly in the current education scenario.

The Position Paper of Focus Group on Habitat and Learning, 2006, also states that **"the changes envisioned in this new paradigm involve a major shift in our thinking of education as a process which cannot be achieved by merely changing the curriculum and textbooks."** To meet this huge challenge, the Focus Group of Habitat and Learning recommended to initiate a new thinking in six major areas namely curriculum revision, development of locale-specific material, making effective usage of ICT, empowering teachers and making school habitat as a role model.

This requires making the complete environment of the school healthier for students and staff which includes the Greening of not only the entire curriculum, teaching-learning material, learning processes but also the physical, social, natural and cultural environment of a school as well, so as to develop and strengthen an emotional bond with the environment and society in order to lead towards positive actions. In order to do so, partnership between the school, family and community, with the school playing a lead role in the whole process, needs to be established.

1.4 Sarva Shiksha Abhiyan and Green Schools

Sarva Shiksha Abhiyan

The *Sarva Shiksha Abhiyan* (SSA) aims at universalising access to elementary education in accordance with the vision of the RTE Act. Under this, the school is envisioned as inclusive and pedagogically rich sustainable ecosystem, safe and secure from hazards and maintaining cleanliness and hygiene, incorporating elements of Green architecture, optimum utilisation of resource and space through culturally and environmentally sustainable practices.

Guiding Principles for Whole School Development Plan (WSDP)

1. Infrastructure plan to follow the education plan.
2. Child-centred planning with overall development of child (physical, social, emotional and cognitive) addressed.
3. Responsive towards the needs of all children and the diversity they bring to the school.
4. Entire school space (indoor and outdoor) as learning continuum for a child and the teacher — this is to be recognised by all stakeholders while planning.
5. Developing the entire school space as resource for fun and learning activities using ideas of Building as Learning Aid (BaLA).
6. A safe, secure, clean and hygienic environment for all children.
7. Maximising the entire school as a resource — not just for children and teachers of that school but also for the community and neighbourhood schools.
8. Respectful towards the local context and traditions — wisdom, social and educational needs, culture, geology, climate, flora, fauna, etc.
9. Optimum resource utilisation and cost-effectiveness.
10. Integrates good practices in environmentally sustainable designs — to demonstrate and practise them.
11. Scope for future expansion.

Whereas the notion of 'Whole School Development' as envisaged in SSA pertains primarily to the optimum and appropriate usage of school space and resources, the present document takes this thread of thought forward to extend and use all learning opportunities afforded by a school meaningfully. For instance, it illustrates how daily school activities such as the morning assembly and even Mid Day Meal scheme can be utilised to help promote an enviromentally ethical ethos in the school.

CHAPTER 2

Understanding the Green School Curriculum

- Does the curriculum provide opportunities for children to look at environment holistically? Does it help make connections and inter-linkages across different stages, subjects, themes and concepts?
- Does it incorporate the scope to inculcate in our children the sensitivity and concern, along with the capability to carry out their responsibilities as individuals and as members of a larger community?
- Does it provide adequate scope to equip children with appropriate skills to take positive actions for improving the environment?

"Education for life, education through life, education throughout life"

– Mahatma Gandhi

Curriculum implies the learning experiences in totality that a child receives through structured and unstructured activities during the period the child is inside as well as outside the school. Moreover, the term 'curriculum' needs to be seen in qualitative rather than quantitative terms.

Does our curriculum provide ample opportunities for children to connect with their surroundings through first-hand and real life experiences?

A meaningful school curriculum helps children—

- in learning to learn;
- face the challenges of the new century;
- enhance their health and well-being;
- develop desired values, attitudes and habits that promote a sensitive and responsible behaviour;
- respect differences and celebrate diversity;
- develop skills to work for conservation of resources;
- sensitise against any form of violence and abuse; and
- seek community support for education.

A 'Green Curriculum' resonates with these ideas and suitably caters to them.

2.1 Towards Green Curriculum

The ultimate goal of Green curriculum is action, i.e. action to improve the environment, prevent its degradation and sustain its well-being. For children, direct engagement with their surroundings can be a powerful way of learning about the environment because it helps them realise that their actions can make a difference. The sense of action and achievement will not only motivate children, but also create a sense of empowerment — a feeling that "we can make a difference". You will be able to appreciate the aspects of Green Curriculum if we first try to identify the impediments in its planning and execution.

2.1.1 Major Gaps

Our school curricula provide a great deal of content and information about environmental concepts and issues. But there is still a gap between textbook knowledge and positive action. The curriculum and accordingly the teaching-learning process is governed by the examination system

which often tests information and labels the children based on grades/ marks. Gradually, this makes the children accustomed to mugging up information and reproducing it in the examination. Very often it is also observed that there is a gap between what is taught and what is practised. In order to provide learning experiences beyond awareness and information, the curriculum needs to have the scope to provide children with ample opportunities to connect with the real life. This would make the process of teaching-learning an enjoyable and meaningful experience it would also enable them to develop sensitivity and acquire relevant skills to address the real life environmental issues and problems. The 'Greening' of the curriculum is thus important.

This calls for a reorientation of the way in which teaching and learning takes place, i.e. from emphasising on mechanical reproduction of information to encouraging children to undergo different processes of learning, e.g. observing, critically thinking and examining and generating knowledge on their own. However, prior to this no compromise should be be made when it comes to ensuring their health, well-being and safety.

2.2 What is Greening of Curriculum?

Greening the curriculum refers to the infusion of environmental and sustainability perspectives into the school curriculum. The key is the perspective and the approach in which the contents are explored and learnt. Many people think of a Green Curriculum as 'nature studies'— a supplement to the educational system, an activity that largely takes place outside school and which relates only tangentially to the core curriculum.

The objective of environmental education had been limited to:

- Learning about the environment;
- Learning through the environment; and
- Learning for the environment.

Learning about the environment: Learning about the environment focuses mainly on acquisition of knowledge and understanding of our surroundings and related issues.

Learning through the environment: Learning through the environment refers to the processes of learning while being engaged with environment inside and outside the classroom. It focuses on learning process in addition to books and lectures, but by observation, hands-on experience, learning-by-doing, problem-solving through exposure to the environment and learning. The direct contact with the environment provides the relevant context for acquiring knowledge, skills, aesthetic appreciation and practical experience to learning.

Learning for the environment: Learning for the environment aims at the development of an informed response and responsibility towards the environment. It goes beyond the acquisition of skills and knowledge. It is concerned with the formation of attitudes that lead to personal environmental ethics which will involve people in actions for the conservation and preservation of our national, social and cultural heritage. However, the main goal of a Green Curriculum for children at all stages is to understand environmental science and related social issues to make well-reasoned and ethically appropriate environmental decisions across different areas — be it economy, technology, industry or our social and cultural life, for sustainable growth and development.

The sustainability perspectives, however, demand that we go much beyond and above and bring into focus the holistic nurturance of all living beings. The curriculum should naturally bring the learner closer to the world around her and appropriately respond to her socio-cultural context and emotional needs.

The following section will help us evolve an understanding of curriculum that resonates with the perspective of sustainable development.

2.3 Understanding Green Curriculum

For a curriculum to be 'Green' it must include the following aspects but may not be limited to these.

2.3.1 It Addresses Environmental Concerns Holistically

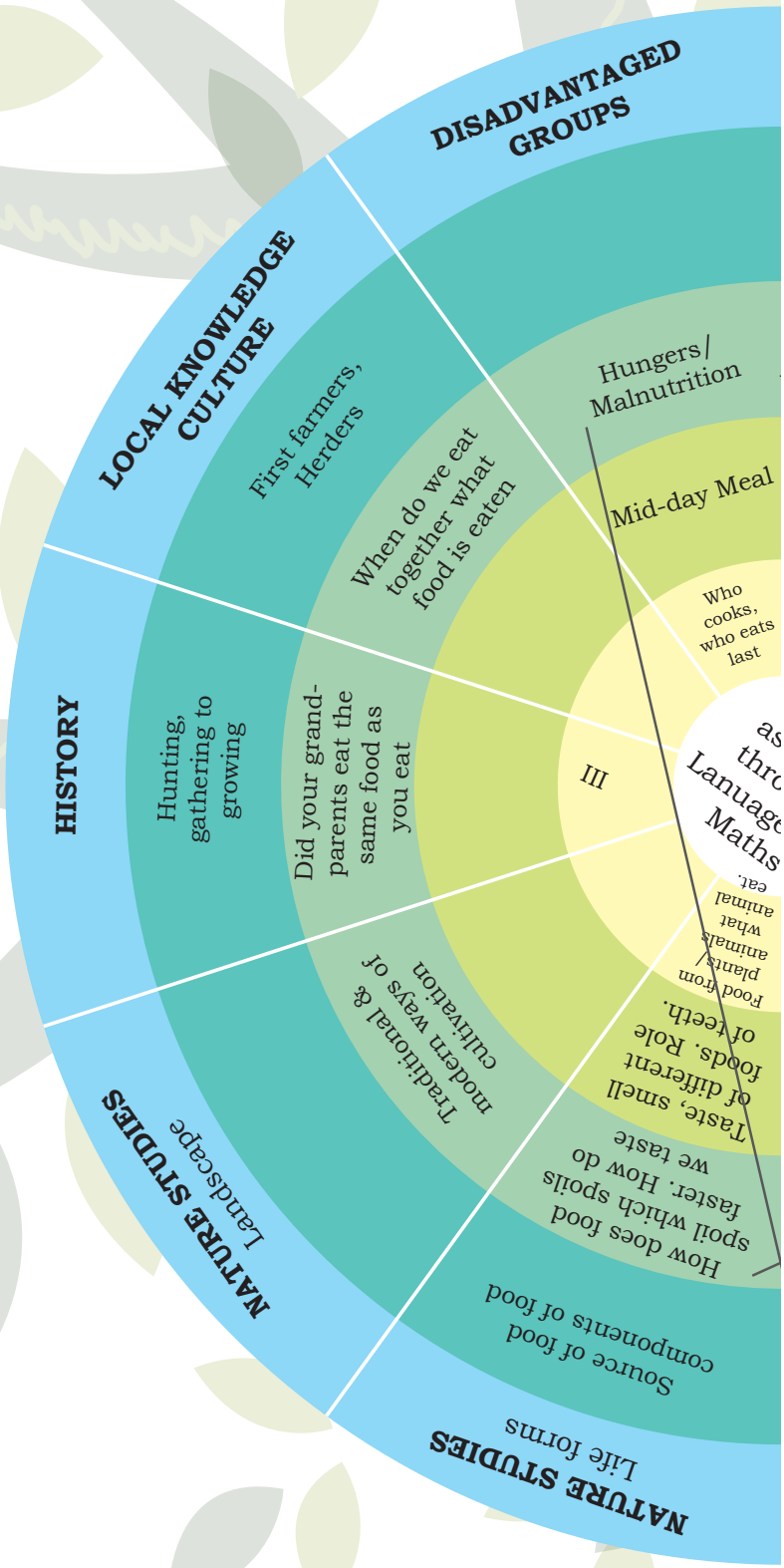
Environment is all-encompassing, multidisciplinary and dynamic. It has scientific, social, economic, political and technological dimensions and it is important that children visualise these holistically, instead of viewing these different aspects in segregation.

Being holistic, a Green Curriculum views environment as all that is around us and aims to give a better understanding of the way the world functions its operation as a total system, its alteration because of the actions of the human race and its consequences on the system and on us.

> It must also holistically address the following sustainability concerns; protection and conservation of natural resources, traditions, culture and heritage, safety and security, both physical and emotional assurance, health and sanitation issues, concern for equity and justice and interconnection between natural, social, physical and cultural environment.

This requires a teaching-learning approach where children are provided time and space to explore and discover the different facets of environment and facilitated to put together all the pieces to construct a larger picture.

Thus, a Green Curriculum is the concern of all children and all teachers. It is a perspective, concerned with all disciplines and therefore needs to permeate into all subjects at all stages. At the same time, introducing a Green Curriculum is not to add to the curricular burden by introducing new areas of study. In fact, it is an approach to enrich and energise the entire curriculum through infusion and integration. As we have seen environment is a composite of natural and human made surroundings (socio-cultural), it is important that children are sensitised to understanding the environment in this broad perspective. A Green Curriculum needs to break not only the watertight compartments of subjects but it also has to help connect the themes, concepts and topics within and across stages in a particular subject. This enables children learn and understand step-by-step, holistically about their own


DISADVANTAGED GROUPS
LOCAL KNOWLEDGE CULTURE
HISTORY
NATURE STUDIES
NATURE STUDIES
Life forms
Source of food
components of food
How does food spoil which spoils faster. How do we taste
Taste, smell of different foods. Role of teeth.
Food from plants/ animals what animal eat.
Landscape
Traditional & modern ways of cultivation
Hunting, gathering to growing
Did your grand-parents eat the same food as you eat
First farmers, Herders
When do we eat together what food is eaten
Hungers/ Malnutrition
Mid-day Meal
Who cooks, who eats last
III
as
thro
Languag
Maths

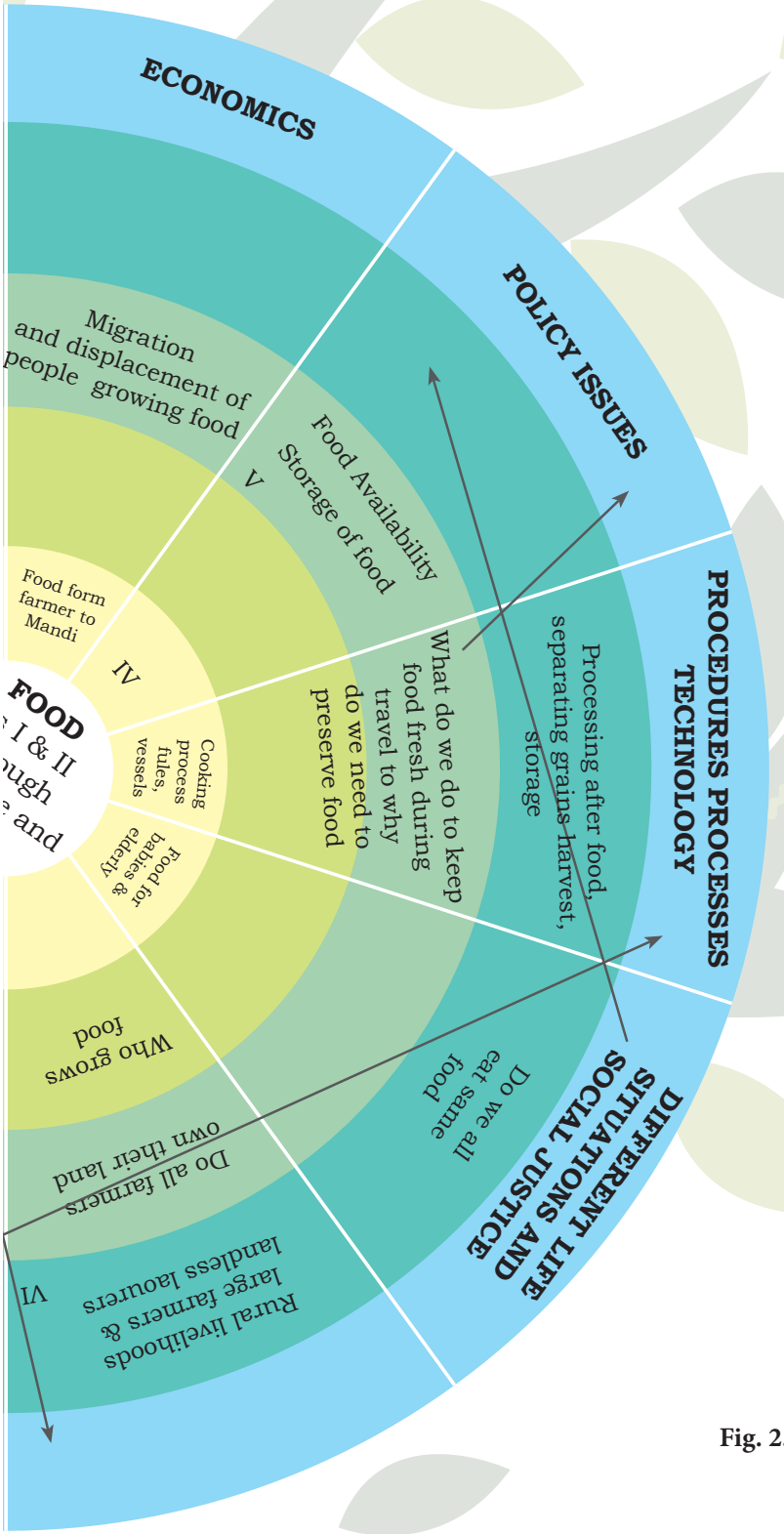


Fig. 2.1: *Syllabi of Different Classes*

environment. This includes the physical, biological, social and cultural dimensions and how we are affected by these. We need to appreciate that various aspects of environment can be addressed by taking up a central theme and weaving different understandings around it. This theme-based approach breaks down the traditional rigidity that looks at knowledge only through the lens of different subjects making it dull and unnatural.

The following Fig. 2.1 explains how questions/concepts/issues that are part of EVS syllabi at the Primary level actually pertain to different areas of knowledge of the environment.

To Do

- Review Fig. 2.1 in the context of the class that you teach.
- Identify a concept(s) in your subject. Design a few learning situations around this concept that would help address the concerns raised.
- The arrows drawn in the figure depict linkages between the concepts/issues in Classes III to V in the theme 'food'. Try to draw more linkages, e.g. in Class V, traditional and modern ways of cultivation can be linked to economics, policy issues, technology, etc. Think about it and draw a parallel.

The treatment of the theme of 'Food' through Classes III to V begins in Class III with 'cooking', 'eating in the family', about what we eat and what others eat, what animals eat, etc. (to respect the diversity in eating practices across regions, cultures and across age groups – traditionally taught as 'Science' topics). It then moves on in Class IV to how food is grown, what different plants they may have seen, how food reaches us, etc. (appreciation of different life situations such as those of farmers and protection of our natural resources such as soil and water, etc. taught as part of Social Studies). In Class V children discuss who grows it, the hardships farmers may face, while staying grounded to the reality of our own pangs of hunger or the plight of people who do not get food (Social Studies). In addition 'when food gets spoilt' explores spoilage and

preservation of food (while changes in food habits and the crops grown are analysed through the experiences of elders/grandparents, malnutrition, etc. for developing sensitivity towards different age groups, social deprivation and towards different aspects of health, hygiene, safety and security (touching upon cultural, geographic, economic and other social aspects). Also in Class V the theme 'food' is linked to water availability and rainfall in a region, various regional agricultural practices (such as Jhum cultivation in the North East) forest products, community eating, spoilage of food, eating practices and discrimination in families based on gender, malnutrition, food cooked on various occasions and festivals, etc. In doing so, children would be exposed to the local environmental issues and use indigenous knowledge to address those. This will help strengthen bonds between the children and the community.

Did You Know

With the enforcement of the RTE Act 2009, it is all the more important to introduce the educational practices that cater to the constitutional values (social and natural environmental) that help develop an overall personality of a child by nurturing her physical and mental abilities to the fullest extent in a fear and anxiety free environment.

2.3.2 It is Process-oriented

A process-oriented curriculum helps to structure and organise learning experiences for children to explore, understand and experience their environment, through which they 'construct' their knowledge, which would lead to development of attitudes, values, skills and habits that would last for life and inspire positive action.

The NCF–2005 emphasises that the curriculum transaction needs the pedagogy that gives primacy to children's experiences, their voices and their active participation. It underlines a preference for process-oriented in place of an outcome-oriented approach to the curriculum, laying emphasis on opportunities to question, enquire and reflect to arrive at a better understanding. Identifying problems and trying to understand

the causes and connections while seeking solutions help to develop critical life skills.

Reflect on the learning situations that you designed in the last section. What kind of process skills will be enhanced through these situations?

2.3.3 It Connects to Life Outside the School

The process of constructing knowledge is a continuous one. It goes on throughout life and well beyond the formal schooling period. Learning is gained not only from transmission of information, but primarily by interactions with the environment around — nature, people, things, places. Schools can play a pivotal role in supporting children to explore their environment and derive meaning from their interactions/ explorations. The process of engagement with real life situations would reveal the numerous dimensions and complexity of any issue. In doing so, children develop their own understanding of physical and human processes which shape the environment. These are the building blocks that lay the foundation of a life-long appreciation and sensitive concern for the quality of the environment.

Children learn by fitting new information together with what they already know to understand the unknown, i.e. it is easier for them to move from their immediate environment— self and family to a wider environment like community, society, nation and the world.

Look at the suggested activity below for children of Classes I and II.

> We share the earth not only with our fellow human beings, but with all the other creatures.
>
> —The Dalai Lama

Activity

Enlist the following things on the blackboard along with the cost of each.

Sweet box– Rs 40, diyas – Rs 10, chocolates– Rs 10, a pack of candles– Rs 10, fruits– Rs 20, crackers – Rs 30.

Now ask the children,

What things would they like to buy if they have Rs 50?

Let each child draw in his/her notebook the things that he/she buys. You may keep the total amount less or more than Rs 50 depending on the level of children. Discuss about different combinations that children choose. Use this opportunity to sensitise children about crackers.

A mock market scene, e.g. a *mela* scene, a vegetable market, stationery shop, a fruit shop scene may be created. Children can buy and sell using paper money. Different occupations can be discussed.

Fig. 2.2: *Children's Market*

Let us Reflect

Can you say which 'subjects' and 'topics' are being covered?

Can you list which concepts, skills and values can be nurtured through this activity?

You may have listed this as an example in Mathematics learning on addition/subtraction linking with real life. However, along with this, it also reinforces the ideas of market and buying and selling, familiarisation of different types of occupations, currency, making choices and also sensitisation to issues of crackers, etc.

Relating textbook examples to the children's own contexts provides a better understanding and gives a feeling that this is something that

relates to 'my own life' rather than what is in 'my textbook'. For example, a textbook has a lesson on sources of water. If this lesson can be linked to a discussion about the local water body in your area—a river, pond, lake, sea—children will be able to understand more easily and also relate it to their own life. This understanding can be extended to discuss issues regarding water in the context of the children's own environment. The issues may be raised through questions such as:

- Is there a shortage of water in their area?
- How does this shortage affect their daily life?
- What could be the reasons for shortage and how can they help in conserving water?

> The curriculum must enable children to find their voices, nurture their curiosity—to do things, to ask questions and to pursue investigations, sharing and integrating their experiences with school knowledge rather than their ability to reproduce textual knowledge. (NCF–2005)

2.3.4 It Ensures that Learning is Shifted away from Rote Methods

Generally, children are expected to primarily memorise/mug up and reproduce textbook information. The learning in this context remains superficial and disconnected from practical experience and does not help children in any manner.

Most textbook lessons end with a set of questions, the answers to which are provided within the lesson. This does not require any exploration outside the textbook. It neither gives any space to the children to reflect upon their own experiences nor helps in understanding of the concept. When textbook lessons are designed so as to encourage reflection and connections, then the lesson becomes more real to the child. Open-ended questions encourage children to reflect upon and express their own experiences for which often there are no 'right' or 'wrong' answers,

but numerous dimensions and viewpoints. Allowing children to ask questions that require them to relate what they learnt in school to those outside the school, encouraging them to describe their everyday experiences are important in helping children develop understanding and in contextualising their learning. Moreover, providing opportunities of working hands-on using variety of modes and allowing children to go through various processes of learning as mentioned above, in real life situations, help discourage rote learning.

For example, the chapter 'Who will do this work' in EVS textbook (Class V) of NCERT includes various situations of pictures reading, interview/ interaction to make children aware of human rights and human dignity and sensitise them to the life situations of people engaged in cleaning work. It also includes narratives and incidents of Dr Bhim Rao Ambedkar and Gandhiji related to the issue of untouchability. Various open-ended questions are weaved in the text of the chapter (such as given below) for which the answers are not directly available in the textbook and responses are likely to vary from one child to another as there is no single, completely accurate answer to these questions:

- What kinds of work people do not want to do? Why?
- Why do some people do this work that others do not want to do?
- What would happen if no one does these types of work?
- If none clears the garbage outside your house for a week, then what would happen?
- Do people look at different kinds of work in the same way? If not, why? Why is it important to bring change?

Let us Reflect

- Do you think these provide scope for extended learning?
- Choose any one theme and frame interesting open-ended questions around it.

2.3.5 It Encourages Multiple Sources of Learning

Generally, the textbook is equated with the syllabus. Teachers are hard pressed to complete the 'syllabus' and often they use the textbook as the be all and end all of the teaching-learning process. The textbook must be viewed as not the 'sole' but 'one of' the repositories of knowledge and information. The curriculum and learning tasks must ensure that children are encouraged to seek out knowledge from sites and sources other than textbooks – in their own experiences and surroundings (home, community, physical and natural environment), in the experiences of people at home and in the community, in sites outside the school. (NCF–2005).

A child constructs his/her knowledge while engaged in the process of learning. Things that children learn out of school helps to expand their capacities, learning abilities and knowledge base.

It is important to provide ample opportunities for children to explore and discover. Much can be learnt from observation of one's surroundings, from talking to different people, especially elders and even from grandmother's stories, songs and proverbs. It is important that you not only encourage but also respect and value this exploration, and that these learnings are shared and integrated with the textbook teachings. This will enrich and contextualise the textbook concepts and encourage them to appreciate that they can learn from anything and anywhere.

Choose any topic/concept that you wish to take up with children at any stage and mention three sources of learning other than textbooks which children can use. How will you help them tap knowledge from these sources? Draw an action plan.

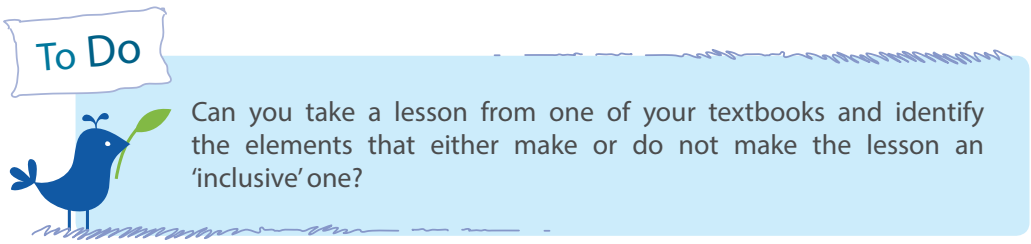
2.3.6 It is Inclusive

One of the major concerns in ESD is equity in terms of socio-cultural and economic aspects. The educational process needs to support the

development of values that help respect individual differences in terms of gender, socio-cultural and economic situations and physical and mental abilities. At the same time, this also provides opportunity to discuss areas of inequity and discrimination in different aspects and sensitise children to these issues.

The multilingual and multicultural composition of a group of children in itself provides great potential for learning and understanding of the richness and value of diversity. Opportunities to share and exchange information about food, festivals, traditions and lifestyles enrich and create sensitivity and appreciation of differences.

For example, a 'community lunch' may be organised where children bring traditional dishes from their home and sit together to share and eat. The children may be asked to learn and perform songs or dances which are special to a particular festival (e.g. *Sankranti/ Pongal, Baisakhi*). These



are some of the opportunities that help children understand how diversity in food, dress, customs and celebrations, etc. enriches our life. They also get an idea about how festivals are linked with the environment, seasons, agricultural cycles, and also issues such as pollution.

Education for Sustainable Development is fundamentally about values, with respect at the centre; respect for others, including those of present and future generations, for difference and diversity, for the environment, for the resources of the planet we inhabit.

(UNESCO – International Implementation Scheme for the DESD 2004, p-23).

2.3.7 It follows an Integrated Approach

Learning is always holistic as children do not construct knowledge in a compartmentalised manner, rather they observe and understand their surroundings in totality.

Traditionally, we follow a subject-based approach to organise the curriculum drawing mainly on the disciplines. The subject areas are treated as watertight compartments. However, keeping child at the centre, curriculum needs to draw insights from different curricular areas. She needs to be encouraged to draw linkages and relationships with the immediate surroundings initially and gradually moving on to the wider environment beyond subject boundaries.

> The discipline, rather than the child's way of viewing the world, tends to become the starting point, and boundaries get constructed between knowledge in the school and knowledge outside (NCF–2005).

Integrating dimensions of Science, Social Science, Mathematics, Language and Environmental Studies helps children to understand their surroundings and day-to-day experiences as a whole, rather than dealing with them in isolation. Themes include topics related to children's day-to-day life to bring out the linkages and relationships between disciplines and subjects.

Let us Reflect

- Did any of your students mention that the topic you teach was also discussed by some other subject teacher?
- Are there any opportunities for discussion with other subject teachers for teaching a particular theme/topic of your subject? How does it help?

To Do

Try to identify a theme/topic that cuts across different curricular areas and carry out the following as joint activity with your colleagues.

Water	Chapters/topics where it is mentioned/related	List of activities/projects that you can design on water
Science		
Mathematics		
Social Studies		
Language		
Art Education		
Health and Physical Education		
Any other		

Children learn about the properties of water as part of the Science subject; rainfall patterns as part of Geography; traditional water harvesting structures as part of History, and poems and essays about water in the language class. These occur as discrete lessons taught by different teachers at different times of the school year. Rarely do the children make links between these different aspects of water. Many critical aspects concerning water, such as sanitation and health; disparities in access and availability of water; politics of water; water and gender issues, wastage and conservation of water in context of lifestyles and even an understanding of water as related to one's own life and community are not often included in discussions on water, or are superficially touched upon. The understanding of the theme of water gets limited to rote learning of facts in each 'subject'. There is no opportunity for the different pieces to be seen as a composite whole, and more critically, to see how different aspects are integrally linked with almost every aspect of our day-to-day life.

It is important to provide integrated learning experiences to the children as environmental issues are complex and cannot be separated from social and economic issues. Addressing them requires knowledge and skills from all disciplines. Integrated learning activities in the classroom

(when aspects of several subjects are taught simultaneously, often through hands-on experiences, field studies and community projects) help children develop good understanding of the concepts.

Ms Radha taught a lesson on 'Food' to the children of Class VI. She organised the following activities while teaching this topic:

Individual Activities

1. Make a list of five food items you like the most and five food items you like the least.
2. Make a list of various food items that can be prepared from wheat, rice and potato.
3. Show popular food items of people living in different States of India in the political map of India.

Group Activities

1. Make a list of food items that you and your friends have brought in their lunch boxes.
2. Make a list of the food items suitable for infants, small kids, adults and the elderly persons.
3. Why do the food requirements of sick people change? Discuss. (Refer to diabetic people, people with heart diseases, etc.). Share such experiences with the class.
4. Discuss the food habits of people in your surroundings.
5. Give suggestions to make the Mid-day-meal programme better in your school.
6. Discuss:
   - Many people in the society do not get sufficient food.
   - What are the occasions on which you see food getting wasted. What can be done about it?

This topic can be further linked to growing of crops, various agricultural tools and practices linked with agriculture, need of nutrients for the plants, role of fertilisers and manures, food processing, food supply to different places, food preservation, kitchen gardening, testing for food adulteration, consumer awareness related to adulteration and misleading advertisement in the media, composting, etc. It all depends on the knowledge, ability and creativity of the teacher.

As a teacher, one needs to try and connect the curriculum and the classroom activities with needs of other people and other species. Children should understand how they are connected to other people, other species and other lands through the foods they eat, the clothes they wear and the items and materials they use everyday.

Efforts need to be made towards making learning a collaborative process where learners too have a role in planning and execution, in addition to experiencing the learning situations. Opportunities for making decisions and accepting their consequences will enhance their capacity and boost their confidence. Once children develop an understanding of this global interdependence and be better equipped to make everyday choices that respect the rights of others, they are able to impact significantly towards sustaining life on this earth.

CHAPTER 3

Promoting Green Practices Within and Beyond School

- Which subject do you teach?
- How much scope is there to bring in an environmental perspective to the subject you teach?
- Can some part of what you teach be taught through practical exposure, activities and hands-on experiences?
- Do you provide opportunities to the students to share their own experiences, ideas and perspectives while teaching-learning?
- Do you feel that building skills and attitudes is also a part of your teaching-learning?

"Everything that belongs to us comes to us if we create the capacity to receive it"

– Rabindranath Tagore

You are already familiar with the different aspects of a Green Curriculum that includes addressing the environmental concerns by emphasising on the processes of teaching-learning which are different from rote methods. It calls for connecting with life outside the school, with an emphasis on an integrated perspective across disciplines.

You may also recall that a Green Curriculum relates to learning about (to acquire knowledge and awareness), for (to address the issues and concerns

of environment in a holistic manner) and through the environment (using the environment as a teaching-learning resource). It invites learners to explore, question, analyse and apply their understanding. Such participation and engagement of the learners fosters critical thinking, attitudinal changes and responsibility which would lead to positive action. Though 'environment' has a wide-ranging connotation in terms of the natural and socio-cultural milieu of the learners that extends well beyond the school, the immediate school surroundings can also be used as a rich teaching-learning support.

Now the questions arise:

2 Should a Green environment be created in school/neighbourhood first so that you (as teachers) could provide learning experiences using such an environment?

2 Should we provide learning opportunities that enable active involvement of students in the Greening process of the school/neighbourhood environment? Let us find out.

You know that in order to help students build connections and linkages between the knowledge gained from textbooks and their surroundings, it is necessary to not just expose them to their environment but also to motivate them to be involved meaningfully in it.

3.1 ESD and the School Environment

The school environment comprises the physical and the socio-cultural environment as well. The physical environment includes the school building and the built structures of the school such as classrooms, library, labs and common spaces like corridors, school kitchen, toilets, school garden and the playgrounds. It is the organisation and maintenance of these areas which are important indicators of environmental practices for sustainability in the school.

Greening of the physical environment is impossible without the students and support staff that include teachers, administrative staff,

helpers, gardeners, watchmen, cleaners and the community. The inter-relationships amongst them and with the physical environment of the school and its surroundings constitute the socio-cultural environment of a school.

The school environment provides enormous teaching-learning opportunities. Students gain first-hand experience from their surroundings that go beyond the classroom and as a teacher we need to think of strategies of engaging them with it. Students learn in different ways and styles, at different paces and from different sources, textbooks being only one of them. Students are constantly interacting with the physical environment of their school during structured or unstructured time consciously or unconsciously.

- What different strategies come to your mind that can expose to and engage students actively with their surroundings?
- Do you feel that it would take too much time if students were to be engaged in activities that go beyond the classroom?
- Do you hesitate to engage students in any such activity due to the issues of managing the large number and demands of time and discipline?

In your teaching-learning activities, you might be asking students to take up simple action projects. These do not require extra resources and can be taken up by an individual or a group of students, if properly planned and facilitated, so that different aspects of the school environment are taken up simultaneously, leading to the overall improvement of the school.

A variety of activities can be planned that use these resources as learning opportunities and also link to the curriculum. Such activities are useful not only in engaging students in direct interactions and participation in different activities of the school, but are also valuable in inculcating

a sense of ownership and responsibility towards the school and as members of a larger community extending beyond the school.

Read the following case studies.

There was going to be an inspection in the school the other day. The school premises were full of dirt everywhere. The Principal issued orders to all and warmed the staff with strict action if there was any lapse on anybody's part. Everyone swung into action and all efforts were made to clean the school campus. Students were asked to wear neat clothes and trim their nails. Loads of garbage was collected and dumped in the backyard. It was covered with grass collected from the mowing of the lawns of the school. After the inspection was done, everything was back to the same, where no one took responsibility and all students and staff were used to the same routine.

The government school at Baprola, Delhi, is always neat and clean, no matter what time of the day one visits it. Not just the classrooms and corridors are clean but the school lawns are neatly manicured. The entry to the school itself is such a pleasant experience with attractive dustbins adorning the corridors and other corners of the school. The plants are watered and the school campus appears to be green with many different trees and flowering plants. No graffiti is visible on any wall or furniture of the school.

Let us Reflect

- How do you differentiate between the two schools?
- To which of these two schools does your own school have a close resemblance?

We owe it to ourselves and to the next generation to conserve the environment so that we can bequeath our children a sustainable world that benefits all.

—Wangari Maathai, Nobel Peace Prize Winner 2004

Fig. 3.1 : *Government Senior Secondary School, Baprola, Delhi*

Following are the excerpts from an informal talk with the Principal of the Baprola School, Shri Om Subhash.

How did you manage all this?

Actually, I wanted to do something since I was posted here four years ago. The land here was uneven and had lot of bushes. I talked to the community people and expressed my willingness to make this school one of the best schools. I selected a team of dedicated staff members and motivated them towards the cause. We decided that we will carry out the work phase-wise. During the first year, we focused on land management and plantation activities. We involved the community to help us in this. Till date, some of the community members help us in watering and cleaning activities of the school.

Lot of water is required to water the plants. How do you manage?

We harvest the rain water. So we do not face any dearth in any season not only for watering the plants but also for providing clean drinking water to the children. We have three RO systems installed for this purpose.

Have you used the Building as Learning Aid (BaLA) concept?

Yes. You can see that. After plantation, we focused on the school building. Using the BaLA concept we utilised various spaces for concept learning and giving appropriate messages to the children. (see Fig. 3.1).

How do you involve children?

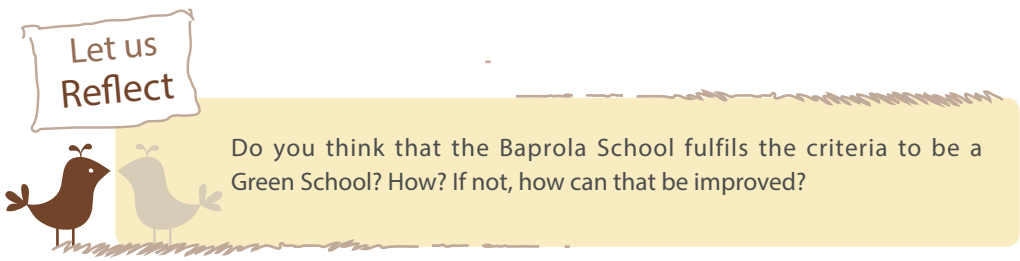
Along with Greening of the school campus, we carried out the teacher orientation so that students are involved in this process. Now teachers make students visit the medicinal garden using plants and trees for learning activities. Also we are segregating waste and doing vermicomposting in the school. Students are involved in taking care of worms for composting, preparing compost and using it as manure for the plants in the school. We also supply the manure to those who wish to purchase. We encourage people to send us the waste that can be recycled. We use the money earned from various activities for school development.

In addition to greenery, your school also has a very colourful look with these nice paintings, sheds, benches, dustbins. How did you do this?

Some waste pipes have been used to create these colourful sheds for students to relax and play. The big trees are supported by cemented platform. Students and their parents also sit in the shade during summer. We have designed child-friendly spaces. Colourful dustbins painted in interesting characters encourage students to use them. We have also introduced bird shelters in the trees. One can see many birds in different seasons here.

How did you mange the funds?

We estimated the funds available to us from the government. I think there are enough funds and one only needs to plan and act appropriately. We believe that it is children's money and it is our duty to use it meaningfully for them. Careful and thoughtful planning with my colleagues and the community helped us in this endeavour.



Do you think that the Baprola School fulfils the criteria to be a Green School? How? If not, how can that be improved?

The first step towards ESD through Greening the school premises would be to review our immediate surroundings where we and our students spend a large part of our day. We generally complain about the lack of maintenance or management and put the blame elsewhere, feeling that we have neither the capability nor the responsibility to address these issues. Let us start with the classrooms where you and your students spend most of the time.

Look at the illustrations below. Put a 3 or a 7 depending on the appropriateness or inappropriateness of the situation. Also provide reason(s) for your opinion.

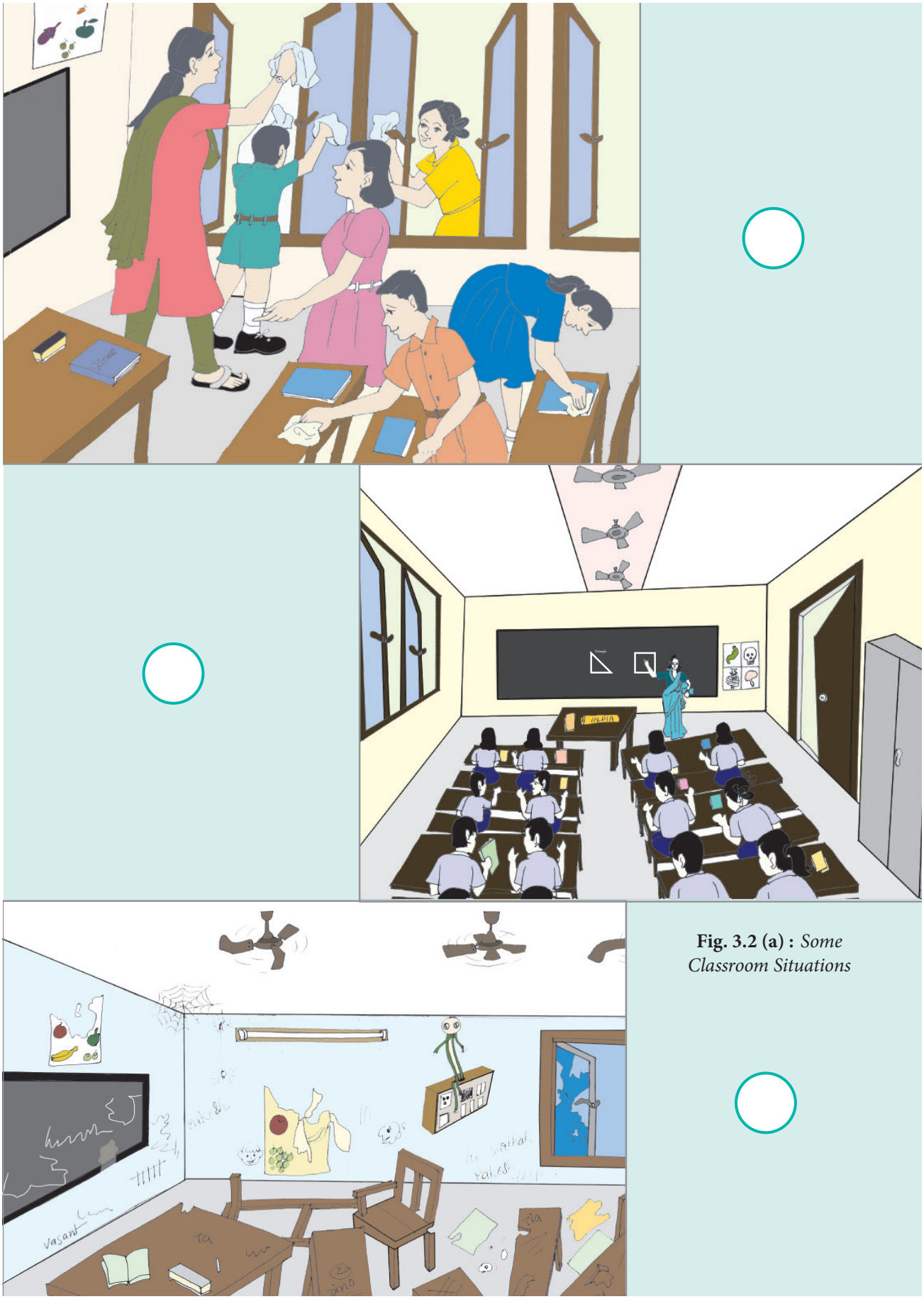


Fig. 3.2 (a) : *Some Classroom Situations*

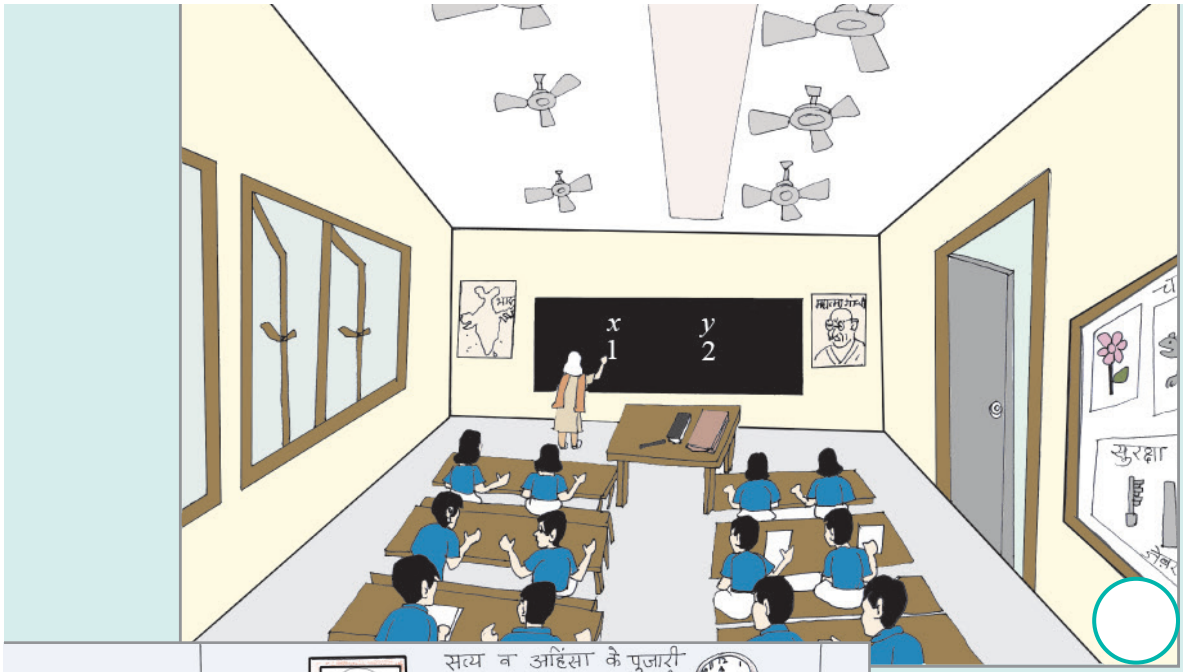


Fig. 3.2 (b) : *Some Classroom Situations*

Could you observe some of the situations given below in these illustrations?

- Students cleaning window panes.
- Students sitting with their back to the windows and windows on the left side of children.
- Position of the fans in the middle and students sitting on the sides and fans placed right above children.
- Cupboard blocking the windows
- Fans on in empty classrooms, litter in the classroom, CFLs instead of tubelights, fans with regulators, ventilators and double-door classrooms, scribbling on the furniture and walls.

Which of these are problem situations? How can you improve them?

Keeping the principles of Greening the school environment, safety, security and health were crucial to the children's development, using environmental resources promoting sustainability. The following activities are suggested to accomplish the objectives of ESD.

Let them carry out audits as suggested below. Involve them in the activity to assess whether their classroom is properly lighted, ventilated and cleaned.

3.1.1 The Classroom

Enlist the problems that you face with regard to light in your classroom?

- too much glare on the blackboard;
- too little light;
- dust covered bulbs;
- dirty window panes blocking light; and
- any other.

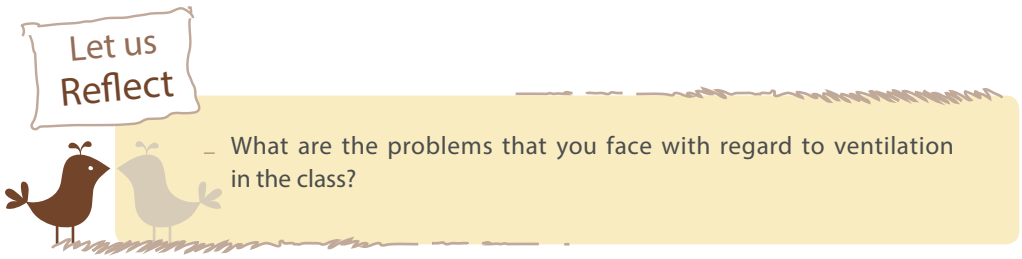
A well-lighted, ventilated and clean classroom provides a healthy environment for teaching-learning, whereas a poorly lighted and dingy classroom puts strain on the eyes and also breeds many diseases causing

health concerns. Involve your students in doing the natural light audit of their classroom.

(a) Natural Light Audit

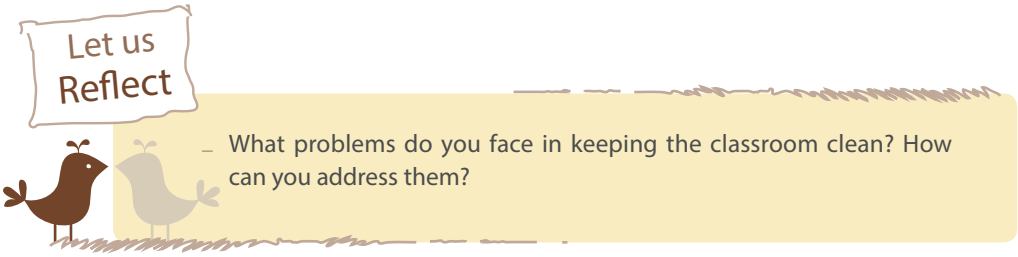
S. No.	Is there adequate light in the classrooms/rooms? If not, check the following.	Yes/ No/ any details	What can be done?
1.	Are there sufficient number of windows?		If no, explore the option of increasing the number of windows.
2.	Is the light from the window falling on the work-zone of the children in your class?		If no, find that out. ` If the window sill is high and light does not fall on work zone (desk / table/ floor, as the case may be), explore the possibility of lowering of sill. ` If lowering of sill is not possible, splay the sill of the window from inside to admit more light and natural ventilation on the work zone.
3.	Are the window panes clean?		If no, you can have a period involving all the students to wipe and clean the panes as the light may be reduced because of the dirt deposited on window panes.
4.	Are the windows placed on the sides (preferably left) of students rather than back or front?		` If no, explore the possibility of changing the seating arrangement of children, so that the light comes from their side. ` A new blackboard can be constructed on a suitable wall to facilitate the arrangement. ` Reallocation of activities in rooms might help in certain cases.

5.	Are some trees/ vines, etc. outside classroom blocking the light?		If yes, the tree branches can be trimmed to allow more light inside. ` The trees selected to be planted near windows in future should have a canopy height which does not block the light.
6.	Are the interiors of the room painted in dark colours?		If yes, painting the rooms in white or light semi-glossy paint will improve the light quality of the rooms. ` Make sure that walls adjacent to windows that reflect light internally, are painted in light colour. Dark coloured Teaching Learning Materials (TLMs) should not be placed there.
7.	Is there a need to supplement natural light with artificial light?		If yes, artificial light such as tubelights/CFLs/LEDs may be used where scope of using natural light is not adequate.
8.	How many light points are there?		Get them installed if those are less than required. If the number of artificial lights is more or less than required, take appropriate action accordingly.
9.	Are they all working?		The light points that are not in working condition may be repaired/ replaced.



(b) Ventilation Audit

S. No.	Are the classrooms properly ventilated?	Yes/No/ any details	What can be done?
1.	What are the sources of ventilation in your class?		
2.	Number of doors/ windows/ventilators in the classroom		` At least two doors are required per classroom. ` Appropriate ventilation should be there.
3.	Do they remain closed or are they kept open?		If some window is not opening, the reason for this may be found and if required, someone who can fix the problem may be called.
4.	Is there a provision for cross ventilation?		Possibility for opening windows and doors on the opposite walls in a room may be explored. Ventilators need to be there and should always be kept open.
5.	What is the location of doors/windows/ ventilators? - Are the doors on the same wall? - Are the windows/ ventilators on the walls opposite to the doors? - Are the ventilators at some higher place/ close to the ceiling?		Two doors preferably on the same wall need to be there for ventilation as well as safety. Windows need to be there on the walls opposite the doors Ventilators should be so located that hot air is not trapped inside the room.



(c) Cleanliness Audit

S. No.	Is the classroom clean?	Yes/No/ any details	What can be done?
1.	Who cleans the classroom?		Get the cleaning staff to clean the classroom. Motivate the students to keep a duster in their bags and clean their desk and/or chair at the start of the day. The value of shared responsibility for common spaces may be inculcated through this. They may not depend totally on the cleaning staff.
2.	How often is the classroom cleaned?		The classroom must be cleaned at least once daily.
3.	Are there cobwebs in the room?		Cleaning staff should be asked to clear out the cobwebs. Students' help may be taken.
4.	Are some parts of the room damp or stained?		Seek help from the administration to get the seepage checked and painting jobs done.
5.	Are there any dustbins in the classroom?		Dustbins may be arranged for the classrooms and students may be encouraged to create a litter-free classroom.
6.	Is there a lot of litter in the room?		Help students prepare a roster of duties to clean up and check for litter in the room.

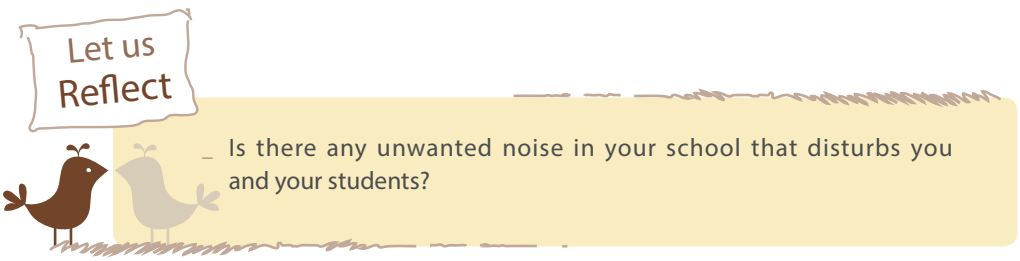
What problems do you face in extreme hot, cold or rainy conditions?

(d) Ambient Temperature Audit

Look for the arrangements in the classroom to maintain an optimum temperature. The options may be changed depending on the climatic conditions of your region.

S. No.	Maintaining optimum temperature in the classroom	Yes/No/ any details	What can be done?
1.	Is the room very hot in specific seasons?		
2.	Is it because of the very direction of the Sun?		` Vines can be planted along these walls to decrease heat gain along these walls.
	Is the longer side of the room facing south, south west?		` Winter deciduous trees may be planted in regions with extreme weather conditions, e.g. Neem, *Champa*, Gulmohar, *Imli, Semal, Shrish/Siras*. ` Choose the trees as per your climatic conditions. ` These wall surfaces can be painted in white to reflect the heat. ` Trees with a canopy height at a level that it casts shadow on the walls will also decrease the heat gain. ` If possible increase the roof projections so that the walls are shaded.

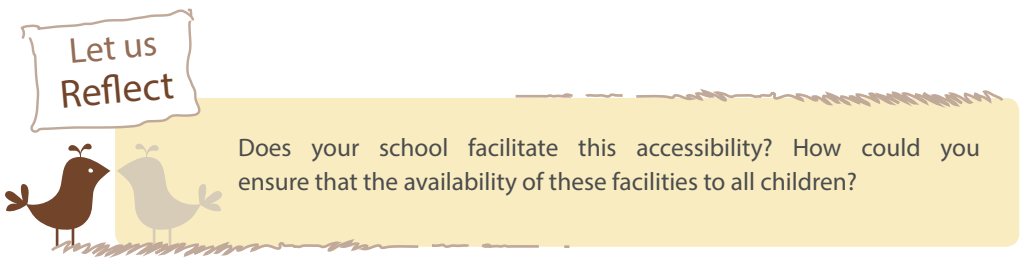
3.	Is hot air getting trapped inside the room?		` Hot air tends to rise up. There have to be ventilators at the upper side of the walls to remove this hot air from the room. In schools constructed in hot and dry climatic zone, composite zone or even warm and humid zone, there should be ventilators above the lintel level to remove hot air inside the room. Explore the possibility of making such openings.
4.	Is there inadequate shade on the windows?		Provide sun-shade devices (asbestos/tarpaulin/awning, etc.) on windows.
5.	Do the rooms require any other cooling arrangement? Mention those (fans, etc.).		
6.	How many fans are working?		They may be positioned so that all children are benefited.
7.	Is the classroom very cold in certain seasons?		
8.	Is there a provision for the Sun rays coming into the room during the winters?		If not, explore the reasons. If there is a tree blocking out the Sun, you may get it trimmed. Another possibility is to hold the class out in the Sun.



(e) Noise Audit

S. No.	Addressing unwanted noise	Yes/No/ any details	What can be done?
1.	Does your school face a problem of unwanted noise?		
2.	If yes, what are the sources of this noise? (vehicles, noise from a busy public place, etc.)		
3.	What can be done to reduce this noise level?		` Put appropriate signages outside the school on the boundary walls (e.g.'NO HONKING').
			` Plant a three-layered filter belt to cut off the noise with larger trees on the outer periphery and the medium-sized shrubs in the middle and the small sized vines and climbers on the inner side.

It is important that the physical school space and its facilities (drinking water, toilets, laboratories, etc.) are accessible to all students at all times. The special needs of the students also need to be suitably catered to.



Let us find out

(f) Audit of Provisions for the Differently abled

S. No.	Infrastructural needs of Differently abled	Yes/ No/ any details	What can be done?
1.	Are any of your school students or staff differently abled?		
2.	If yes, what are their special needs for the infrastructural changes in school?		
3.	Are there provisions for hand rail at appropriate places?		
4.	Are there ramps in the school?		The gaps may be pointed out to the concerned authorities and School Management Committees (SMCs)
5.	Is the ramp made up of anti-skid materials? Is its slope appropriate for person in wheelchair to move on it?		
6.	Are there provisions for toilets for the differently-abled?		
7.	Is the school floor and furniture appropriate to their needs?		

It's the little things citizens do. That's what will make the difference. My little thing is planting trees.

—Wangari Maathai, Nobel Peace Prize Winner 2004

(g) Seating Arrangement

S. No.	Appropriate Seating Arrangement	Yes/ No/ any details	What can be done?
1.	Where do children sit in the classroom? (chairs/ benches/mats/any other)		Seating needs to be comfortable with regard to appropriate posture, height and climatic conditions and at an appropriate distance from the blackboard.
2.	Is it comfortable for them in adverse (too hot/cold) climatic conditions?		If no, locally available material that is child-friendly may be used.
3.	Where do they keep their notebooks while writing?		There should be adequate working and storage space for each child.
4.	Are they able to maintain a right posture with their back straight while reading and writing?		Writing desk/board should be placed so that distance between the notebook and the eye needs to be appropriate, at least 30 cm.

- Ask students to think ways by which they can overcome the problems enlisted after the survey.
- Select the ideas on which an immediate action can be taken by the students with your help.
- Are there any options for the authorities to take any action? Find out.
- Help the children device a suitable strategy to make their grievances reach the authorities.

Let us Reflect

- What teaching-learning strategies were used in the above example? What were the opportunities for learning? What kind of learning has taken place?
- What is an audit? How is it undertaken?
- Did you have opportunities for assessment of the children?
- Did the students enjoy the audit exercise? Did it provide a hands-on experience to the children?
- Do you think environmental concerns were addressed? If yes, what were those?
- Were there any opportunities for skill formation?

(BaLA) Building as Learning Aid

BaLA is an abbreviation for 'Building as Learning Aid'. The concept of BaLA originated in Lok Jumbish in Rajasthan in 1997-98. The idea was supported by the Ministry of Human Resource Development (MHRD) to encourage the States to adopt the concept of BaLA.

Fig. 3.3 : *Using BaLA in the Classroom*

3.1.2 Common Spaces

Think about the other spaces in school where students spend time apart from classroom. Is it the verandah, corridors, playground, school garden, etc.? All these can be effectively used for promoting the objectives of ESD.

- Are there any corridors in your school?
- What are the different purposes that they serve?
- Who cleans those?

- Are there any occasions when the corridors are decorated? Which are those?

(a) Corridors, Verandah, Terrace

Entry to the classroom is through the corridor and the first impression of the classroom comes from the entrance. Now that your students have taken the lead in making their classroom 'Green', they can do the same for the corridors and other spaces in the school. These spaces may be reviewed by the students just as they did in their classroom. Encourage students to carry out cleanliness and space-use audit of various spaces like corridors, verandah, terrace, etc. of the school. Let them find out;

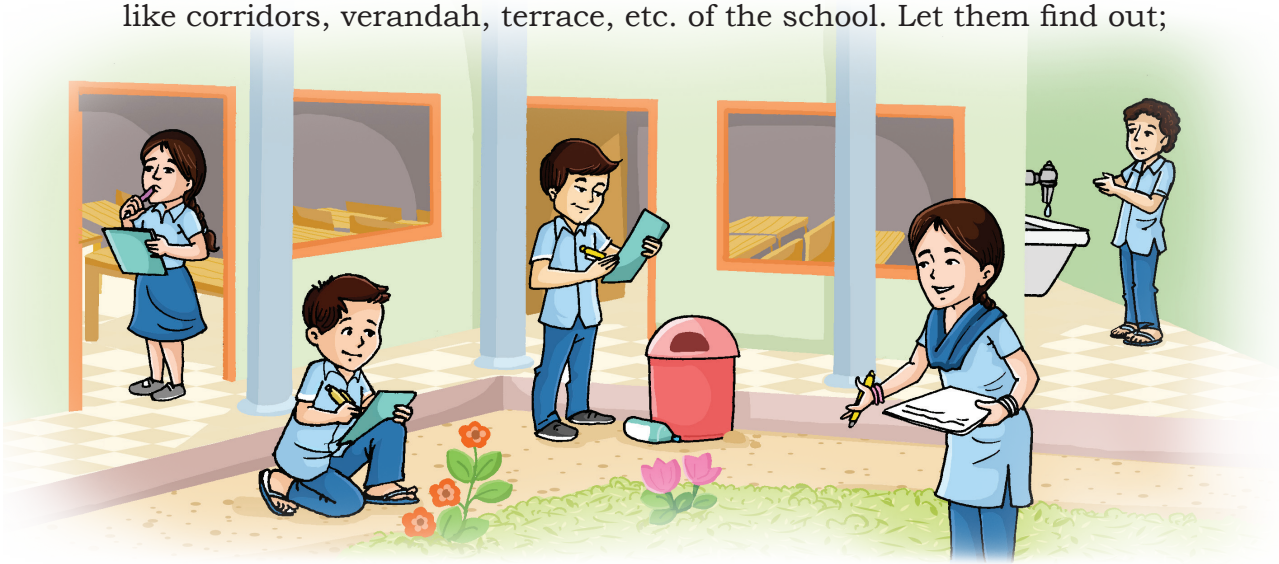


Fig. 3.4 : *Children doing cleanliness Audit*

Activity

- Are the corridors clean?
- Are the walls clean and free from defacement and graffiti?
- Are there any sections of the wall which could be used for displays?
- Which are the spaces that are not being used optimally?
- Are the verandah and corridors used for any activities? Which are those?
- Is there a terrace?
- Has it ever been used for any activity?
- Are there any display boards in the school compound?

The students may carry out the activity in groups, prepare and present their report in the class. They may be asked to brainstorm how to use these spaces for various activities that they could organise there.

One usually finds that there are many spaces which are not being used optimally.

Some spaces are not used at all, whereas some spaces are used only for some time and for a very few typical activities only. For example, in many schools the terraces (even if those are accessible) and backyards are hardly ever used and spaces like corridors, the pockets of spaces between buildings, staircases, etc. are usually used for only movement, a bit of socialisation by the children and sometimes for play. These spaces can be very effectively used for the greening through activities to foster the overall growth of the students in all domains of development.

We must also appreciate that the school space belongs essentially to the child and needs to be accessible to him/her. Unnecessary restrictions on students' freedom for play and movement, that flows from the traditional notion of 'discipline', needs to be reviewed. Students can utilise common spaces to play traditional games like hide-and-seek '*unch-neech*', *Posham pa*, etc.

Fig. 3.5 : *Children playing Posham-Pa*

Fig. 3.6 : *A shed made from waste material in a school*

If we create sites in schools which provide opportunities of individual and group learning for students to explore, discover, play, interact, talk, have a dialogue, etc. in different group sizes from being alone to being in large groups, then we increase

the probability of students getting meaningful learning experiences in schools. These sites can be created in any area of the school– be it corridor, terrace, open areas, classrooms, etc.

Let us Reflect

Which sites can be created and used in different locations of schools and how can they stimulate growth and development of children?

(b) Sites for play and other activities

A chess board game kept locked in teachers' almirah or rooms is scarcely used and if used, it is mostly a teacher-guided activity. On the other hand, a chessboard created in the school verandah will help students use it at their own discretion. Similarly, other such games and puzzles can be painted on the corridor walls and floor, e.g. hop-scotch, abacus, calendars, fraction tiles, etc. Even writing surfaces, pre-writing aids and many more such ideas can become part of the built environment.

Fig. 3.7 : *Chess board painted in the corridor*

Spaces where students can sit, talk or discuss freely may be created in a variety of locations in the school, where groups of students in varying sizes can use them effectively. There can be simple built-in seat between the columns of the corridor, the small walls made along the flower beds where students can sit comfortably.

To break the monotony, alternative spaces of the school may be used for structured activities apart from the classroom. The open classrooms on terrace or any such open area may be planned for different microclimates – summer, winter, etc. Planting winter deciduous trees (*champa, neem,* etc. which shed their leaves in winters allowing winter Sun to warm the place and become green in summers, thus providing shade to the space underneath) near such settings will facilitate such activities.

Fig. 3.8 : *Hopscotch game in school ground*

Fig. 3.9 : *Children playing with Abacus*

Fig. 3.10 : *Children playing with Abacus*

Sustainability is about ecology, economy and equity.
—Ralph Bicknese

To Do

Plan five such activities where children can enjoy free play in the alternative spaces (corridors, terrace, any other place apart from the classroom). In your school identify the children with special needs and analyse how you will involve all and provide an inclusive environment?

Activity

1. Ask students to think about the ways to keep the classroom clean. Posters and charts having slogans on innovative ideas may be put up in the classrooms.
2. Put up a soft board/display board. Assign groups of students the responsibility of maintaining the displays—put up reports of class projects, posters, students work, quotations and news. Plan the calendar for displays—thematically reflecting special days, etc.
3. If possible, keep a few potted plants at the entrance to the class. Assign responsibilities for their care and maintenance.
4. Students may prepare attractive dustbins and dusters during the art and craft period.

(c) The School Grounds

Just as you have reviewed the classrooms and the corridors of the school building, it is also important to review the area around your school from the ESD perspective—the grounds, playing area, area with vegetation (lawn, trees, flower beds, vegetable garden, etc.).

Ask the students to make a survey of the school premises, observe the different areas and note down their observations.

1. Does the school have a separate playing area? If yes,
   - Is this an open ground?
   - Paved area?
   - Area with play equipment (swings, sea-saw, etc.)?
   - Any other?

2. Does the school have any area with plants? If yes, what is it?
   - Lawn
   - Herbal/vegetable garden
   - Any other place
3. Does it have
   - Trees
   - Flower beds
   - Vegetable/herbs patch
   - Any other?
4. What is the parking space/arrangement in the school?
5. Any other open space in the school premises? What is this space used for?
6. Is there litter on the ground?
7. Are the play equipments properly maintained?
8. Is the ground properly maintained (proper levelling, etc.)?
9. Are the plants properly maintained? Who maintains them?
10. Is there any place where water tends to collect and form stagnant pools?
11. Any other observations.

The children's observations on these and other points will help them to identify areas that need improvement. Based on the issue, they would be able to plan and take up simple projects. They may take the help of the school staff like the gardener, maintenance persons, etc.

> A nation that destroys its soils destroys itself. Forests are the lungs of our land, purifying the air and giving fresh strength to our people.
>
> —Franklin D. Roosevelt

Fig. 3.11 : *Some cost-effective ideas for the playground.*

Check your school playground for the following:

S. No.	How child-friendly is the playground of your school?	Yes/ No
1.	Is there sufficient diversity in play settings so that all the students find sufficient choices and avenues of play without getting into conflicts or fights?	
2.	Are there segregated play zones for younger students and older students to ensure that younger students also get time and space for play without being excluded/ bullied because of age factor?	
3.	Is the play-zone a soft area (e.g. soft treated earth, fine sand) to prevent injuries from fall, except sports that require hard area like basketball, skating, etc?	

4.	Is there sufficient diversity in play spaces in terms of warm zones in winters and cool, shaded zones in summers?	
5.	Are the swings away from the branches of the trees, boundary walls or from any hard vertical surface?	
6.	Is the playground free from plants with prickles?	
7.	Is the playground free from sharp protrusions of any kind rather than bricks or stones with jagged ends?	
8.	Is there adequate drainage of water from the open areas and the paved surfaces?	
9.	Is the paving in the open areas made up of anti-skid material and are those areas regularly cleaned and maintained?	
10.	Are all the paved surfaces given adequate slope to prevent collection of water?	
11.	Are the outdoor lighting points earthed with no live wires in the vicinity of the children?	
12.	Is there a provision of first aid at appropriate multiple locations near the playground?	
13.	Is the entire playground under visual command?	

To Do

Help students analyse this information to identify actual problems and discuss and encourage them to evolve strategies to solve them.

We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.

—Aldo Leopold

3.2 Conservation of Energy Resources

3.2.1 Conserving Water

- Where does your school get water for drinking and other uses from?
- Does your school have a problem of shortage of water?
- Have you noticed any wastage of water in any part of the school? (toilets, drinking water areas, kitchen, canteen, garden, etc).
- Do you find lights and fans switched on in the class even when not required?
- How is the school waste disposed off?

This raises some pertinent questions about the conservation of the energy resources of the school. Addressing these is crucial to the greening process. There can be various ways to facilitate this.

Read the following case study.

Auditing Water Use

As a project activity, students of a Government Middle School were given a water audit activity in their school campus to understand the water consumption pattern. Students distributed themselves in groups and each team took up the responsibility of a different component of water audit. While one team of students focused on the water sources, the other concentrated on the water use. The students found that the main source of water in the school was supply water where water was pumped to an overhead storage tank. They calculated the capacity of the storage tank as 2000L. The math teacher helped the students calibrate the tank and mark the levels on the tank. The students measured the difference in level of water in the tank in one day and calculated the volume of water consumed in a day. By dividing the total volume of water consumed by the number of students and staff, they also calculated the water consumption per person per day.

After the audit, the students campaigned in teams and tried to create awareness amongst all in the school on water conservation. They approached the principal

for fixing the leaking taps, redirecting the water after hand washing for spillage and urged everyone to close the taps properly after use. They also, organised a number of activities in the school like slogan writing, poster making, role play etc. to sensitise every one in school about water conservation. They approached the authorities and the school got cement troughs built under the water taps to save water. It was used for washing and cleaning activities. At the end of the audit, eco club students were happy to observe that there was a reduction of more than one litre per person per day.

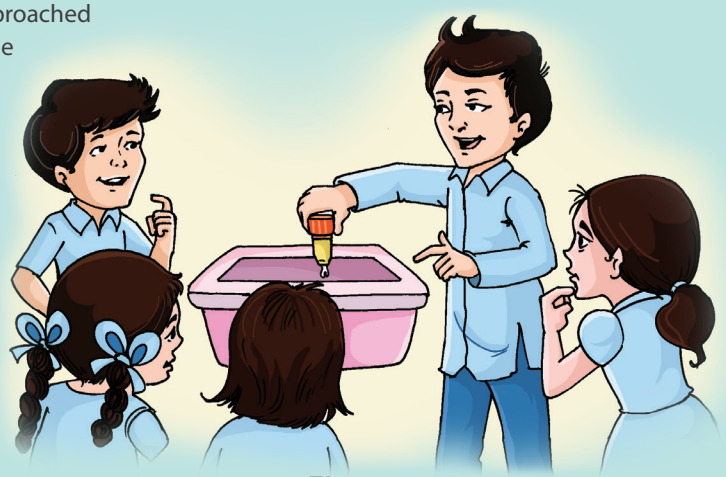


Fig. 3.12

To Do

Out of the various activities carried out by the students mark (3) before the ones that you consider can be a good opportunity for teaching-learning and (7) before that you do not consider to be so.

In this activity children:

_ calculated the capacity of the storage tank; ( )
_ measured the level of water in the storage tanks; ( )
_ calculated per person consumption per day; ( )
_ carried out activities of role play, slogan and poster making; ( )
_ organised campaign for water conservation; ( )
_ noticed problem areas and approached the authorities for action; ( )
_ suggested ideas of water conservation; and ( )
_ measured the total quantity of water collected in troughs. ( )

You will appreciate that the entire exercise was an enriching teaching-learning experience for all those who were a part of this.

Given below are some activities to conserve water in your school.

Activity 1 School Water Survey

Help students to conduct a survey daily for a week to find out more about the water supply, storage systems and water usage in the school. They may use an audit format like the one given below.

1. What is the source(s) of water? borewell/municipal supply/taps/hand-pump/ other

_____

2. Is the water stored? Where? (tanks, *matkas*, coolers)

_____

3. What is the number of taps in the school? (including garden, kitchen, coolers, toilets, labs etc.)

_____

4. Are they properly covered?

_____

5. Are some of the taps left open after use?

_____

6. How many taps are leaking?

_____

7. How much water is wasted by the leaking taps in a month?

_____

8. Who are the persons, other than students and teachers, using water in the school? (gardeners, cooks, sweepers, etc.?)

_____

9. Who is the in-charge of the pump-house?

_____

10. How many times does he/she start the pump in a day?

_____

11. What is the amount of water bill for the last three months?

_____

Note

- The questions may be excluded or included depending on the situation.
- To calculate the amount of the water wasted from a dripping tap, collect the water in a container placed below it and measure the amount per minute in a measuring cylinder or any other calibrated container. Calculate the wastage in a day/month.

After the survey, help the students to:

- compile their findings to analyse the nature of the problem. For example, were the taps dripping because they had not been closed properly, or because the washers had worn out, or due to some other reason?
- begin a campaign (once the situation is understood), so that others in the school also become aware of the problem.
- carry out group discussions, poster making, sharing the details of their survey (specifying the magnitude of the waste, causes and consequences of water loss, electricity bills for pumping, etc.) may be carried out.
- devise practical ways to improve the situation.

Fig. 3.13 : *Tanks for storage of water*

Fig. 3.14 : *Children washing Hands*

For example, for the leaking taps, students may be encouraged to contact the relevant person in-charge in the school or the Principal, and discuss the findings of the survey with them, requesting that the problem be addressed. They may write an application requesting the principal to do the needful–either change the taps or repair them, and ensure, by repeatedly checking, that the problem is rectified.

Fig. 3.15 : *Drains for watering plants at a water harvesting site*

If there is unavoidable wastage of water, for example, near the drinking area or washing area, efforts may be made to use this water for irrigating plants.

2 Divert the water through a canal, lined with clay or bricks to prevent its collapse over a period of time.

2 Periodic cleaning of tanks to ensure safe storage of water may be undertaken.

2 To Monitor to ensure that the activity is sustained.

After a month/term, students should do a survey again to find out the extent of improvement in the situation.

Activity 2 Let students find out about traditional systems to collect rain water such as village tanks, underground tanks, etc. They can collect such information from elders in the family, from books, internet and any other source. Plan ways to harvest rain water in school with the help of school authorities, local community and experts (if possible).

Activity 3 Think of the various ways in which waste water from drinking and washing area could be reused.

We all know that the school environment essentially comprises different resources out of which water, electricity, paper, soil, etc. need to be conserved in order to promote sustainability concerns. They can also be encouraged to adopt these measures in schools. They can be taken to the community through demonstration and involvement of the community members in setting up facilities and maintaining such practices. Conserving resources offers some hands on opportunities for the students to learn meaningfully as we observed from the case study mentioned above.

3.2.2 Conserving Electricity

Let students examine the electricity bills of the last twelve months of their school. They may conduct this survey in groups.

- In which month was the bill the highest?
- In which month was it the lowest?
- Find out the number of electrical gadgets in your school. List them and their numbers.
- For what duration do these remain on/functional in a day?
- Do you think some of these run when not even required?
- How can you prevent that?

Fig. 3.16

For example, replacing high voltage bulb with low ones wherever feasible, using LEDs, de-plugging the gadgets when not in use, etc.)

- Have a discussion in the class on the issues that emerge during the course of the survey and work out the corrective measures. We need to build a culture of resource conservation in society in general and in schools in particular. This could be achieved through active involvement of children, teachers and other staff.

Think of and design some innovative projects (on the lines of the water related projects discussed above) which could include the following activities:

- Creating Awareness: Provide opportunities such as posters, activities in morning assembly where students can spread message for others to switch off fans and lights when not in use.

Fig. 3.17 : *Awareness for saving energy through campaign in neighbourhood*

- **Patrolling:** Encourage students to patrol the school during recess, free periods, etc. to check on lights, fans, etc. left on.
- **Reporting:** Sharing with the rest of the school the impact of the save-energy campaign—e.g. reduction in electricity bills.
- **Troubleshooting:** Identifying electrical appliances that are in need of repair and bringing it to the notice of the authorities.

What strategies in addition to these would you propose to adopt to address the conservation of electricity in your school?

3.2.3. Managing Garbage: Reduce-Reuse-Recycle

The practice of Reduce-Reuse-Recycle and optimal utilisation of resources was always a part of the Indian way of life. We as people have always believed in recycling and sharing resources and minimising wastage. In contemporary times, we seem to have moved away from this ethos, it is thus critical to infuse the culture of conservation into our schools and children. Here are a few examples of schools who in their own way have taken a step forward in this direction.

> Everything in the universe belongs to the Lord. Therefore take only what you need, that is set aside for you. Do not take anything else, for you know to whom it belongs.
>
> —Isa Upanishad

(A)

A 'no plastic zone' at Pinnacle School, Delhi

Pinnacle Public School launched a project called 'Parivartan' through which the school has tried to avoid the use of poly bags and encourage the use of cloth and jute bags in the school and local community. In this campaign, cloth bags made by students were distributed free of cost to residents, shopkeepers and local vendors of local area. Local residents were told to get their own cloth bag stitched by the tailors at school free of cost.

Fig. 3.18 : *Students making paper bags from recycled paper.*

Fig. 3.19 : *Students distributing paper bags in the neighbourhood*

(B)

Today when Meenu (the teacher) went for her class she was surprised to see so many chart papers lying in one corner of the classroom. Tanya told her that these were the waste from the weekly decoration of the display boards. Meenu said that today the craft work would be done using this waste paper only. She helped students cut beautiful patterns, craft items using this paper. All students liked the activity. She asked students to think how that waste could be used for any other activity/work. Following were some of the responses.

Fig. 3.20 : *Carry bags from waste chart paper*

Fig. 3.21 : *Pieces of Art from waste*

Paresh	Ma'm, we can use these to cover our notebooks.
Nisha	I can use these to cut shapes for my maths activity.
Salma	These could be used to spread in shelves.
Tanya	I can use the pictures of these charts for my report.

(C)

Rajesh told all his students to cover their copies with English newspapers. He uses these covers to teach English language to the students. He asks the students to find out nouns, pronouns, verbs, adjectives and sometimes asks them to find out the difficult words and search their meanings in the dictionary. This way, covers of the copies become learning material for the students. After usage , the old cover is carefully kept with other old newspapers for the kabadiwala.

- What are the three important ways to address the waste problem as discussed in A, B and C case studies? Are these indicative of Reduce-Reuse-Recycle approach? If yes, then what steps are being taken in your school to adopt these practices for addressing the waste problem?
- Do you think that for conservation of resources such as water, electricity etc. the solution could be Reduce-Reuse-Recycle? If yes, how?
- Design some projects where students get opportunities to innovate and practice different ways for Reduce-Reuse-Recycle of energy resources.

Some of the following activities may be taken up.

Activity 1 School Garbage Survey

Groups of students may inspect different areas of the school (classrooms, common spaces, school grounds, canteen, etc.) everyday for one week.

Fig. 3.22 : *Students segregating waste*

Fig. 3.23 : *Waste segregation*

Observe and list the types of garbage/litter they find, the quantity and also where it was found. Paper and plastic wrappers may be counted by number of sheets or pieces. Wet waste may be weighed.

Activity 2 Maintaining Compost Pit

Involve students in creating and maintaining compost pit. The organic waste from the school kitchen and the dry leaves and other wastes from the school garden can be used to make compost from the compost pit in the school, which can then be used to fertilise the trees and plants.

(a)

Fig. 3.24 : *Vermi Composting in Different Schools*

(b)

(c)

Activity 3

The students can take up a campaign to cut down on paper (stationery) waste through several activities. Take up a campaign to create awareness about waste generated by a "throwaway" culture and convincing others to prevent such waste. (It could also be for avoiding water, and food wastage etc.)

Activity 4

Students may be encouraged to seek their participation in:

Fig. 3.25

- Collecting waste paper and reusing what is reusable (for crafts, papier mache, making rough books, etc.)
- Encouraging use of both sides of paper.
- Discouraging wastage and casual use of paper, pencils, etc.
- Proper use of notebooks and not tearing out pages.
- Discouraging use of throw away pens and encouraging use of refillable items.
- Using slates for revision.
- Keeping textbooks in a good condition, collecting and

Fig. 3.26 : *Using slates in place of paper*

encouraging younger students to use those.

- Making rough pads with blank sheets from old notebooks
- Collecting used paper, old notebooks, calendars, diaries and sell these to the *kabadiwalla*.

Fig. 3.27

Let us Reflect

- Which out of these do you find the best to be practised and why?
- Add some more strategies to those listed above.
- Classify these into Reduce-Reuse and Recycle.
- Design some projects that are based on the principle of Reduce-Reuse and Recycle.

3.2.4 Plantation in School

Learning about plantation is essentially a part of the curriculum but it should not be limited to bookish learning. Green and pleasant natural environment of the school not only provides opportunities to connect them with nature, enhances their potential of learning by allowing them to explore wide range of activities leading to experiential learning but also fosters a sense of emotional well-being in children.

The trees and vegetation planted within the school offer a variety of resources like leaves, flowers, twigs, seeds, plants, etc. for a host of curricular concepts and also creative play. The trees with sturdy, low and horizontal branches are nearly liked by all the students as a space to sit and chat. Boulders, or even the tree trunk (or a pipe) invites students to sit. Seats made under the shade of a tree can be another option.

Let us Reflect

- How do you think the plantation activities contribute to school environment apart from making it green, pleasant, i.e. for a better ambience?
- Do you think the plantation needs to be carried out as per the local climatic conditions?
- Who do you think students need to be involved in this activity of the school?
- What kind of learning opportunities can be provided to students through the school's natural environment?

Fig. 3.28 : *Project on trees in progress*

Help students to take up simple action projects to keep the school environment. These activities do not require extra resources. If properly planned and facilitated, every class can take up selected activities so that different aspects of the school environment are taken up at the same time leading to the overall whole school improvement. There are many ways in which you can involve students where you may provide good learning opportunities to them that they would enjoy. Some of the ideas are given below. You may choose as per the curricular requirements and developmental level of students.

Activity

1. Divide the students in groups and ask them to find out the following.

- How much space do you have in your school premises for planting trees and other plants?

- How many plants have been planted in your school in the past two years?
- How many of them have survived? If all of them did not survive find out the reason?
- Are the students involved in the plantation and maintaining greenery in the school?

2. Design a project around a tree. What all understandings can be communicated through a tree? Enlist the curricular concepts that can be addressed.

Fig. 3.29 : *Project on trees*

3. Let students prepare a layout of the school and mark and name the areas that have trees and vegetation? Students can conduct a survey to find out which areas have a better a scope for plantation.

4. Let students count the number of trees and classify them based on their size, shape, flowering pattern and their use for students to play, climb, sitting in shade, etc.? If possible help them find out their names?

5. Design some activities/projects where students use leaves, flowers, barks of different textures, colours, fragrances, sizes and shapes to transact various curricular concepts in order to provide them visual, sensory and hands on stimulation to children.

6. In case the school has a garden or some planted area, think of how students can get involved in looking after it. Along with the gardener you can plan weekly or monthly duties for each class. According to the season and the annual schedule students can help with preparing the soil, preparing and maintaining a compost pit to supply organic manure, sowing and planting saplings, regular watering, weeding, upkeep of the flower and vegetable beds, and finally the cutting/pruning the plants.

7. In case there are big trees, each class/house/student can adopt a plant, and care for it through the year. In case the school does not have suitable outdoor space for planting, encourage students to think of other ways of 'greening' – e.g. a rooftop garden; growing plants in earthen pots.

'My plant in my school' drive was initiated in Government Girls Senior Secondary School No. 1, Tilak Nagar. The students were encouraged to sow at least one plant in the school and take care of it. Soon the lawns of the school were full of plants. The students watered them even before the prayer started. Since there was a shortage of water supply in school, the students brought water from their home in a poly bag and watered their plant as the first activity in school.

Fig. 3.30

- Is there any vacant space in the neighbourhood of the school like a common plot? If possible, with the necessary permission, carry out some plantation in that place. Students will also have to think of ways to protect the saplings by putting guards, thorn guards etc.

8. How many plants do you have in your house? Can you name all of them? Try to identify at least twenty plants growing in your school or near your house.

9. Ask students to list the various medicinal plants. They may consult the elders at home or the local gardener or any other

sources. Which of these plants can be grown in your school? If feasible, develop a medicinal garden with the help of children.

Fig. 3.31 : *Herbal Garden in School*

10. Does a vegetable garden or medicinal garden exist in your school? If no, these may be created and maintained with the help of students and support staff. Do you think this would help students in learning? How is it related to their curriculum?

In Mysore district H.D. Kote, Hunsur Taluks GHPS, N.N. Halli, Bovi colony and GHPS, Yelehundi children, with their parents' support, who are farmers, grow vegetables and greens in the schools that are used in preparing nutritious Mid Day Meals.

Fig. 3.32 : *Vegetable Garden in School*

They have adopted sprinkler water supply and rain harvesting systems with the help of local community in schools in the taluks. The community also helped to prepare slabs and benches out of locally available materials and students enjoy eating under the shady trees in the school.

11. Identify the sites that can invite birds, bees and insects. Create those spaces.

Settings for these small friends can easily be created in the school by simple ways. If simple provisions for food and water are created in the school spaces, in the form of trees that bear fruits, flowers that attract butterflies, or making simple structures for bird and animal feed like a clay dish, or a tyre cut into half, then the probability of the visits by these creatures within the school will increase. These settings should be in relatively quiet corners of the school but within the visual accessibility of the children. Bird baths provided at different corners of the school will also attract them.

Fig. 3.33 : *Bird shelters in Govt. Sr. Sec. School, Baprola*

Let us Reflect

How do you think it will help students to enrich their learning?

Such activities also attempt to widen the meaning of the term "Greening", beyond planting trees, to cultivation of a variety of gardens/plots, growing grass, and even facilitating natural regeneration of vegetation and even inviting birds. Through these projects students will not only understand the vital importance of creating and maintaining a green cover but at the same time hands on experience of different natural and social phenomena that they only read in the textbooks will enable them attain their deeper understanding besides getting exposed to various values of working together to be self reliant etc.

Fig. 3.34

At the same time these will also help students acquire appropriate skills and address the environmental concerns as mentioned here.

Environmental Concerns

Health and Sanitation, Protection and Conservation of Natural Environment and Culture and Heritage, Safety, Security and Hygiene, Social Justice and Equality.

Skills of Learning

Questioning, Observing, Recording, Compiling and Organising, Analysing, Evaluating, Critical thinking, Working together, Negotiating, Decision-making, Empathy-building, Clarifying Values, Coping Skills, Logical Thinking, Caring and Sharing,

To Do

Given below are a few projects. Identify the curricular area, environmental skills and concerns that they cater to and write them in the spaces provided as illustrated in than example given below.

Posters with encouraging messages to keep school clean and Green.

- Curricular area(s) — Language, Environments Studies, Science, Social Studies, Art and Craft.
- Environmental concern(s) — Preservation and conservation of natural environment.
- Skills — Creativity, sensitivity for the environment, working together.

Working with the school management and staff to initiate and maintain a system of waste collection and disposal.

- Curricular area(s) _____
- Skills — Discussion, taking leadership, decision-making, working in a group, cooperation
- Environmental concerns _____

A campaign to keep the school grounds litter free.

- Curricular area(s) _____
- Skills — Working together, taking leadership, decision making, working in a group,

- Environmental concerns _____

_____

Preparing and maintaining compost pit for wet waste (especially leftover food, dried leaves, etc.)

- Curricular area(s) _____

_____

- Skills _____

_____

- Environmental concerns _____

_____

If there are stagnant water pools, working with school staff to fill them up and to plan how to avoid this.

- Curricular area(s) _____

_____

- Skills _____

_____

- Environmental concerns(s) _____

_____

Identifying sites where water drips from a tap collect the water at some points, e.g. drinking water area, canteen area, then create a small channel to divert it and find a meaningful use for it.

- Curricular area(s) _____
- Skills _____
- Environmental concerns _____

Making signage, naming and giving other interesting information on trees in the school campus.

- Curricular area(s) _____
- Skills _____
- Environmental concerns _____

Putting up simple nest boxes, feeding trays and water containers to attract birds.

- Curricular area(s) _____

  _____

- Skills _____

  _____

- Environmental concerns _____

  _____

Initiating a plantation programme, planting trees, shrubs, flowering plants, medicinal plants or vegetables, or starting a plant nursery.

- Curricular area(s) _____

  _____

- Skills _____

  _____

- Environmental concerns _____

  _____

If your school ground does not have a compound wall, start a protective Green boundary by planting a hedge using plants that animals are not likely to eat (e.g. local cactus, *mehendi*, etc.).

- Curricular area(s) _____

  _____

- Skills _____

_____

- Environmental concerns _____

_____

Prepare the school building layout. Map different areas (playground, toilets, drinking water points, plantation, etc.). Is there any scope for increasing the Green cover? How can this be done?

- Curricular area(s) _____

_____

- Skills _____

_____

- Environmental concerns _____

_____

These are only a few ideas. You may add to this list many more that are relevant to the local context. These activities for improvement programme will be possible due to collaborative efforts of all students as well as school staff and at times that of parents as well.

The activities provide rich teaching-learning opportunities. Students will be greatly enriched by the hands-on experiences that such projects provide.

To Do

Enlist some other ways to use the physical environment as a teaching-learning resource for ESD.

3.3 ESD through Greening of Common School Activities

The organisation of the timetable and overall schedule of the school provides that most of the activities and interactions between students during the school day are conducted with a particular set of students and within a set time and space. For example, students of Class VI will spend almost all their time with one other in the classroom, and even outside, in the sports period or recess time. Beyond these also there are occasions outside the classroom where the larger student body gets together and most of us are oblivious to the enormous opportunities of ESD that these offer. These 'whole school' occasions are a very good time and place to engage students in activities that bring them to work together and create a sense of shared participation and responsibilities.

- On what occasions does the entire school come together?
- What usually happens when the school comes together?
- Can you think of ways to engage the maximum number of teachers on such occasions?

3.3.1 School Assembly

You will appreciate that a School Assembly is the most important common activity of a school and is a daily event. It is an occasion when all the students and teachers are present and where all issues of common concern are raised.

- How is morning assembly organised in your school?
- Do you plan the activities in advance?
- What objectives do you try to achieve by organising morning assembly?
- How can we use morning assembly for developing a sustainable environment in the school?

Please read the following and express your views on the questions given below.

A city school decided to celebrate 'water week' from 19-24 March. The objective was to raise awareness about the significance of water and to sensitise the students to the need for water conservation in present times. As part of the week-long celebrations, a special assembly was organised by the students and teachers of Class VIII on one of the days. Parents and grandparents of the students had also been invited on the occasion.

The assembly began with the Principal orienting the students about the significance of the 'water day' that is observed on 22 March every year. It was followed by a student reading out a collection of newspaper clippings that reflected the growing scarcity of water, depleting water table and the inconvenient and ugly situations that this could lead to. Some of the news items pertained to illegal harnessing of water by people.

The next item was a short play by students that depicted the future scenario if we continued to waste water the way we do.

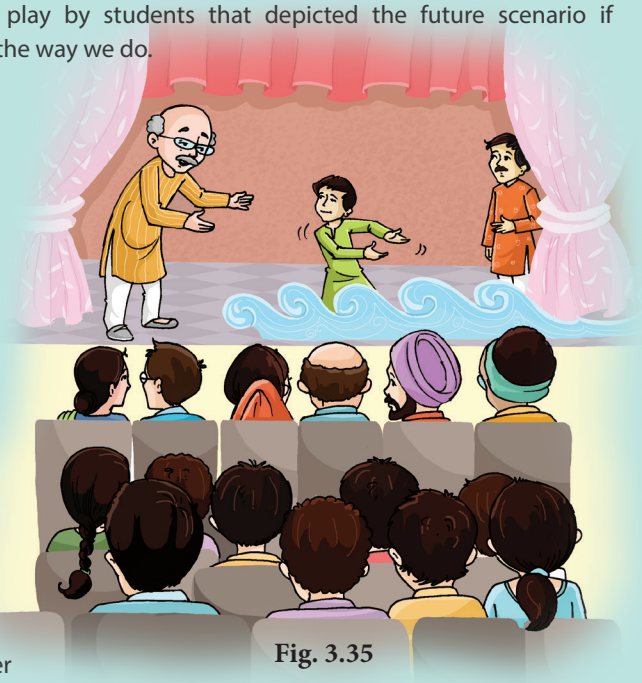


Fig. 3.35

A few grandparents were invited to narrate their experiences of the water table. They recounted how in the 70s they only had to dig only up to small depths to access water and now one has to dig deep down in the same city to reach water. Some of the parents came forward to describe their ways of collecting and re-using water in their households. One of the mothers explained how she had arranged a short pipe from the kitchen basin to the garden outside water the plant. On being queried about the adverse effects of water containing detergents, on plants, she informed that it was not a problem as she was using ash to wash the utensils. Students were surprised when she added that ash was quite hygienic for washing both hands and utensils.

The gardener of the school came up on the dais next to share some of the innovative ways he used to conserve water in the garden. He explained that some plants need slow and continuous supply of water. Using a strong jet of water will only lead to a lot of water wastage. He demonstrated watering plants with some defective pots. He said he had obtained these leaking earthen pots from the local potter and buried them in shallow pits at the base of the plants. He then filled the pots with water and closed the lid. The water from the pot kept seeping through the soil to the plant thus fulfilling its need. He went on to explain the 'drip. irrigation' method in great detail.

A group of people from the nearby village who had successfully revived a pond-like local water body was invited on the stage next. They described how it all began with a few villagers noticing two trees in the local park that needed urgent attention because they were in the danger of being uprooted as their roots had begun to show. They approached the government authority that was responsible for the maintenance of the park and obtained the permission to cover up the roots of the trees from the nearby land. It was while they were doing this work that they noticed the dried up water body that stretched between the trees. They began to mobilise support for its revival. Initially water from the nearby hand pump was used to fill up the water body. They then drew up a plan to manage the nearby catchment areas. The body was successfully revived and since its revival at least 26 species of birds have also been spotted in the area. They invited the school students to visit the place and the Principal promised to arrange that. All students were also excited.

The assembly ended with a collective oath by all the students that they would make personal efforts to conserve water in their school, their homes and around their neighbourhood.

- What new information do you think the students got?
- What teaching-learning strategies were used?
- What all teaching-learning material was made use of?
- Who were the resource persons?
- What concerns were addressed in the above case? Is it the preservation and conservation of natural resources?
- How is the occasion of assembly utilised in your school?

Many schools often use the assembly innovatively. Here is an example:

The Zigyasa Manch

At a school in Najafgarh, New Delhi, ten minutes were devoted everyday in the assembly to address the queries of children. Students could drop their questions in a box without giving their names. They were free to ask questions related to any topic, any subject. Any teacher could volunteer to answer the questions. The students asked a variety of questions like: 'How do we know that God exists?' 'Why is the sky blue?', 'Why do we say *Hara Samundar*, i.e. green sea whereas we paint water in blue colour?', 'Why do we cry when we cut onions?', etc. (If some of the questions the teachers could not answer spontaneously, then they took some time to discuss and those were answered later, however, none of the students were discouraged ever.)

It was a popular activity for the entire school. Do you think it can help promote/develop:

- the habit of exploring the environment;
- skill of questioning;
- confidence and communication skills among students;
- curiosity among children;
- skill of observation and sensitivity to the world around them;
- awareness in the students regarding various social and environmental issues; and
- healthy rapport with students?

_ How do you motivate your students to ask questions?

_ What opportunities does your school create for the students to ask questions and seek answers to them?

_ Do you have such activities in your school? If yes, how often are they conducted?

_ Who is given this responsibility? (Is it the responsibility of one teacher or all teachers?)

– How far do you think such activities help in accomplishing the objectives of ESD?

3.3.2 Celebrating Occasions/Festivals

It is customary for schools to observe special days of importance and think up their own ways of going about it. For instance, the '*Bal Sansad*' project in which groups of students go out to the community to monitor and test the quality of water, can be carried out during the 'water week'. Water surveys and audits are other meaningful activities that students can engage in, as part of 'water week' celebrations.

Think of some other days that could be celebrated in a similar way. Some could be World Environment Day (5 June), Earth Day (22 April), World Wetlands Day (2 February), *Vanmahotsava* (July and August are the best months to celebrate this as plants sown in this season get rooted easily due to the rainfall and high level of humidity, you may plan as per the climate of your area/region) and so on.

The list can be decided at the school level as per the local context. Emphasis also needs to be given to traditional and local festivals so as to endorse the indigenous practices that promote social cohesion and harmony with nature. Let the students plan by themselves (under the supervision of teachers) the celebration activities keeping in mind the following aspects.

- Why is a particular day celebrated? (the historical significance)
- How can we plan the celebration making judicious use of resources while maintaining its socio-cultural significance with joy and fervour?
- How do we involve the community in the celebrations?

3.4 Creating a Safe School Environment

(A) Addressing Emotional Needs

It is difficult to accomplish the objectives of ESD without addressing the social and emotional needs of students regarding their safety and security of all children. There are certain issues that need to be addressed through the process of dialogue on a shared platform. These are often found related to bullying, emotional needs at puberty, drug abuse, parental pressure, corporal punishment, etc. Look at the cases below.

1. Rama in her class always told students to brush their teeth, bathe, comb their hair and dress up neatly everyday. At times, she related the habits of personal hygiene with the lessons of their textbook. However, still the problem remained as ever. On being asked by the Principal she said that students do not listen to her and she recommended taking strict action against them.
2. Sudha was very upset today. When her father visited the school, the teacher complained about her unhygienic manners. She said her clothes are always dirty and she gives an obnoxious smell. She told her father to monitor that Sudha bathes everyday. She showed her dirty nails to the whole class and all students laughed at her. She informed that a group of some good students will observe other students everyday and the defaulters would be punished. Her father was furious and immediately slapped Sudha in front of all children. At home also Sudha was rebuked by him. Even her mother was also reprimanded by the father. Sudha is too scared to go to school now.
3. Najma teaches Class V. She observed that Raghu in her class is always dressed shabbily. Neither his nails, hair are ever trimmed nor did he seem to bathe regularly. No one in the class ever wanted to sit beside him. One day, she called him and asked about his place of stay, about his family members, his routine in the morning and the role of other members, etc. There was a warmth in her behaviour and therefore, Raghu felt no hesitation in talking about himself. During the informal talk she found that he was staying in a one room house with four brothers and sisters. His parents were daily wagers and worked hard to keep the family going. They had to bring water from a common tap in the community everyday to meet the water requirements of the family. Najma called her parents one day to the school and she discussed the problem with them. She suggested that if there is not enough time in the morning then the parents could facilitate his bath in the evening or night. She trimmed Raghu's nails herself and discussed

Fig. 3.36 : *Teacher trimming the nails of her students*

the importance of cleaning the uniform, shoes, etc. with his parents. After a few days, visible changes were there and Raghu also was confident to mix with other students and improved in studies as well.

The education should bring about holistic development of a child, nurturing his/her talent, potential and abilities to the fullest extent in a child-friendly school environment free from fear, trauma and anxiety. (RTE Act, 2009)

Let us Reflect

- Which out of these do you think is an appropriate way to address the issue?
- Why do you think so?
- Do you think preaching or penalisation helps to deal with various problems? Does your class have any such socio-emotional problems? How would you address them?

(B) Emergency Preparedness and Disaster Management

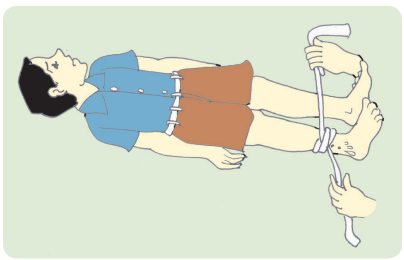
- What types of emergencies can occur during school hours?
- Does your school undertake any activity to prepare students tackle emergencies If yes, which are such activities?
- How do you think those can be helpful to the children?

Here are a few situations that you may encounter during any regular school day.

- Sanjna while gulping down food chokes and starts gasping for breath.

- Farhan was bitten by a snake while playing hide and seek during the games period.
- Tsering falls down from a swing and gets a hand injury with profuse bleeding.
- Mandeep suffers a heat stroke during the school assembly.

First Aid



1. Snake bite

2. Drowning in water

3. Choking of throat

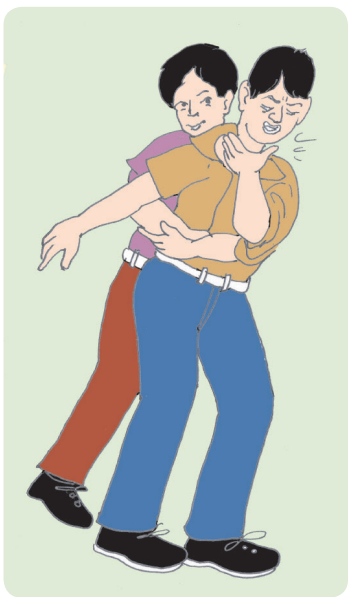
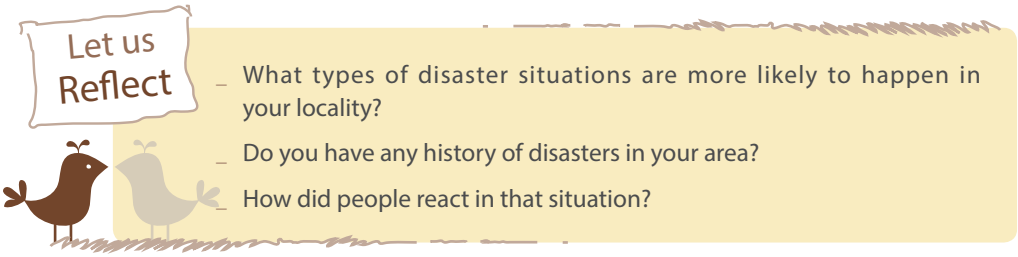


Fig. 3.37 : *A poster depicting some emergency situations and ways to handle them.*

How prepared do you think you are to handle these situations? Does your school provide you with any input that would enable you and the students to deal with such emergencies?

To Do

- Help students to think of and enlist the various emergency situations during school hours. Discuss how can these be appropriately dealt with?
- Students may prepare charts/posters depicting ways to handle such emergencies. These may be displayed at prominent places in school.
- Ask students to find out the contact numbers of various emergency services. For example, police station, fire brigade office, local hospital, ambulance and display this information in classroom/corridors of your school.
- Help students assemble a first-aid kit.



Disasters like earthquakes, fire, floods, tsunami, etc. come without warning. They cause damage to the life and property. The damage is more in schools if it happens during school hours. It is therefore essential that every school should take necessary measures to enhance disaster preparedness of its students and the staff. Such a message may also reach the community through students to make them also well-prepared to handle emergencies during a disaster.

In order to introduce the concept of disasters and emergency preparedness, Rachna (the teacher) thought that a 'film' would be an appropriate strategy.

Before showing the film, she asked the students about the different kinds of disasters that could strike us.

Ramesh: There was an earthquake last month.

Richa: My native village was struck by sudden floods last year.

Vikas: There was a cyclone in my uncle's place in Odisha two months back.

Salima: My neighbour's house was burnt in a fire couple of months back.

Simran: Ma'am, there was a huge disaster in Japan in 2011. I saw it on the TV. Huge waves brought water and destroyed houses and factories and killed lots of people.

Rachna (the teacher): Ok, what are these huge waves that bring sea or ocean water called?

Arya: I know that. It's called tsunami.

(The teacher can lead the discussion towards difference between man-made disasters like fire and natural - disasters like tsunami and cyclone. However, it is pertinent to point out that some of the natural disasters like flood is, in many cases, a result of human doing).

Rachna then showed a film on the 2004 tsunami to the children. The visuals of the tsunami left a huge impact on the students and they had lots of things to ask. So, after the film, there was a round of discussion on why tsunamis happen and the kind of destruction they cause. Rachna explained to the students how earthquakes, floods and cyclones are caused. She emphasised the fact that disasters do not just damage life and property but also leave behind deep psychological scars for a long time to come.

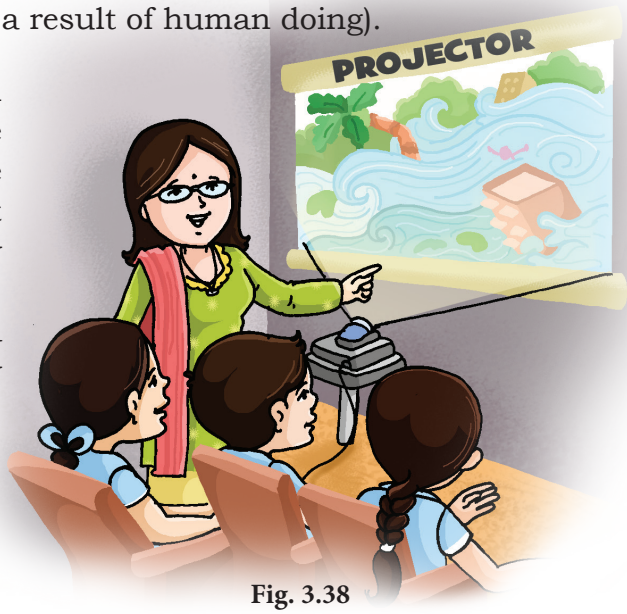


Fig. 3.38

To Do

Think and devise another strategy to acquaint your students with disasters that the region or location of their school is prone to.

Rachna divided the students into four different groups and gave each group an assignment to prepare a project report on floods, tsunami, cyclone and earthquake (this could be a summer vacation or winter vacation assignment). The students had to address the following themes in their project work:

- What are these disasters?

- How are they caused?
- Why do they happen?
- Where do they take place most often?
- Name major areas affected by these disasters in the past few years. Name major incidents of such disasters. Paste photos.
- Who get affected by these disasters?
- How life changes during and after these disasters?

Let us Reflect

- What teaching-learning strategies were used in the above case? Were these strategies away from the rote learning process?
- What opportunities did you have for assessment of the children? (when they present their project reports).
- Did the students enjoy the film? Is film as a medium of learning an effective tool? (visuals leave behind more impact compared to text).
- Do you think environmental concerns were addressed? If yes, what were those?
- Were there any opportunities for skill formation?

To Do

Design projects related to concepts of the subject that you teach that are related to disaster awareness and preparedness. You may plan together with your colleagues and help children carry these out.

In the next class:

Rachna: Yesterday we were talking about disasters. Today we will continue with the same topic. Now tell me is it possible to minimise the loss during disasters? If yes, how can that be done?

Samir: Yes ma'am, it is possible to minimise the loss of life and property during such disasters. For that we need to take certain measures before hand.

Rachna: Ok, what measures?

Samir: Ma'am, we should always have a first-aid kit handy at all points of time.

Rachna: Very good point. How will the first-aid kit be helpful in this situation?

Sheena: Ma'am, people panic in such situations and start running without seeing anything or anybody. It is very likely that people will get injured in such a scenario. If we have a first-aid kit ready, small injuries can be treated right away. In any case the hospitals may already be full with the patients who are direct victims of such disasters.

Fig. 3.39 : *Demonstration to use a fire extinguisher in school*

Rachna: Very well explained. So the first thing is not to panic and try to make yourself safe. Then go ahead and help other victims by bringing them to safe places and if required giving them first aid. Also you have to be prepared to take quick decisions.

Rachna: Tell me now, if there is a fire while you are in school, what will you do?

Ravi: We should try to douse the fire.

Rachna: Ok. But how will you do that?

Seema: We will carry water in buckets from the toilet and put it on the fire.

Samir: No, no. We should call the fire brigade by calling 101.

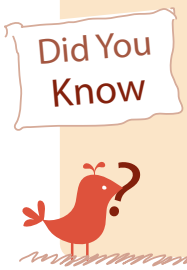
Pinky: But fire brigade will take time to come. Till then we cannot just sit idle and see the fire spreading.

Peter: We need to use fire extinguishers to douse the flame. My father has a small one in his car.

Rachna: Yes, fire extinguishers are the best option to douse the flame and stop it from spreading. But before that all of you need to run away from the fire and protect yourself and your clothes. Then look for the fire extinguisher and use it. Now how many of you know how to use an extinguisher?

There was a pin drop silence in the class. All the students nodded their head in a gesture of 'No'.

Rachna: Ok then today we will learn how to use a fire extinguisher. I have a small extinguisher here and I will demonstrate to you how to use it.



- We can even use sand to extinguish the fire.
- The fire can be extinguished if we stop the contact of the substance on fire with air/oxygen.
- In case, a person has caught fire, it is good to wrap him/her with a blanket and make him/her roll in the ground.
- A liquid/fuel in ground in a container on fire, if covered with a lid can extinguish the fire.

Rachna then demonstrated to the students the proper usage of the fire extinguisher.

Rachna: Now tell me, do we have fire extinguishers in our school?

Some nodded in a yes, while others were not sure.

Rachna then told the students that they will conduct an audit exercise to find out the following:

- Are there fire extinguishers in the school?
- How many altogether?
- Do each and every floor and every corridor of the school building have an extinguisher?
- Where are they kept?
- Can the students reach them?

- Is there information displayed to let the students know where the extinguishers are kept?
- Are they in working condition?

Fig. 3.40 (a)

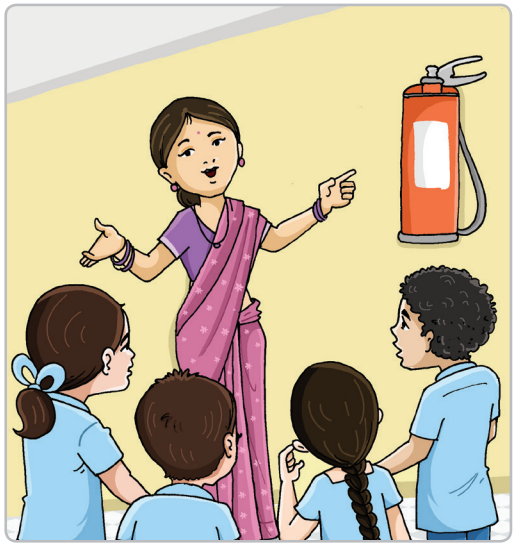


Fig. 3.40 (b)

She divided the class into four groups and separately accompanied each group to each of the four wings of the school to find out answers to the above questions.

After all the four groups had collected the information, Rachna asked them to pool together their information and present the report of the audit exercise.

Fig. 3.40 (c)

Samir presented the following report on behalf of the class:

Our school does have fire extinguishers. There are 16 extinguishers in the whole school, four for each wing. These 16 cover each and every floor and corridor of the school building. The extinguishers are kept on hooks

put on the walls of the corridors. Out of the 16 places, in 12, we found that students could easily reach the extinguishers. The remaining four could only be reached by slightly taller children. Except for one place in the junior wing, all the rest of the wings had information displayed to let the students know where to reach for the extinguisher in case of a fire. Out of the 16 extinguishers, two were not functioning properly.

Rachna: Very good. Now I will present this report to the Principal on your behalf so that the problems can be pointed out and taken care of well in time.

- What teaching-learning strategies were used in the above example? What were the opportunities for learning? What kind of learning has taken place?
- Did you have opportunities for assessment of the children?
- Did the students enjoy the audit exercise? Did it provide a hands-on experience to the children?
- Do you think environmental concerns were addressed? If yes, what were those?
- Were there any opportunities for skill development? Which were those?

- Let the students collect some experiences of their own, family and people in the neighbourhood who were either caught in or have witnessed any incident related to fire accident. Let them narrate the collected information in class and discuss the strategies to overcome such accidents.
- Let students collect the experiences from the elders in surroundings about the disasters they experienced and strategies that could be used to prevent them. They may prepare a report and present it in the classroom.
- Think of some concepts around which you can plan an audit exercise. Some of the following points may be helpful. You may change/add to these depending upon your context.

3.4.1. Audit for Infrastructural Safety

School Infrastructure	Yes/ No/any details	What can be done?
1. Is the school building an RCC structure or a temporary one?		
2. Is the roof of the school building thatched or tiled?		
3. Are the overhangs from the school building safely secured in order to mitigate the effect of strong cyclonic winds?		Retrofitting work should be undertaken on priority basis.
4. Is the school located in a low lying area or an area close to the sea which could be prone to flooding?		
5. Is the building wind/ water resistant?		
6. Can the school building serve as an emergency shelter?		
7. Have any specific warning signals been worked out for an emergency situation, for e.g. signals for strong cyclonic winds or flooding.		
8. Is there any evacuation plan? In what sequence will students evacuate the classroom and even things like which classroom will evacuate first? Where will the students assemble after evacuation?		` Responsibilities should be delegated to different staff members so that the evacuation operation can proceed smoothly.

		` Train students to evacuate the building in minimum time in case of an earthquake. Also train them to take strategic positions to save themselves in case they get trapped inside the building.
		` Mock drills for different kinds of disasters must be conducted often so that all members of the school community know what exactly is to be done in case of an emergency (The overall drill for different disasters would differ on some actions, e.g. an earthquake drill would be different from a fire drill).
9. Has an evacuation route been worked out?		Necessary modifications like double doors in rooms, double staircase and proper exit points should be made
10. Have signals been worked out and marked on the school walls to indicate evacuation routes?		
11. Is the staff trained in basic first aid?		` Schools must have trained medical personnel on the campus. or the teachers may be given training for first aid.

		` All emergency numbers - Police, Fire Department, Ambulance, etc. should be prominently displayed at different places in the school. An emergency evacuation plan must be ready for any disaster.
12. Who takes roll call after evacuation to ensure safety of all the children?		
13. In case a child is missing, who needs to be immediately informed about the same?		

Schools are vulnerable to disasters such as earthquakes, floods, cyclone or fire. The school management should see that the school building is hazard resistant. School buildings if properly designed can not only prevent the loss of precious lives, but can also serve as useful shelters for the community in emergency situations.

Use the following points in your interaction with the students

- What would you do if you are trapped in fire?
- What will you do if you see somebody has an accident with fire?
- Display the information for preventing fire accidents and various types of burns such as from fire, hot water, steam, etc. on the walls of the school.
- Enlist the items from the first aid-kit that can be used to treat burns.
- Prepare the kit and keep it in the classroom/school.
- Conduct mock exercises for preventing fire accidents.

3.5 Greening through the Mid Day Meal Programme in School

Read the following news except and reflect on the subsequent questions.

Midday mealtime right for teaching green behaviour

(Times of India, 17 August, 2014)

NEW DELHI: The one hour given to Mid Day Meals (MDM) in schools is an opportunity for discussing a variety of issues related to sustainable development. The MDM scheme, introduced mainly to encourage kids to enroll and remain in school can be used as teaching aid, argue the authors of a recently-compiled manual on education for sustainable development for elementry schools published by National Council of Educational Research and Training (NCERT) (TNN/Aug 17, 2014, 11.49 AM IST).

Let us Reflect

- Do you agree with the title of the news item - "Midday meal time right for teaching green behaviour"?
- Is MDM just an eating activity or is there more to it?
- Can MDM be an opportunity to teach green behaviour in schools? How?

It is 11.00 AM. Rani and her classmates are desperately waiting for the lunch break. They all are watching out as its time to enjoy the Mid Day Meal being cooked in the school. The irresisting aroma reaches their nose and Ahmed whispers "today it is my favourite *Chole Puri*".

Nina says "I think it would be *Khichri* as per the weekly menu displayed".

Ramesh: No matter what it is, I am too hungry to eat anything today. No meal was cooked in my house last night."

Ahmed: "Why? What happened?

Ramesh: "You know my father is ill and all money is going for his treatment. Moreover, the bad harvest this year also did not yield us much money."

Sakshi (the teacher): "Yes, Ramesh. May I know what is the matter being discussed?"

Ramesh: No answer

Sakshi: By the way, how is your father?

Ramesh: Ma'am , he is improving.

Ravi: Ma'am what is being cooked in Mid Day Meal today?

Sakshi: "Its a surprise for you. I tasted and it was yummy. I am sure you all will also like it. If that is so then the Principal agreed to include that in the weekly menu."

Rani: Ma'm I don't see any smoke from the kitchen. Is the food being cooked or not?

Sakshi: Oh, our kitchen has a smokeless *chullah* now. Tomorrow I will take you all to watch the cooking process of the Mid Day Meal.

The bell rings and all students rush out. Sakshi reminds the students to wash their hands before taking the meals while she walks out talking to Ramesh.

Students form a queue at the water taps to wash their hands and then sit in circles in different groups on the mats. Today mothers of Kanu and Raziya had come to school to assist the cook-cum-helpers and Dhokla has been cooked under the supervision of Kanu's mother. Everybody in her neighbourhood is fond of her *Dhokla*. One of the cook-cum-helpers (CCHs) distributes plates and the other one serves the meals. Kanu's and Raziya's mothers are also helping students

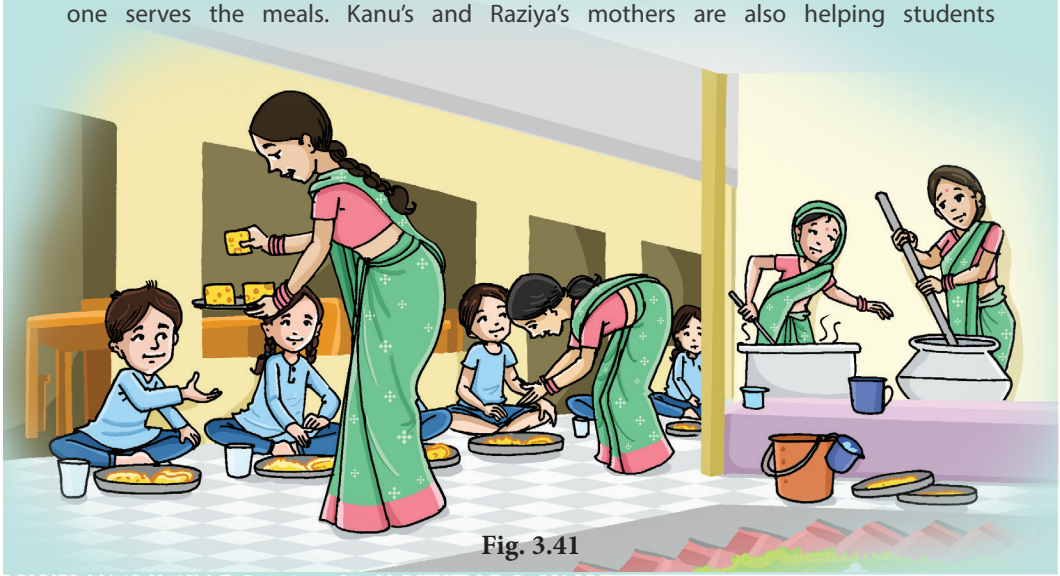


Fig. 3.41

sit in an orderly manner as some of them are very impatient to grab their share. They tell students to sit in circles while the meal is being served, Sakshi asks Class IV and V children to guess what ingredients lave been used to prepare *Dhokla*. Students tell various things and then Kanu's mother also tells how she prepared *Dhokla*. By this time all meal is served and students relish eating it. Priya shared with the teacher how she used to cook at home for her siblings while her parents were off to work but now she could also attend school as all of them were getting noon meals from the school.

Fig. 3.42 : *Children having Mid Day Meal in School*

MDM Programme

The National Programme of Nutritional Support to Primary Education (NPNSPE), popularly known as Mid Day Meal (MDM) programme exists in India for the last 18 years. The scheme was launched to provide Mid Day Meal to each and every child aged between 6-14 years of eligible schools to achieve the goal of Universalisation of Elementary Education. The scheme was launched with the following objectives in mind:

- To address hunger in schools by serving hot cooked meal.
- To improve nutritional status of children.
- To encourage poor children, belonging to disadvantaged sections, to attend school more regularly and help them concentrate on classroom activities, thereby increasing the enrolment, retention and attendance rate.
- Providing nutritional support to students in drought affected areas during summer vacation.

We all know that MDM is an important and essential activity in majority of the schools in the country. It can help in achieving the objectives of ESD as not only does it provide many opportunities to improve health,

- Does your school have the Mid Day Meal (MDM) programme? What is the strength of the students up to elementary level in your school?
- Do all students avail MDM? If not, how many of them eat MDM on an average per day in your school?
- Is there a separate cooking, storage and washing area for cooking food?
- Does the kitchen-cum-store have adequate space, light and ventilation?
- Do the devices and fuel used in cooking contribute towards eco-friendly practices?
- Is there an availability of safe drinking water?
- Is the nutritive value of the food cooked being ensured?
- What steps are taken to prepare and serve food in a hygienic manner?
- Does the school cater to the physical and emotional health of all children?
- Who all can play a responsible role in effective implementation of MDM?`

hygiene and social interaction but can also be an effective tool to enrich learning in different curricular areas. Going through the following section helps find answers to all the questions mentioned above. This will enable you to develop insight for using it to promote children's overall development as envisioned in the RTE Act and eventually, towards Greening of elementary schools.

As you know that the MDM programme in any school has the following aspects:

- Managing and maintaining the infrastructure for MDM.
- Ingredients and cooking process.
- Distribution of MDM.
- Monitoring the MDM.

Each of these is discussed below to help you use sustainable eco-friendly practices and thus help you to preceed a step further towards making a school a Green School.

3.5.1 Managing and Maintaining the Infrastructure and Cooking Fuel for MDM

Infrastructure for MDM includes the lay out and construction of the kitchen-cum-store and the cooking devices.

Is there a separate space for cooking, storing and washing for the MDM?

If yes, students may be involved in the following activities.

1. Ask students to draw lay out of the school premises and highlight the position of the kitchen-cum-store of your school in that.

2. They may also draw the map of the kitchen-cum-store.

Note Remember that the neatness and accuracy will vary as per the age and development level of the children.

3. Let students analyse it for the adequacy of space for storage, cooking and washing utensils. The questions such as the following might be helpful.

- Mention the different sections of the kitchen-cum-store and their use?
- Is there separate rooms/sections for cooking, storage and washing?

- Is the space adequate for cooking, storage and washing?
- What are the sources of light in it?
- What kind of system exists for the ventilation?
- Are the classrooms away from kitchen?
- What is the material used in the construction of the kitchen-cum- store?
- What are the advantages of this layout?
- Do you think it needs any improvement? How?
- Can the absence of the kitchen-cum-store lead to any health hazards or accidents? How?

Note Care may be taken to ask these as per the cognitive level of students.

4. To sensitise students and cooking staff towards the safety aspects related to the preparation of meals. Let them go through news such as the following and discuss the related questions.

JULY 2004 Shiksha Newsletter and World Socialist Website (22 July 2004)

On July 16, in a horrifying tragedy that shocked the nation, 90 school students were burnt to death and 23 seriously injured as fire raged through the nursery section of the Saraswathi English Medium School in Kumbakonam town of Thanjavur district in Tamil Nadu. According to police and eyewitnesses, the blaze started in the kitchen while the Mid Day Meal was being prepared. The attached roof caught fire which rapidly spread to the rest of the building. Although, it is illegal to have thatched roofs on schools, the practice is widespread and largely ignored.

- What is the material of the roof of the kitchen shed in your school?
- Is it inflammable?
- If yes, should it be of a different material? What could be that?

- Do you think the cooking needs to be done on a raised platform? Why?
- Is there an appropriate drainage system in the kitchen?
- How is the waste disposed off?
- Does the kitchen have a raised platform for cooking?
- Does it get adequate light?
- What is the system of ventilation?
- Who all can be approached (people/agencies) to help the school adhere to the stipulated norms? (For example, SMC).

Did You Know

Every State has been directed by the Ministry of Human Resource Development (MHRD), Government of India (GOI) to set up a Grievance Redressal Cell.

As per the MDM–MHRD guidelines as well, it is mandatory to construct a kitchen-cum-store as its absence would expose students to food poisoning and other health hazards and even fire accidents. Also it needs to be constructed away from the classrooms. Absolute care needs to be taken to ensure that kitchen-cum-stores should not have any thatched roofs or other inflammables, like straw, bamboo and synthetic material. Further, it should be designed in such a way so that the storage facility with locks is available to check pilferage. It should always be kept clean.

Cooking Devices and Fuel

Better ventilation for existing cooking devices and the use of cleaner burning fuels can help a lot in the process of Greening of the MDM programme.

Let us Reflect

- Which stove (*chullah*) is being used in your school?
- What is being used as fuel in it?

Did You Know

India's Indoor Air Pollution (IAP)

According to WHO report 'Every year, indoor air pollution (IAP) is responsible for the death of 1.6 million people — that's one death every 20 seconds'. It comes from the use of biomass fuels (fuel wood, animal dung, crop residues, etc.) for cooking, heating and lighting. IAP affects India more than other countries as most of the rural population are still accustomed to use the biomass fuel. In rural areas of India 72% of the total population (90%) of households also use biomass, i.e. wood, twigs (64%), crop waste (13%), and animal dung (13%) mostly with traditional stoves and inadequate ventilation, leading to inefficient combustion (production of poisonous gases) thus causing to indoor pollution and respiratory ailments.

Indoor air Pollution – World Health Organisation fact sheet

Given below are some activities that would help your students be aware of and compare different types of fuels used for cooking in order to sensitise others about the conservation of fuels and use of eco-friendly fuels for cooking. These will also enable them to make better choices from the options available besides getting tips for their safe storage as well as usage.

Activity

5. Show students (if possible) the working of Smokeless *chullah* (cooking stove). Ask them to compare the traditional and smokeless *chullah*. They may write a report about it and present it in the class. They may use the pictures as shown below.

Smokeless *chullha.* The smokeless *chullah* costs about Rs 200-300 . Its fuel efficiency is also higher. The cook stove is available in various sizes suiting the need. It conserves biomass fuel (firewood, animal dung, crop residues) and helps reduce cooking time.

Fig. 3.43 : *Traditional chullah*

Fig. 3.44 : *Smokeless chullah*

6. Let children enlist some fuels which can be used in place of firewood.

7. Does their list contain any different name as well? They may add that to the list given below and fill the following table.

Fuel	How can it be procured?	Approx. cost (per unit)	Gives out smoke Yes/No	Anything left after combustion	How do you store?
1. Kerosene					
2. LPG					
3. Firewood					
4. Charcoal					
5. Cow dung					
6. Crop residue					
7. Any other					

8. Let students compare the fuels mentioned above for the following:

- Which do you think is the most easily available to you?
- Which seems to be very cost effective fuel?
- Which is the least polluting and most environment-friendly?
- Which, according to you, is the most appropriate to be used in schools?

- Do you know people around who are engaged in fuel gathering? How do you think it harms them?

Did You Know

Lot of women and children are engaged in fuel wood gathering daily. It limits the women's contribution to other productive activities and takes children's time on studies. They are also prone to injuries and violence.

Activity

9. To familiarise students with LPG usage and its safety, help them read a receipt of an LPG cylinder and carefully read its back side. They can further sensitise the cooking personnel and others in their family and neighbourhood.

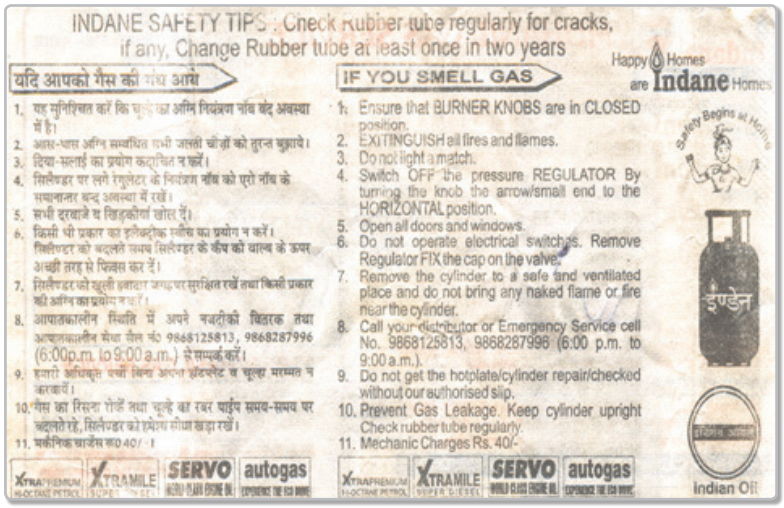


Fig. 3.45 : *Backside of LPG cylinder receipt*

- What are the various safety tips provided to prevent gas leakage?
- What precautions are mentioned to be observed in case the LPG leakage is there?

- Did the school face any incident of gas leakage/fire anytime? If yes, what steps were adopted after that?
- Is the contact number and address of the emergency services to deal with leakage and fire displayed or available in your school?
- What are the steps adopted to make the cooks, staff and students aware of dealing with any such incident?
- How can we store wood, crop residue, coal, kerosene safely?

2 Kerosene should be stored in leak proof container.

2 Wood, coal, cow dung and crop residue need to be protected from moisture.

10. Students can be encouraged to take up projects for a campaign in the society to install smokeless *chullah*.

- What are the teaching-learning opportunities that you can provide your students through the above mentioned activities under Greening through infrastructure and cooking devices and the fuel and its usage?
- How do you think these would lead to Greening of the Elementary schools and ESD?
- Design a few more activities in your context that lead to ESD.

Conservation of the fuel in our daily life is very important. In MDM preparation, if some money can be saved on the fuel consumption, then it can be utilised judiciously to provide more calories and better nutrition to the children.

11. Ask your elders about various ways to conserve cooking fuel at home. Discuss about these in the classroom and make posters in groups for display in the classrooms/corridors.

Did You Know

Some ways to conserve fuel for cooking

- Soaking of rice and pulses reduces cooking time.
- Use vessels with broad base to cook so that the flame is below the base.
- Usage of a pressure cooker for boiling and steaming after one whistle of the pressure cooker/ when the water starts boiling, the gas knob can be turned to minimum to reduce the flame.

Can you think of more ways to conserve fuel?

Many schools use biomass fuels, especially firewood for cooking. Better ventilation can be adopted through the use of smokeless *chullahs* but the burning of biomass still harms the environment in numerous ways.

Can you think of cooking without biomass fuels?

Have you heard about the solar cookers?

Solar Cooking and the Mid Day Meal Programme

Solar cooking is the best substitute to the use of fossil fuels (biomass, LPG, etc.) which can help address the problems associated with the use of biomass fuels for the health of our women and children. In a hot country like India, solar energy can be extensively used and solar cookers can provide a smoke-free solution. A small family-size solar oven can quickly heat enough water to cook rice or lentils with no fuel. A large capacity solar cooker may be used to cook food for all the students of the school. Solar ovens can prepare meals with no fuel cost, using only passive solar energy which thus provides a clean and cost-free alternative to the use of firewood or dung. They are most efficient between 10 a.m. to 2 p.m., so they can be used effectively to prepare the Mid Day Meal. Any excess capacity of the oven could be used to dry food for preservation or storage, to heat and purify water, etc.

A Smokeless village Kurabalakota in Chittoor district is a village mandal in the State of Andhra Pradesh, India, where for the first time at Bysanivaripalle, biogas plants and solar cookers were being used by all families and the village had become smokeless. Each solar cooker costs Rs 6,250 and the Central Government gave ₹ 2,250 as subsidy.

Reference: Census of India.

Fig. 3.46 : *Villagers using Solar Cooker*

Solar cookers are highly durable, require low maintenance and have an estimated useful life of 15 to 20 years. The solar cooker can be used both in the rural and urban areas; in the rural sector it helps curb deforestation and also avoids health risks through smoke from firewood and in the urban sector it saves energy on kerosene and LPG and makes cooking easy.

Many States have introduced solar cooking on pilot basis in government schools. The results are very encouraging as it saves the cooks from pollution due to smoke and also from the worry of getting the food burnt. The taste of the food in solar cookers is also liked by children.

Activity

12. Let the students find out the reasons why solar cooking has not picked up in India as well as globally in spite of its advantages.

13. Think of some innovative themes/topics on fuels, their types, conservation, usage, safety, etc. and organise debates in your classroom/school.

3.5.2 Ingredients for MDM and Cooking Process

Providing nutritious food to students for their overall development is of primary concern worldwide. It is a prerequisite to their better physical and mental health to help them concentrate in different curricular areas thus fulfilling the objectives of quality education to a large extent and eventually, that of ESD. Adequate nutrition and hygienic cooking and serving practices of the meal can be considered as Green practices in MDM. This requires procurement of the ingredients of cooking that cater to the nutritional needs of students besides ensuring orientation of the staff engaged with it to cook and serve in a hygienic manner.

(A) Procurement and Storage of Ingredients for Cooking

It is important for the students to understand the source of the ingredients for cooking and their safe storage as they may be needed to be engaged with various activities. These would let them acquire information engaged in the following activities.

14. They may be involved to collect the following information individually or in groups.

- Is there a fixed menu in your school?
- How often is it changed?
- Who decides the menu?
- Is it displayed in the school?
- If yes, where? If not, how could anyone know about it?
- What will you do if the decided menu is not being followed?

15. Enlist different dishes that you get in the MDM and find out the ingredients to prepare those?

Name of the Dish	What is it made up of? (Ingredients)

- Which ingredients are procured in bulk? How are they stored? Are the ingredients stored in dry and covered containers to protect them from moisture and pests?
- Which items do not have a long shelf life? Are these procured fresh?

16. Find out how different ingredients are procured for preparing the meals in your school?

Ingredients	Supplied by Central/ State Govt.	School Management	Community	Puchased from the Market	Any other
Rice					
Wheat					
Vegetables					
Spices					
Salt					
Water					
Any other					

- Do you have anything marked under the column school garden?
- If yes, what is that?
- If no, how do you think a school garden can help?
- Do you have any such garden in your school?
- How can it be used effectively for implementation of MDM?
- Did it happen at any time that the food was not prepared/ served due to non-availability of any food ingredients?
- How could that situation be checked?

In Shimoga district, Sagar Taluk GHS Subhashanagar, teachers, with the help of support staff and students, established a kitchen garden where they grew vegetables that they use to prepare the school MDM. The yield is so good that they even distribute these to ten schools in the neighbourhood of the taluka everyday.

Fig. 3.47 : *Students maintaining Kitchen Garden in schools*

In Mandya District GHPS, Byadarahalli and GHPS, K. Kodihalli school in Maddur Taluk, Karnataka the teachers and the students established a school garden where almost many types of vegetables, especially greens and fruits are grown and used for Mid Day Meals. Locally available millets, jowar and ragi, are used for additional nutrition.

17. Let students find out the following information and fill the table below.

Ingredients	Periodicity of Procurement	Place of Storage	Material of the container	Can it protect the food item from spoilage (moisture/ pests etc.)	Number of container (Adequate/ Inadequate)	Capacity (Appropriate/ Inappropriate)	How often are these cleaned	How often are these cleaned
Rice	Once in Six months	In the Kitchen-cum Store of School	Steel	Yes	One, adequate	100 Kg (Appropriate)	When the rice finishes	Yes
Wheat								
Pulses								
Spices								
Vegetables								

(B) Taking Care of the Nutrition

18. Students may be asked to reflect on the school menu.

- Write the weekly menu followed in your school.
- Does it include cereals, pulses, green vegetables, fruit and eggs?
- Which dishes do you like most?
- Which dishes do you wish to replace and by what?

Let us Reflect

Do you think changing the menu will affect its nutrition and the expenditure? How? Can the school afford that? Discuss with other staff members, headteacher or SMC?

Did You Know

High levels of malnutrition, particularly among growing students are directly and indirectly associated with high morbidity and mortality. Malnourished students tend to have lower I.Q.(Intelligence Quotient) and impaired cognitive ability which affects their school performance and productivity in later life.

Some major nutritional deficiencies affecting young students in India are:

- Nutritional anaemia (Haemoglobin [Hb] <12g/dl) due to iron and folic acid deficiency is widely prevalent among young students and adolescents. Iron deficiency in school-going students affects their learning ability and concentration power.
- Protein Energy Malnutrition among school age students assessed through weight deficit for age is the most sensitive indicator of their nutritional status.
- Deficiency of micronutrients. Even mild deficiencies of micronutrients (vitamin A, iron, folic acid, zinc, etc.) affect their growth, development and immunity. Vitamin A is important for promoting growth of the child, and building immunity and resistance to diseases. Iodine deficiency during childhood, the period of maximum growth, can result in loss of I.Q. points and poor physical and mental growth and development.

Activity

19. Help students to examine your school menu; find out the nutrients that these dishes are rich in. (For example, vitamins, calcium and protein).

20. Students may collect the following information:

(i) What are the various cooking practices being followed in your school?

(a) Wet cooking: (e.g. boiling)

(b) Dry cooking: (e.g. frying)

(ii) What kind of rice or wheat is used to cook food?

(Broken/whole wheat, white flour, parboiled rice/unpolished rice/ polished rice).

Did You Know

A slice of whole wheat bread has the protein content almost double and fibre in almost triple amount compared to that in the white bread. Refined grains, such as white rice or white flour, have both the bran and germ removed from the grain. Refined grains don't have as many nutrients as whole grains do, and they don't provide as much fibre naturally. Parboiled or unpolished rice is highly nutritious as well as cheaper. Sprouted pulses have more nutrients and need to be incorporated in single dish meals.

Activity

21. Ask students to visit the kitchen and observe and identify various processes/methods used for cooking on different days and fill the following table.

Did You Know

Why do we cook?

Cooking improves the appearance and taste of foods and confers new flavours. It destroys harmful food-borne micro-organisms. Digestibility of several foods, particularly of starch, improves on cooking. Also, heating the legumes especially soybean helps improve protein quality.

Cooking Process	What is being cooked?	Vessels used	Can it be cooked by any other process? If yes, then name it.	What else can be cooked using this process?
Boiling				
Steaming				
Frying				
Roasting				
Baking				
Any other				

Note The teachers may take the students to observe the Mid Day Meal being cooked in the school.

22. Discuss with students the occasions when people eat together.

Activity

23. Organise *melas* in school where a close interaction between community and school takes place. Students may be asked to share their experiences on such occasions.

(A) Preserving nutritive value of food

While most of the time we eat cooked food, the cooking process, if not done carefully, may lead to the loss of lot of nutrients that depend on the temperature, duration of cooking and the nutrient involved. Let us see how.

- Are the rice and vegetables washed before cooking? How?
- Do all vegetables need to be peeled?
- Are the vegetables freshly peeled and cut?
- What kind of salt is being used?
- What happens if we fry repeatedly in the same oil?

- Weather the vegetables cooked with the lid on are more/less nutritious as compared to when cooked in an open vessel?

(b) Washing and cutting of food ingredients

Leafy vegetables should be thoroughly washed before cutting. All vegetables should be freshly cut in large pieces to reduce the spoilage due to air exposure. Leafy tops of carrots, radish, turnips, etc. should not be thrown but utilised in preparing Mid Day Meals. Food items involving fermentation such as *idli, dosa, dhokla,* etc. may be encouraged for preparation as fermentation improves nutrition.

Rice must be washed with minimum amount of water to prevent the loss of minerals due to washing. In parboiled rice loss of vitamin and minerals due to washing and discarding of kanjee is much less as compared to boiled rice. Parboiling diffuses nutrients into the grain and prevents leaching by forming a protective gelatinised coating on the grain. Only "iodised salt" should be used for cooking Mid Day Meals.

Activity

24.

(a) Let the children be aware of the iodised salt and why it should be used during cooking? They may find out whether different brands of salt available in the market contain iodine or not?

(b) What are the other ingredients being used for cooking? Find out the source of their procurement?

Iodine deficiency is a primary cause of preventable mental retardation and brain damage. It also increases the chance of infant mortality, miscarriage and still birth.

Some precautions that need to be observed while cooking which can help in preserving its nutritive value are given here.

- Cooking to be done in minimum amount of water and if there is excess water, it may be used in soups and gravies. Excess

water during the boiling of rice should not be thrown but may be mixed with *dal* if the two are cooked separately.

- The root vegetables should be cooked with their skin as maximum nutrients exist in fine layer just under the skin and peeling can be done after cooking.
- Steaming prevents loss due to leaching. Vitamins, especially those of water-soluble B group, show a greater loss during cooking.
- Cooking in acid media with tamarind and other acids has a protective effect against vitamins. If the fat (such as oil/ghee) is repeatedly heated during frying it may end up containing toxic substances.
- The dishes need to be cooked for a short period of time and covered with a lid while cooking to prevent loss of nutrients. Over-cooking should be avoided as it may compromise nutritive value of proteins, particularly if the heating is done in the presence of sugars.
- Use a minimum quantity of fat for frying and avoid using it over and over again as reheated oil is harmful for frying and should be avoided.

The most important part of the cooking and the serving process of MDM requires the use of potable water.

Activity

25.

- What is the source of water available for cooking and drinking?
- Does it require cleaning before use?
- What steps are followed to clean it?
- Is it filtration through fine cloth, boiling, using alum, chlorine tablets, underground water (borewell/handpump) or any other?
- Use any such process to make the water potable.

(C) Ensuring Hygienic Cooking by the Cooks

26. Let the students observe the following :

- Do the cooks wash their hands with soap before cooking?
- Is their hair tied neatly while cooking?
- Do they wear apron and head gear?
- Do they wash the vegetables, pulses and rice with clean potable water?
- Are the leafy vegetables washed thoroughly before chopping?
- Whether the cooking utensils are cleaned the same day after the food is served?
- Is the cooked food kept covered before distribution? If yes, how?
- Do the cooks-cum-helpers have their nails trimmed?

In Haveri district GHPS, Yattanahalli, GHPS, Kurubagonda, SDMCs have taken lot of interest in Haveri district with regard to MDM in schools. All cooks in Ranibennur taluk are well-trained in cooking nutritious good quality food and are provided with two sets of uniform, aprons, head scarfs and some have also been provided with hand gloves. Idly cookers, pressure cookers grinder mixer have been donated by the community.

Fig. 3.48 : *Some hygienic practices in States for MDM*

The cooks need to wear cotton clothes while cooking and avoid synthetics to save themselves from fire/burns.

Activity

27. Ask the students to check the following food items for adulteration (Give them appropriate instructions and tips):

- Turmeric (*haldi*): If unadulterated, it will give red colour with soap solution.
- Black pepper seeds (*kali mirch*): Genuine black pepper seeds will sink when put in water.
- Red chilly: If unadulterated, it will not leave behind any colour in water.
- Pulses and vegetables (check for colour): If polished with artificial colours, they would leave behind colour when soaked in water.

3.5.3 Distribution of MDM

Let us Reflect

- Do students wash their hands before and after MDM?
- What do they use for washing hands?
- Are the plates kept in school or students bring from home?
- How is the cleanliness of utensils during cooking and serving taken care of?
- How do the students sit in your school while having the MDM?
- In a straight line/big circle/small circles/wherever they wish to/Any other.

To Do

Observe the MDMs logo.

- Is it displayed in school? Where?
- What does it signify?
- Do you see students sitting in a circle?
- Why do you think the food plates are depicted orange?

Did You Know

The MDM logo depicts a group of children sitting together in a circle and having their meal served hot. Equal importance is given to boys and girls. Orange colour is used for the food plate to represent it as hot and fresh food. It also symbolises energy, heat and Sun. Overall, it represents a shape of flower as a symbol of childhood, happiness, healthiness, progress and well-being of the future generations.

Children may be served meals while they are seated. It helps respect their dignity and saves them from getting hurt if the hot food from the plate falls accidentally on being served in a queue.

Read the following and express your views.

It is lunch time in the Government Primary School in Dantanuru village in Mahbubnagar district of Andhra Pradesh. Yellamma and Anjanamma can be seen serving hot rice and this is a scene common to most primary schools in the State. The two women serving food are a part of the Mahila Podupu Sanghams, Self Help Groups and have taken up the responsibility of cooking the MDM. They two take care of all the expenses like daal, cooking fuel, eggs and other ingredients like spices. Rice is provided through fair-price shops. They change the curries daily; provide tasty food with eggs once a week. These women cooks belong to the OBC (Other Backward Classes) section. Sarpanch C. Srinivasulu says that even Scheduled Caste women were involved in the activity. It did not face any protest in the village. The scheme has the full backing of the State Government.

Let us Reflect

- Who cooks and distributes the MDM in your school?
- Who employs them?
- Are there any Self Help Groups (SHGs) associated?
- Who recruits them?
- Do you agree with the views of the Sarpanch about recruitment of SC women as cook-cum-helpers?
- Does your school practise such things?

School Health Programme

The main aim of education is the overall development of the child. Health is a significant determinant of the well-being of the child. Promoting a healthy physical development of students is as much the responsibility of the education system as nurturing the cognitive and the socio-emotional development.

Let us Reflect

- Is a health card maintained for each child of your school?
- Does the health check up take place in your school? If no, find out the reason and initiate efforts with School Management Committee (SMC) or Principal for doing so. If yes, the following activity may be done with your students.

Activity

28. Let students take their health card and find out:

- When was the card issued?
- How many times has the health check up been done since then?

Fig. 3.49

- How many times has the health check up been done in a year?
- Who has done it?
- On what different aspects the health check up is done?
- Were students diagnosed with any problems? If yes, which ones?
- Are they given treatment in the school or referred somewhere else?
- Are any referral cards also issued to these students?
- Is the immunisation done as per the national schedule?
- Students can be asked to bring a copy of their immunisation card to the school and it can be used as a teaching-learning opportunity to discuss various diseases and their preventive measures? (Help of the medical staff visiting school for health check up may also be taken.)
- Are the Vitamin A, iron, folic acid tablets and de-worming tablets distributed as per schedule?
- How many students have been diagnosed with visual, hearing or any other physical disability? Find out.
- Have they been provided with the prescribed aids and appliances?

To Do

- Can you help in maintaining good health and hygiene of children?
- Mention a few situations that provide you such opportunities.

Did You Know

School Health Programme needs to be in place to address holistically the health and nutrition needs of children. Teachers should screen students on a continuous basis and a trained medical personnel /doctor should visit the schools on a fixed day for screening, treatment of minor ailments and referral. Screening of general health includes assessment of Anaemia/Nutritional status, visual acuity, hearing problems, dental check up, common skin conditions, heart defects, physical disabilities, learning disorders, behaviour problems. Basic medicine kit should be provided to take care of common ailments prevalent among young school going children.

Why School based Kitchen?

Let us Reflect

- In which area is your school located (Urban/ Rural)?
- Does your school get MDM from the school based kitchen or the central kitchen?
- Why do you think the MDM guidelines prioritise the use of school based kitchen?

In Ria's school the Mid Day Meal is cooked at some central kitchen by a caterer and supplied to 15 schools of the neighbourhood. In her school the food is delivered first by the concerned person at 7 am. By the time it was served it turned cold. Though, it was *aloo poori* with *kheer* but many students could not enjoy that.

To Do

Please go through the MHRD guidelines for MDM on the website of MHRD and reflect if your school is justified in setting/using the kitchen meant for MDM.

In urban areas or at some places where school-based cooking is not feasible, generally a centralised kitchen setup is possible for a cluster of

schools and cooked hot meal may then be transported under hygienic conditions through a reliable transport system to various schools. However, a school-based kitchen has many advantages over a central kitchen:

- Students get fresh food like home cooked food.
- Many learning opportunities can be provided to students by allowing them to observe (kitchen layout, storage and procurement of ingredients, vessels for cooking and cooking process), involve (the teachers, students, MDM staff, SMC, etc.), sensitise(students, staff and community), manage (safe, hygienic, and nutritive meals) the MDM programme of their school.
- Growing vegetables and fruits in schools provides children not only nutritions MDM but also a first hand experience to learn.
- Involvement of mothers and community in MDM can be sought.
- The issues of equity can be addressed by providing employment to disadvantaged (esp. women and those from the deprived section).
- Helps ownership amongst children, parents and community.

3.5.4 Monitoring under MDM

Let us find out

- Enlist the organisations and agencies associated with the MDM programme. Try to find their roles and responsibilities towards the MDM programme being implemented in your school/district /State.
- Do the following have any role in the whole process? If yes, then state in a few words how do they help?

Person(s)	Do they have any role in MDM	Role
Head Teacher		
Parents		
Teachers		
PTA		
SMC		
Community		

Some case studies of effective community participation in Dakshina Kannada District, Karnataka.

In schools of Dakshina Kannada, Bantvalataluk, GHPS, Pilichindikallu, SDMCs are highly cooperative. Community has donated mixer-grinder, utensils, plates and tumblers to children. In Putthurtaluk the community has provided plates and tumblers to all the students of the taluk.

Fig. 3.50 : *Items donated by community for MDM in School*

In Uttar Karnataka districts of GHPS, Karwar and Murudeshwara, Gokarna and Idugunji, everyday donors are providing vegetables and an amount of Rs 600 per school for buying ingredients per month. Wire meshed box and water filters are donated by the parents. In one of the schools, food is given to students by the donors which is relished by children, as fish is the main food of the locality.

Fig. 3.51 : *Donations in cash and kind by community*

In Uttar Kannada, Sirsi Taluk schools in Kageri and other places, almost all school students are getting tasty pickles, curd/buttermilk from the donors for MDM. *Tambuli* greens and coconuts are ground and mixed with curd/buttermilk and given to students, adding to the nutrition as well as taste.

In Gadag district, as shown, *idli* cookers have been provided to schools by the donors in the community. *Idlis* and *dosas* are prepared in the schools of on every Saturdays and distributed to students in MDM which is highly enjoyed.

Let us Reflect

_ What, according to you, are the main aspects about MDM in your school?

Good things about the MDM in my school	Some aspects where it needs improvement

3.6 Beyond School: Greening through Extended Activities

3.6.1 Involving Commvunity

Let us Reflect

- Who all would you consider being part of the community as far as the school is concerned?
- What is the nature and extent of parents' participation in your school?
- Do you ever invite people from the neighbourhood/locality to your school? If yes, on what occasions and for what purposes?
- Do the teaching-learning activities of your school have any scope for the students to reach out to the local community?
- Are there any issues where your school can be benefited by the community?
- Do you think the community can also be benefited by the school activities? How?

Effective partnership between the school and the community can help address the environmental concerns. The community can be an important resource in the teaching-learning process besides getting benefits in return from the school as well. This helps strengthen the bonds between the school and the community.

Given below are some of the real life examples where the school and the community have partnered in some way or the other, in order to develop a sustainable environment in the school and around.

Fig. 3.52 : *School-Community partnership*

Case 1

Bal Sansads for Water Quality Monitoring: Soon after their classes are over, around a dozen students from Pathargora Upper Primary School in the Mousabani block of East Singhbhum district in Jharkhand are busy packing their portable water-testing kit. These students are members of the local Bal Sansad or Child Cabinet, who have been trained to test the quality of drinking water from the hand pumps and wells in their village. The *Bal Sansads* project is a joint initiative of the Department of Human Resources Development, the Drinking Water and Sanitation Department, the Government of Jharkhand and UNICEF.

Proudly carrying the kit on her shoulder and leading her cabinet, Saloni Mardi, the Prime Minister of this Bal Sansad explains how the collected water samples will be tested for harmful bacteria and chemical content. "After the testing of the water, we can conclude whether the water is safe for drinking or not. This is essential information that has to be communicated to the villagers who are using this water for drinking," says Surumuni Hansda, the Health Minister in this *Bal Sansad*.

The *Bal Sansad* tests the quality of water from different sources. The group now undertakes the task of checking the water quality of every school, hand pump and well annually. Students have also been assigned the task of testing the water in their village on days when they are free. Necessary action is initiated if the water is not found safe for drinking.

Apart from testing the water from various sources, *Bal Sansads* are also involved in educating the community on safe drinking water. During the training sessions, the students are given information on the need to drink safe water. They are also informed about the consequences of consuming unsafe drinking water.

http://www.unicef.org/india/wes_6127.htm

Case 2

The Government Co-ed. Senior Secondary School, Baprola, Delhi has a large campus of about three acres. More than one acre of the land had wild vegetation growing to the height of 6-7 feet. When the new Principal joined the school, he felt that a big part of the school was lying unused and it had also become a security threat for the school because animals and anti-social elements could easily hide over there. So, he talked to the people in the community and they offered full cooperation to the school. Soon, the whole area was cleared of the wild vegetation and now it has been developed beautifully giving the school a new grand look. The community at Baprola has developed a very close tie with the school. The people have donated fans and water coolers to the school. They regularly supply cow dung to the school for vermicomposting. Whenever the school demands anything from them, they come forward with full support.

Case 3

In Deepalay a School, Kalkaji Extension, Delhi most of the students come from the slum colonies nearby and the school provides them education at a subsidised rate. The school faced the problem of some boys eating gutka (tobacco) in the school. The Principal decided to take a strict action against the boys who brought *gutka* packets with them. So, all the boys were thoroughly checked. The school Principal met the community leaders and asked them to put a ban on the sale of gutka in the area around the school. With the help of the community, the Principal was able to control the sale of *gutka*. Soon, the school became a *gutka*-free zone. The school also took out rallies in the community lanes and spread awareness about the harmful effects of tobacco and the rallies were led by a person of the community who had lost one of his lungs due to tobacco smoking.

Case 4

Eat healthy Stay fit programme in K.V. AAI Rangpuri

In Kendriya Vidyalaya Rangpuri, a school in New Delhi, informal discussions with parents on different occasions often revealed that children were extremely fond of junk food and disliked home-made simple food. The matter was brought to the notice of the Principal and she discussed the matter with the staff council. First step in this regard was to keep a check on the school canteen. She constituted teams that included students and teachers and the matter was discussed with the canteen owner. The substitute to different junk food items were thought of and a list was provided to him. The rates were also discussed, e.g. in place of noodles, pizza's and burgers, food items such as idli, dosa, rajma chawal, channa kulcha, etc. were suggested. The canteen food improved. However, the problem still existed. During observation of children's tiffins it was found that many students brought noodles, chips and biscuits as lunch from home.

Fig. 3.53 : *Healthy salads and breakfast ideas prepared by the students*

Mrs Silvy Zachariah, EVS teacher decided to seek help from the community by speaking to the parents of the students regarding the ill effects of eating junk food. She launched a project titled, "Eat Healthy, Stay Fit", which highlighted

the importance of eating good wholesome food for better physical, mental and psychological development and for the well-being of the students and the entire community. She decided that the project is not to be an activity in isolation, but linked it with the curriculum. In fact, she decided to teach 15 units of the EVS textbook of Class V through this project of ten months.

The project was divided into two terms. Right from healthy eating habits to what food astronomers and mountaineers carry with them on an expedition was taken up. Food pyramid, balanced diet, techniques of food preservation, loss of nutrients due to unscientific cooking methods, how food gets spoilt, health and personal hygiene, collection of information on food used in ancient times, problems due to malnutrition and anaemia, deficiency diseases, medicinal plants and herbs, junk food and their adverse effect on the body, importance of water in our diet, problems caused due to dehydration, etc. were taken up as themes.

Fig. 3.54 : *Celebration of "No Junk Food Day"*

In the second term children discussed and discovered about special food eaten by people in far flung regions of the world like hot desert and cold desert, food distributed in relief camps during disasters like earthquake, tsunami, flood, hurricane, etc., special food supplements taken by players and sports people, food products collected from the forest, different farming methods and different types of crops, organic farming, composting of bio-degradable waste, preserving and storing grains and pulses using natural

Fig. 3.55 : *Different types of foodgrains*

methods, festivals related to farming and harvest and food prepared during festivals.

During the project the parents cooperated by providing proper nutritious food in their children's lunch boxes and even stopped giving them money to buy chips, samosas and cold drinks. Parents also helped with all the activities in the project like guiding the students to collect different types of foodgrains (as sample for display), supporting the students in making posters and banners for celebrating "No Junk Food Day" in the Vidyalaya, by giving ideas to make different types of salads, lemonades and smoothies for the activity, "Cooking without Fire" and helped organise a food court by preparing healthy regional dishes.

Fig. 3.56 : *Food court organised by the students*

Fig. 3.57 : *PPT presentation by students on the interactive board*

A "Children's Market" was organised with full help and support from the parents, who provided fruits, vegetables, organic food, pickles, jams, etc. which the students sold in the children's market to the school teachers and senior students. It was a market for the children and by the children. A post office selling stamps and three to four stationery shops were also a part of the market.

Fig. 3.58 : *Culminating product: A recipe book compiled by the students*

Some of the other activities that the students undertook as a group were interactive games, poster making, scrap book, slogan writing, creating models and charts, PPT presentations, community lunch, rally and campaign, short plays,

qawali and collecting healthy food recipes, which were compiled into a recipe book, released by the Principal at the culmination of the project.

A number of days such as World Health Day, World Heart Day-*Karo Apne Dil Se Pyaar*, Hepatitis Day, Fruit Day, etc. were celebrated where children were encouraged to write slogans and make posters which played a key role in spreading awareness among the students of the entire school and helped in peer learning.

Fig. 3.59 : *Project "Eat Healthy Stay Fit"*

The entire project was conducted with a holistic approach and helped children think and try out new ideas, reflect independently. This encouraged collaboration and promoted self-learning skills. Through the support of the community, children also learned important life skills like buying and selling, money transaction, besides enhancing their language and interactive skills.

Everyone in the community benefited from this project by adopting a healthy lifestyle.

Let us Reflect

- Compare the above four cases – in which case the school was benefiting from the community. In which ones did the community benefit from the school activities?
- In case 3, the principal took the lead to approach the community. Who else can do that?
- What were the teaching-learning opportunities in the above cases?
- Has your school taken up any joint ventures with the local community?
- If yes, what were the challenges?
- How did you overcome them?

To Do

- Design a few activities where community is used as a resource in various teaching learning activities.
- Teachers can make use of several ways and means where the community becomes a teaching-learning resource.

In order to introduce the concept of different places of stay in Class IV, Saba (the teacher) thought that a 'visit' would be an appropriate strategy.

Let us Reflect

- What do we mean by a visit? Does it require going far away, a lot of time and money, and organisation? What does this mean for you – extra time, extra effort, extra responsibility?
- Visits do not necessarily mean going far away, or going to an unspoilt natural site or nature camp. A walk around the school or neighbourhood; a visit to a local historical or cultural or dilapidated monument, a few hours in a nearby public park or garden; a visit to a wholesale vegetable or grain mandi, visit to a well, visit to a panchayat bhawan and watching the proceedings of the panchayat – all these can become exciting educational opportunities.

Before selecting a particular place, Saba asked the students about the different places that exist in the neighbourhood.

Swati: There is a shop, which sells milk and vegetables.

Nitin: There is a house for horses too.

Saba (the teacher): What is the house for horses called?

Salim: Stable.

(the teacher): Good! What else is there?

Aarti: Ma'am, there is a dispensary as well. I took medicines from there when I was sick.

Swati: I have also seen a sabji mandi and a railway crossing.

After this interaction, Saba took the students outside the class in the neighbourhood. The students saw the places around the school – Mother Dairy, post office, bank,

Sabji mandi, railway crossing, night shelter for the homeless, dispensary and stable. While going around, some of the students narrated experiences and many of them kept asking questions about the different places they saw. Most questions were related to the night shelter.

Girish: Ma'am, this is a big house. Several families must be staying here.

Amrit: No, no, no. An uncle of mine who has come from the village stays here.

Paul: Ma'am, can anybody stay there? Can we also stay?

Saba : This is a night shelter. Would you like to go there?

Saba then went up to the Manager of the night shelter and sought his permission to take the students inside. The students saw a multi-story building with huge halls.

Arun: Such big halls! What happens here? I don't see a kitchen. Where is the food prepared?

Sanoj: Probably one large family stays in this hall. But where are their belongings?

Salim: I can see toilets and bathrooms.

Gita: I don't hear any voices. Where are the children? May be they have gone to school.

Salim: There is hardly anyone around. Where have all the people disappeared?

The students then came back to the school and after a round of discussion, decided to visit the place. Saba knew what to do next. She divided the class into three groups – one group of four students were assigned the roles of 1. Reporter/ presenter, 2. Recorder, 3. Associate, 4. Interviewer. The roles were assigned based on the children's abilities, e.g. the ones who were good at writing were given the role of recorder. This group was asked to interview the manager and two people who stayed here and were still around. The interviewer posed the following questions to the manager, the answers to which were recorded by the recorder and the associate.

- How long have you been working here?
- Do people wishing to stay here have to pay rent? If yes, how much?
- What facilities do you provide to the people staying here?
- Who manages the night shelter?
- What kinds of work do the people staying here do?

The following questions were posed to the people.

- What is your name?
- How long have you been staying here?
- Do any of your family members stay here? Who are these members?
- Do you consider the night shelter your home?
- Do you pay rent to stay here? If yes, how much?
- Where do you eat?
- What facilities are provided to you here? Are you happy with the facilities here and the way they are managed? What changes would you suggest to make it a better place?
- What work do you do?
- Do you get a place here everyday? If not, what do you do?
- Are you happy here?
- Where did you stay before coming here?
- Do you want to stay here throughout your life?
- Where do you keep your belongings?
- Do you carry your belongings everyday with you?

The other two groups were given the task of observation. Individual members of these two groups were asked to observe the following and prepare a report.

Sanitation: How many toilets altogether? Were the toilets clean?

Halls: How clean was the hall? Were the things in the hall neatly arranged or done haphazardly?

Availability of water: Was there water in the toilets? What were the provisions for drinking water?

Other facilities: What about provisions for electricity? How many fans were there in the hall? Was there proper lighting? Were the inmates provided mattresses to sleep on? Did they get blankets during winter?

Arrangement for tea and eatables: Did the inmates get tea in the morning? Was there any provision for providing them with food and eatables?

Children: Were there any students around? Were there any specific arrangements for them? What did they do during the day? Do they go to school?

Women: Did the night shelter have women inmates? What special facilities were provided to them?

Safety and Security: How safe was the night shelter? Was it secure to stay there?

Medical facilities: Did the shelter have any provision for providing medical facilities to the inmates? What did the inmates do in case of a medical emergency?

Emergency provisions: How equipped was the night shelter to handle emergency situations such as fire? Did you see any fire extinguishers around? Were the extinguishers in functional condition? Did the inmates know how to operate them? Was there any fire alarm in the building?

Exits and entries: How many exits and entries did the night shelter have? Were there enough exits so as to vacate the night shelter quickly in case of an emergency? How user-friendly was the overall structure? What was the condition of the building?

In the post-report presentation, several issues were raised and discussed in the class. One of the themes of discussion was migration. Why do people leave their villages and come to towns and cities? So now you see how you started off with one theme in mind but went on to sensitise the students about other related issues as well.

The night shelter is one place where Saba took the children. Students expressed the willingness to go to the other places to learn more about them.

Saba then had a discussion with the students on when you go outside your city/town, where do you stay? The students narrated their experiences of staying at relatives houses or in a *dharamshala* or a hotel, etc. Saba then gave an assignment to the students to write about their experiences of staying in these places.

For the children, visits can help to break the "subject" compartments and show how all are seamlessly integrated in real-life, e.g. a visit to a wholesale vegetable market would include understanding of biodiversity, economics, transportation, market forces and different societal context, such as class and occupations. What seemed to be fragmented information in different textbooks blends to an integrated and inter-related picture.

- What were the opportunities for learning? What kind of learning has taken place?
- Did you have opportunities for assessment of the students (not just when they present their reports, but also during the visit, e.g. trying to improve upon the questions being asked)?
- Did the students enjoy the visit? Did it provide a hands-on experience to the children? Was it connected to their daily life (it certainly provided a change from the daily monotony of the classroom)?
- Do you think environmental concerns were addressed? If yes, what were those?
- What teaching-learning strategies besides visit were incorporated in the above-mentioned example? Was this strategy different from the rote learning process?
- Do you think a visit is required for every concept?
- Were there any opportunities for skill formation?

For the teacher, taking students outside the classroom can help enrich and support classroom teaching and learning. The challenge is how to plan such visits so that they do not remain just an 'outing' or picnic but become valuable opportunities to "connect knowledge to life outside school" and help to enliven and complement the curriculum.

As a teacher you would be wondering when to organise visits. You could organise them as and when required and also when it is most suited for understanding a theme/concept. You need not wait for special occasions to organise these visits. The other concern would be how to plan such visits. This would require some preparation on your part so that the exercise becomes a meaningful experience. You can do some preliminary planning but one must be prepared to learn from trial and error. During the course of planning, you can make a preliminary visit to the proposed site. You will also need to plan different activities that can be carried out by the students before, during and after the visit. Besides, do not forget to orient the students before the visit so that they are not clueless

about the aims and objectives of the visit. Also apprise them of the dos and don'ts that they need to follow during the course of the visit.

Think of some concepts around which you can plan a visit. You can choose whatever is in your neighbourhood. Following are some suggested activities in this direction

Activity 1 Ask students to identify people from their neighbourhood who have been a witness to events of historical significance (Independence struggle, Asian Games, World Wars, Emergency, etc.) Probe them about their experience in those times. Students could also be asked to trace the history of their locality or people.

Activity 2 Find suitable occasions to invite skilled workers such as carpenters, masons, weavers, potters, etc. from your neighbourhood and allow them to share and demonstrate their expertise. They may be engaged as mentors to guide students during art, craft and work education activities.

Activity 3 Students can collaborate with the community to set up museums/ corners where local and traditional artefacts/items may be assembled.

Activity 4 Students may conduct a health survey in a particular area of their neighbourhood to know about the diseases that people of different age groups suffered during the last six months. They may be encouraged to identify the most common forms of illnesses and look for the possible causes. For example, diarrhoea, dysentery, typhoid, etc. may be caused due to contaiminated water, then, sources of water, its storage, purification and handling could be some of the aspects that students can work on.

- In the above example of a visit, identify the specific opportunities when other strategies such as survey, interview and observation were used?
- Plan some situations in any curricular area(s) where students can conduct surveys or interviews.
- Detail out the steps from planning to the execution. What would be your role in the whole process?

Community can be effectively used as a learning resource by encouraging the students to gather information about different concepts related to their curriculum from their parents, grandparents and other people in the community. They get a chance to learn from the experiences of the community people. Knowledge of the local history, agricultural and other occupational practices of the past, impact of technology on the lives of people, rituals and other cultural practices of people of diverse communities can also be a rich source of learning.

4
CHAPTER

How Green is My School?

Take out the paper where you had answered the questions before going through this Resource Book.

- How do you describe a Green School now?
- Is it something more than the plantation activity?
- How does it help achieve objectives of ESD?

"Live simple so that others way simply live"

– Mahatma Gandhi

You might appreciate that the notion of 'Green' has been interpreted very exhaustively in the preceding sections. An attempt has been made to apprise you that Greening of an institution is an all encompassive process that requires synchronised school-community efforts, accessing multiple resources and using a wide range of activities, with the aim of creating a 'Green' space. While in physical sense it refers to a place that is physically Green in terms of plantation and one that caters to conservation concerns, it also refers to a space that encourages sustainability practices and is 'socio-culturally Green' as well. A socio-cultural Green institution by its very nature will be a pluralistic place with people from highly heterogeneous backgrounds (in terms of class, caste, religion and language) as its members. The ethos and spirit will

be just and democratic. Individual-oriented activities and participative governance will be encouraged. The curriculum will have lasting community commitment and will look upon community as a valuable resource. The tasks and activities will be organised in authentic contexts and in real situations. A strong sense of concern for environment will be infused in all kinds of school activities. Curriculum transaction would make use of regular school occasions such as the assembly or the Mid Day Meal to build relevant understandings and cultivate necessary sensitivities. The focus will be on the development of process skills of the students so that they 'learn to learn' and become more empowered in the process and much better equipped to guide their own learning in later life. Assessment will be an inherent part of the teaching-learning process and not an end-term or stand alone exercise.

Reflect on the activities that have been suggested in this Resource Book:

- Do these activities require any special resources in terms of material or finance?
- Are these activities divorced from the school curriculum?
- Do these require special effort for their organisation?
- Are these activities too time consuming?

An obvious negative to these queries should cue about the practicability and feasibility of these activities. Suggested tasks, activities and exercises are all geared towards building a 'Green School' with an active participation of students in the Greening process ensuring enriching teaching-learning opportunities that are rooted in real, immediate contexts. Such everlasting understanding and sensitivities developed during the course of these activities can never be achieved in contrived classroom situations. Students of such an institution will display a visible sense of self worth, a deep concern for values of social justice and will be sensitive to their environment.

4.1 Learning from the Success Stories

Many schools in India have contributed in their own way to the cause of encouraging and institutionalising sustainability practices. They have shown through their initiatives at micro level that the idea of a 'Green School' that may sound as a lofty ideal can actually be translated to everyday reality. Given below are examples of a few such efforts that we can draw inspiration from.

4.1.1 Deccan Development Society (DDS), Andhra Pradesh

DDS society is working in the areas of food security, ecological agriculture and education in Andhra Pradesh since 1993. Pachha Saale, DDS Green School located in Jarasangam Mandal, is a school under the society which has been successful in increasing enrolment and retaining the children in school as well. The society is also trying to blend the local people's traditional knowledge in the area of health and organic agriculture with school education through innovative activities among the children.

Fig. 4.1 : *Children making toys of clay*

Fig. 4.2 : *Children doing plantation*

The children are divided into groups as per their cognitive level. They are involved in the activities like carpentry, masonry, tailoring, book binding, pottery, permaculture, herbal medicine making, para veterinary services, etc.

Permaculture is an innovative organic agricultural practice where school children learn about soil health, Green manure making, plant guilds, earth works, mixed cropping pattern, nitrogen fixing method, tree-crop interrelationships, designing cropping and planting methods and other activities. Children also learn the idea of companion planting; circle planting, alley cropping, techniques of mulching, innovative designing of tree nursery, etc.

The most popular activity in the DDS Green School is to celebrate the community festivals (*Moharrum, Endlukatte Punnam, Erovaka Punnam,* etc.) in a safe and creative manner. During the festivals the children come together to decorate their classrooms, other areas of school, prepare sweet bread, eat and dance together.

4.1.2 Toilets in Leh

Leh is a very dry and hilly area. Running water is a precious resource. Here people have devised their own styles of disposing off the toilet waste which suits the climatic conditions and also converting it into valuable organic manure.

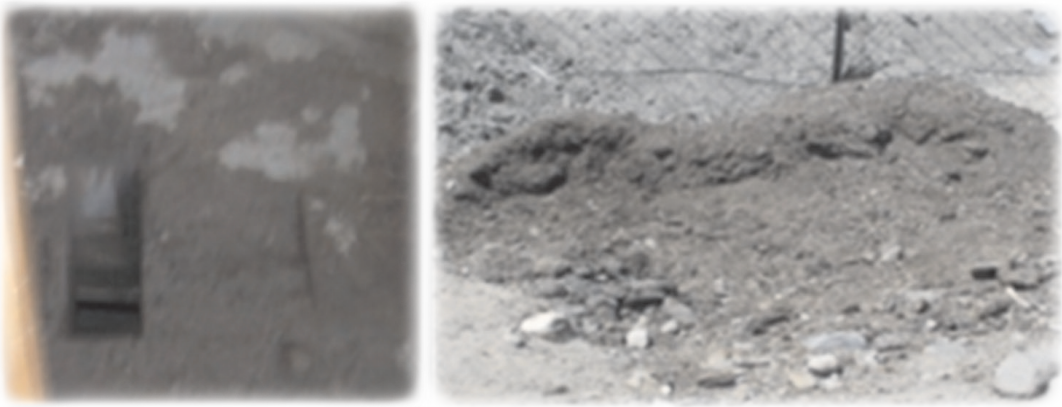


Fig. 4.3 : *Toilets in Leh*

The toilets at Druke White Lotus School at Shey (Leh, Ladakh) are such that the excreta falls down into the pit. There are two seats per toilet. After some time, one seat is closed with sand and the second is opened.

By the time the excreta in the first pit gets decomposed and is emptied, the other pit is filled up and the seat is closed with sand. This way the waste is converted into useful manure.

4.1.3 The Water Harvesting Sites

Unavoidable wastage of water, e.g. near the drinking area or washing area may be diverted for irrigating.

Fig. 4.4 : *Water Harvesting in Deepalaya School, Kalkaji Extension*

Fig. 4.5 : *Water Harvesting in Meera Model School, Janakpuri*

4.1.4 Recycling units set up at Deepalaya School and Surajmal Vihar School, Delhi

- Waste paper is torn into small pieces and kept in a large tub.
- They are soaked in water for two hours.
- Fenugreek seeds (*methi* seeds) can be soaked along with the paper to increase the strength of recycled paper.

Fig. 4.6

- This is an electricity powered mini-beater or a hydrapulper.
- Pulp is made ready in this hydrapulper for making paper.

Fig. 4.7

A wooden board is placed on a table. A piece of thin cotton wet cloth is neatly spread on the board without any wrinkles.

Fig. 4.8

Fig. 4.9

The frame is carefully lifted and turned over the cloth. Atleast ten sheets can be stacked on top of each other separated by the thin cotton cloth.

Fig. 4.10

Fig. 4.11

Another wooden board is placed on this stack of sheets and pressed to squeeze out excess water.

Fig. 4.12

Fig. 4.13

This is a manual screw press. It is used to squeeze out water from the recycled paper sheets.

The stack of sheets along with the two wooden boards, one at the top and one at the bottom of the papers is placed in the screw press. It is rotated like a screw till most of the water is squeezed from the paper.

After squeezing out excess water by the screw press. The sheets of paper are separated and dried in the son.

Fig. 4.14

Fig. 4.15

The dry paper is peeled out from the cotton cloth the next day and straightened with a check up machine or a hot iron.

After this the paper is ready for use or sale.

4.1.5 Life skill Activities

Fig. 4.16 : *Best out of waste*

Fig. 4.17: *Craft work*

4.1.6 Science Parks in Schools

Fig. 4.18 : *Indus International School, Bengaluru*

Fig. 4.19: *Science Park at Trivandrum International School*

Fig. 4.20 : *Ankidyne's Science Park at Kerala School*

Fig. 4.21 : *Maharaja Agrasen Model School, CD Block, Pitampura, New Delhi*

4.1.7 Eco-friendly Festival Celebration

Fig. 4.22: *Diya Making*

Fig. 4.23: *Writing on the School Wall*

4.1.8 Working with Community

Fig. 4.24 : *Students working in the neighbourhood*

These examples show how environmental concerns and issues only make sense when they are taken out from textbooks, analysed and addressed in actual contexts and adopted as a natural way of life. Have you come across schools making efforts at their own small level to build a Green ethos in their respective schools?

4.2 How Green is My School?

Bearing an imprint of a 'Green School' in your minds and having studied the above examples, you may be tempted to analyse your own school on 'Green lines'. You may choose to analyse different aspects of your school, based on the understanding of the concept that you have acquired through this document. Table 4.1 attempts to provide certain indicators that you may choose as reference points while looking at different aspects of your school.

Table 4.1

Components	Indicators of Green School	How Green is my School?	What more can be done?
Classroom	` Naturally lighted classrooms ` Provision for artificial lighting in classrooms, lab, library, etc. ` Natural light from the side of the blackboard. ` Natural light at students' desks from their right side. ` Ventilated classrooms and other closed spaces with provision for cross ventilation ` Windows on the opposite side to the doors ` Ventilators so located that hot air is not trapped		

	` Minimum two doors in each classroom ` Location of blackboard. ` Walls painted in white/light colours ` Maintenance of optimum temperature in classrooms during all seasons preferably without using any electrical appliance ` Fans (if required) right above the children ` Timely fixing of the window panes, electrical points, hinges/bolts if not in working condition. ` Classrooms receiving warmth of Sun in winters and shade in summers ` Cleanliness – clear window panes, litter free spaces, dustbin in classrooms, corridors and open spaces, no graffiti and cobwebs ` Appropriate seating arrangement that allows students to: Sit comfortably, maintain appropriate posture and see from an appropriate distance from the blackboard (to enable students sitting in the last rows as well.) ` Proper place for storage of TLM ` Use of the classroom and building for sensitisation and awareness of various environmental issues and concerns ` Students' participation in managing/maintenance of the above.		

Common spaces			
Staircase	` Appropriate width of the staircases so that students can move comfortably for various day-to-day activities		
Corridors	` Utilisation of corridors meaningfully by students for playing, learning and socializing ` Holistic development of students and ensuring their active involvement in all activities		
Terrace	` Ensuring safety of children while playing		
Garden	` Play zone to be soft area and free from prickles		
Playground	` Sand pit, swings, slides, open ground for playing field games		
Settings for socialisation	` Settings for water play ` Sites inviting birds		
Drinking water	` Safe drinking water facilities		
Toilets	` Separate toilets for boys, girls and children with special needs		
School building	` Infrastructure of the building in accordance with the disaster or any other threat/ emergency prone to it. ` Provision of facilities for the differently abled (hand rail, ramps, etc.)		

	` No unwanted noise of vehicles/ any other such disturbances. ` School having filter belt of trees and displaying appropriate signage outside the boundary walls; if required ` Using BaLA (Building as Learning Aid)		
Green practices within the school	` Water preservation and conservation ` Electricity conservation ` Garbage: reduce-reuse-recycle ` Plantation—medicinal garden, vegetable garden, using natural manure, involvement of parents, community, elders and also reaching out to the community ` Managing and maintaining these with involvement of students, staff, parents and community in all the projects which link them to the community. ` using common school activities such as School Assembly, festivals and other celebrations for addressing the environmental concerns; involving community in these. ` No corporal punishment and child-friendly behaviour. ` Good connect between parents and teachers for addressing socio-emotional problems/needs (e.g. bullying, drugs, gender or any other personal problems that hamper a child's learning). ` Emergency/Disaster awareness and preparedness		

	` Teaching-learning Practices allowing all children to participate ` Involvement of all stakeholders (teachers, head teachers, support staff, SMCs, etc.)		
Mid Day Meal	` School-based kitchen (if possible) ` Existence of a separate kitchen-cum-store as per norms ` Provisions for different sections for cooking, storage, washing ` Raised platform for cooking ` Fire proof material ` Ventilation, drainage and waste disposal ` Usage of eco-friendly stove/fuel – if no such option then judicious use of the option available ` Fuel conservation practices in cooking ` Ensuring safety, security and storage of ingredients/fuel/ cooking devices ` Adequate nutrition through school menu ` Vegetables from school garden ` Hygienic and nutrition preserving cooking practices ` Addressing equality issues (No discrimination based on class, caste, creed, gender etc.) ` Ensuring community participation in MDM- procurement of material, distribution and monitoring activities ` Maintaining health card for each child		

	` Regular health check up of children—screening, treatment and referral services as per the need		
Community Participation	Reaching out to the community and ensuring its effective participation in different activities of the school where not only the school and its students are benefited but the community also receives support in addressing issues related to physical and socio-cultural environment.		

Now, you take out the slip of paper from the safe place where you kept it. Did you find the answers to your questions?

4.3 Profile of a Green School

After going through different sections, critically observe different components in your school using the indicators mentioned above. To evaluate and find out the extent to which your school is Green. You may award points along with giving some qualitative description. You may devise any other way that gives you a true image about Greening of different components of your school. Involve students in this monitoring activity. You may use some pictures, statements, videos or any other anecdotal record also to support the written description. Any other form of evidences if available may also be collected. The data may be stored in some log books or any other booklets. A periodic monitoring, e.g. after six months or a year will help you reflect on the existing practices, areas of strength and gaps in order to improve from where you are and plan accordingly. A tentative format of the profile of a Green School is given here.

Components	Profile of School for Greening	Points	What more can be done?

Classroom	` Our School has spacious classrooms.	5/5	
	` Most of them are naturally lighted. But in some of them lights need to be switched on even during a sunny day.	3/5	We found that there are some trees that cover the windows and some pruning is required. We can ask students to volunteer for bringing a cardboard box and use it as a dustbin in the classroom.
	` Dustbins are there in the corridors but the classrooms do not have any.	3/5	
	` The rooms are swept daily.	2/2	
	` Window panes are also not cleaned regularly.	0/2	
	` There are two fans in each classroom but in 10 classrooms, 15 fans are not in a working condition.	2/5	
Common spaces			
Green practices within the school			
Mid Day Meal			
Community Participation			
	Total Points		

You may do the analysis only quantatively for your school. The report can be shared with the principal, staff, students, VEC, SMC or any other stakeholder who can contribute meaningfully towards transforming your school to a Green School in a true manner.

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Disaster preparedness

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National Council of Educational Research and Training