



**Education Community**



**Environment**

**Water Community**



## **Solution Exchange for the Education Community**

## **Solution Exchange for the Water Community**

### **Consolidated Reply**

***Query: Status of Environment Education in the School Curriculum-Experiences***

Compiled by [Amit Kaushik](#) and [Pankaj Kumar S.](#), Resource Persons, and [Sagarika Gnanaolivu](#) and [Ramya Gopalan](#), Research Associates  
28 February 2007

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**From Livleen Kahlon, The Energy and Resources Institute (TERI), New Delhi**  
**Posted 1 February 2007**

I have been working in the field of Environment Education (EE) for around 10 years now and am currently with The Energy and Resources Institute (TERI). During this period there has been a growing interest of various stakeholders in the subject, and though a Supreme Court directive emphasised the importance of EE in the school curriculum only a couple of years ago, it seems to me that this has been an integral part of education across all subjects for several years.

Recently many new areas of work and specialisation have come into focus as a result of the Supreme Court directive, but the important issues remain the same, such as the effective teaching and revision of EE in schools, especially in a country like India where there are so many linguistic and geographic barriers, the possibility of standardising EE as a single simplified concept, and the availability of tools to enable this process.

In this background, I would be grateful if members could share their experiences on the following:

- What is the current status of integration of environment education in the school curriculum of respective states?
- Have any difficulties been encountered while dealing with this subject in your respective projects? What was the nature of some of these difficulties?
- What could be an acceptable mode of transfer of knowledge to make EE percolate to all regions of a country as vast as ours?
- Examples of documentation that may be available to strengthen the process of enhanced learning.

We propose to produce a document called "Environment Education: Multi-stakeholder Perspective and Case Studies", and would like to include members' responses in it. The document can then be circulated for the use and guidance of all, and used for the preparation of a road map of what needs to be done so as to address the concerns raised.

I would therefore be most grateful for members' support and help in answering the above questions.

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## Responses were received with thanks from

1. [R. K. Vohra](#), Army Public School, Udhampur
2. N. K. Agarwal, Geological Survey of India (G.S.I.), Dehradun ([Response 1](#); [Response 2](#))
3. [Alka Bhargava](#), Ministry of HRD, New Delhi
4. [Shradha](#), DAV Public School, Shimla
5. [George](#), Community Services Trust (CST), Salem, Tamil Nadu
6. [Ajit Seshadri](#), The Vigyan Vijay Foundation, New Delhi
7. [A. Prabakaran](#), Public Action, New Delhi
8. [Satyendra Singh](#), Gayatri Education Society, Rewa, Madhya Pradesh
9. [Jyotsna Bapat](#), Independent Consultant, New Delhi
10. [Anshuman Das](#), Development Research Community & Services Centre (DRCSC), Kolkata
11. [V. R. Raghavan](#), Oxfam GB, Kolkata
12. [Ahmed Fahmi](#), UNESCO, New Delhi
13. [Binay Pattanayak](#), Technical Support Group (SSA), New Delhi
14. [Ram Boojh](#), UNESCO, New Delhi
15. [Kewal K. Likhyan](#), IP2REVENUES, LLC, Hockessin, USA
16. [Rahul Banerjee](#), Khedut Mazdoor Chetna Sangath, Indore
17. [Ruchi Pant](#), UNDP, New Delhi

*Further contributions are welcome!*

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## Summary of Responses

The query sought members' experiences on the status of integrating Environmental Education (EE) in the school curriculum in various states of the country in view of the Supreme Court directive to enforce compulsory environmental education. Members responded by sharing their experiences, spoke of difficulties encountered when integrating the subject, and offered suggestions to make EE a more joyful, inclusive and meaningful learning experience for children.

Respondents pointed out that there have been **varied experiences** incorporating Environmental Education in school curriculum and promoting environmental awareness among children. For example, [States](#) like **Uttarakhand, Chhattisgarh, Assam, Orissa, Andhra Pradesh, Maharashtra** and **Kerala** while renewing their curriculum and textbooks incorporated environmental studies. This process gave the States an opportunity to include local experiences, resources, initiatives and environmental issues in their textbooks. **Uttarakhand** and

**Chhattisgarh** especially, enriched their textbooks with many interesting local examples. However, members highlighted that some States in their attempt to [‘green’ textbooks](#) have diluted the pedagogical content with local sentiments. However, members highlighted that some States in their attempt to ‘green’ textbooks have diluted the pedagogical content with local sentiments.

Additionally, members mentioned various initiatives undertaken in the hill towns of [West Bengal](#), highlighting the need to adopt appropriate mechanisms and strategies to introduce and sustain EE in schools, colleges and forest villages. Exposure visits, media workshops, orientation programmes, street plays and even sacred texts were used to promote conservation related messages. Another example shared was a learning centre set up especially for a tribal community in [Madhya Pradesh](#), which adopted a flexible curriculum combining academics, world issues, practical skills, and cultural heritage.

Respondents noted that several organisations are promoting EE and working on improving its quality. Some well-known examples mentioned were the [Hoshangabad Science Teaching Programme](#) in **Madhya Pradesh**, Aas Paas Ki Khoj and Khojbin in **Madhya Pradesh** and **Rajasthan**, the Environmental Studies Camps and Nature Study Camps held in **Orissa**, and the Environmental Camps conducted in **Ahmedabad**. The Indira Gandhi National Open University and some State and Central Government institutions have started encouraging integration of EE as well.

Members also highlighted national initiatives that have played a pivotal role in promoting environmental awareness across the country. The [National Children’s Science Congress](#) organised by the Ministry of Science and Technology, Government of India, conducts an annual fete at the district, state and national levels to promote environmental awareness among children using case studies. The Central Pollution Control Board encourages environmental awareness by conducting painting, elocution and essay-writing competitions on environmental topics and the Gandhi Peace Centre facilitates environmental awareness through pictorial methods and short stories. Additionally, respondents mentioned that under Sarva Shiksha Abhiyan, activities have been undertaken to improve environmental awareness among teachers and teacher educators.

Discussants pointed out that while the Government, various NGOs and institutions have taken positive towards integrating EE into schools, **difficulties remain**. Members felt that there was a serious lack of quality material on the subject, limited availability of practical learning aids and a shortage of trained teachers in the field. They noted that some textbooks published by State governments contain a lot of ‘environmental’ information, but provide little or no explanation, which forces children to memorise by rote. Given that schools tend to treat EE like any other subject, children tend to view EE as an additional burden, especially when they have board exams.

In addition, members **suggested** teaching Environment Education as a separate subject and integrating it with the natural sciences taught in primary and secondary school. Integrating EE with core subjects, they contended might lead to greater appreciation and understanding of the relevance of the environment in our day-to-day lives. Members cited various documents to help strengthen the process of integration and enhance learning. They recalled the 1986 [National Policy on Education](#), which stressed the value of “protecting the environment,” and argued that it must be an integral part of all levels of the curriculum. Respondents also referred the National Curriculum Framework, 2005, [NCERT’s Source Book on Pupils Assessment](#), [UNESCO’s Source Book on Science Teaching](#) and VSO’s Source Book on Science Teaching, which can be further used to learning process.

In order to make EE percolate to all regions of the country, members suggested that issues like local specificity, social context; participation of children in school need to be addressed. It was strongly felt that sensitising children using local environment issues would help them correlate their studies with global concerns. For example, noting the timing and frequency of garbage cleaning in the neighbourhood would help them to understand urban environmental hazards.

While stressing the inclusion of contextually relevant content when developing EE modules, members also recommended two other important thematic areas. They highlighted consumer education for students, to improve their understanding of the linkage between everyday activities and its impact on the environment, and

also suggested adding the highly pertinent concept of an 'ecological footprint' in the curriculum, so that students can act as better informed consumers. Observing that conservation values are inherent in an individual's customary practices, respondents emphasised including respect for traditional knowledge systems as another significant area for inclusion. This, they felt, would ensure that learning translated into action and became a practice.

Furthermore, members felt EE must be more activity-based and less theoretical. They also underlined the necessity of States reforming their textbooks and curriculum in the light of the [National Curriculum Framework 2005](#) principles of connecting knowledge to life outside school, shifting learning from rote methods, and enriching the curriculum beyond textbooks. Members recommended the need for schools to hold more green competitions, audio-visual presentations of case studies, and graphical presentations. Finally, they noted that EE is not a 'discipline,' it is a way of looking at the world, thus advised mainstreaming and infusing EE into every discipline to become a life long continuing process instead of remaining confined to textbooks and curriculum.

In conclusion, it was felt that children need to view EE as more of a 'joyful' learning process with open-ended opportunities for children to explore, to know about their environment and take up issues on their own.

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## Comparative Experiences

### National

#### Andhra Pradesh

##### **Children Involved in Developing EE** (from [V. R. Raghavan](#), Oxfam GB, Kolkata)

At the National Children Science Congress, children come up with innovative ideas and develop environment-related project cases studies. Children from a rural school in Andhra Pradesh came up with a project on noise pollution, which involved recoding the type of motor vehicle, which passed by and also noted the decibels which further provided insights about the noise pollution levels over the period of a specific day. This project helped the town administration to regularise traffic.

#### Madhya Pradesh

##### **"Adharshila" Learning Centre** (from [Rahul Banerjee](#), Khedut Mazdoor Chetna Sangath, Indore)

The syllabi and teaching methods of government schools in Bhil dominated districts are alien to the community's culture. An adivasi mass organisation is running a school called "Adharshila." The school teaches children the basics of their local language, history, environment and arithmetic. The material for learning about the environment was gathered by observing and analyzing the local environment. In addition, the school involved community elders in preparing lessons on local history. Read [more](#).

#### West Bengal

From [Ruchi Pant](#), UNDP, New Delhi

##### **People for Environmental Action (PEAK) in Kalimpong, Darjeeling and Kurseong**

The main challenge for the 20 area schools trying to integrate EE was motivating the principals. They addressed this by organising a 2-day retreat to a nearby forest area with a resource person from the Community Learning Centre, Assam. During the retreat the resource persons conducted lecture-free sessions and included lots of activities. After the retreat, the principals promised support and formed PEAK to promote EE, with some even allotting an hour a week to studying the subject.

##### **Involving Teachers as Resource Persons in Kalimpong, Darjeeling and Kurseong**

When schools in this hilly region tried to identify resource persons to train children on EE, they encountered obstacles, so they conducted orientation and exposure programmes for teachers, and adopted different strategies to encourage their involvement and elicit a greater response from students. During the holidays, non-residential awareness camps were held that included several activities that served as a useful strategy, followed by regular classes through the year.

### **Involving the Wider Community in Kalimpong, Darjeeling and Kurseong**

Since the goal of integrating EE into the schools was to reach as many students as possible, and give them quality time to learn, a large team of volunteers was required. The school organized orientation programmes at a local college to muster volunteers. Wives of local military personnel stationed in the region also volunteered and some motivated teachers and young principals joined during the holidays, resulting in a healthy ratio of 1:5 (volunteers: students).

### **Involving the Media in Kalimpong, Darjeeling and Kurseong**

Local schools organised 4-day media workshops for senior students to become investigative journalists, segregating them according to their interest, to explore local environmental issues. A range of stakeholders including government officials were interviewed, which revealed a major scam. The issue, however could not be brought to public focus given its sensitivity.

### **Involving Religious Leaders in Kalimpong, Darjeeling and Kurseong**

Local educators felt that just working in schools did not provide enough time or support for students to develop long-term environmentally sound habits. Therefore, they decided to work with local religious leaders and educate them on 'green' practices. With help from the Alliance for Religion and Conservation, a new component was added to the curriculum – conservation-related messages from sacred texts. This resulted in more sustained behaviour change.

## **Multiple States**

### **Eight State Study on 'Strategy for Enhancing Biodiversity Education and Awareness'**

A study to be conducted in formal and non-formal education sectors in 8 states of India, was awarded to the Director, BVIEER, Pune. BVIEER studied the curricula and textbooks for Biological Diversity (BD) issues from States, met personnel from National and State Departments of Education, NCERT and SCERT, school staff, students and NGOs. Individuals who affected BD and who can effectively induce a behavioural change were identified and involved which helped create an action-oriented strategy towards biodiversity conservation.

### **Study on 'Status of EE in Curriculum and Effectiveness of Delivery'**

A sample survey was carried out in 10 States to understand methods used to teach environmental concepts, provide insights into the effective approaches and materials, and identify barriers towards effective EE. The study also analysed textbooks in 32 States to assess the degree of inclusion of environmental concepts in science, social studies and language textbooks. Recommendations which emerged from the pilot phase of the study are being implemented in six States.

### **Greening of Textbooks** (from [Binay Pattanayak](#), *Technical Support Group-SSA, New Delhi*)

Uttarakhand, Chhattisgarh, Assam, Orissa, Andhra Pradesh, Maharashtra, Kerala, etc., have been involved in incorporating environmental studies in their school curriculum. As part of the "greening" of textbooks, local environmental resources, experiences and initiatives were included. However, due to insufficient clarity of the objectives, the textbooks turned out to be emotional initiatives that added local flavour but lacked sound pedagogical content.

From [Ramya Gopalan](#), *Research Associate*

## **International**

## Thailand

### “Rung Arun” Dawn Project

This large scale government supported project adopted integrated learning processes to encourage environmentally friendly behaviour and enhance environmental awareness, among faculty, students, management and local communities. Through formal and non-formal education, best practices were demonstrated using various strategies, concepts and innovative educational media. Results showed behaviour modification and a greater sense of environmental responsibility and awareness. Read [more](#).

## Japan

### Global Environment Learning by Eating Hamburgers

A group of primary school kids were presented with the “Hamburger Scenario” to help them understanding environmental impact/effect using an everyday action: “eating a hamburger.” This showed them that a hamburger is easy to eat, inexpensive, and tasty, but requires 5,000 litres of water to make it. Questions regarding quantities of water and energy used to produce, grow, prepare, transport and consume food helped demonstrate the relationship between everyday food and global environmental issues. Read [more](#).

## United States of America

### Internet-Based Environmental Education Program

Serving kindergarten through 12th grade students, the educational philosophy of the “Journey North” program directly involves students in measuring and recording events, which mark seasonal changes (e.g. animal migration). This provides a focus for studying the underlying natural systems behind the changes. The program supports teachers primarily via teacher’s guides and internet resources. The program helped advance the use of GIS in EE, from an educational and technical standpoint. Read [more](#).

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## Related Resources

### *Recommended Documentation*

From [Ram Boojh](#), UNESCO, New Delhi

#### **National Curriculum Framework, 2005**

National Council of Educational Research and Training

<http://www.ncert.nic.in/sites/publication/schoolcurriculum/NCFR%202005/contents2.htm>

*Document outlines the school curriculum recommended for the country, with the objective of ensuring learning shifts from rote methods and is connected to life outside school, including the environment.*

#### **National Policy on Education, 1986**

Government of India, Department of Education, Ministry of Human Resource Development, New Delhi

<http://education.nic.in/policy/npe86-mod92.pdf> (Size: 10.4 MB)

*Policy lays stress on the need for a radical reconstruction of the education system, and stresses protection of the environment as a value among other values.*

#### **Ministry of Environment and Forests - Environment Education Division**

[http://www.unep.org/Training/downloads/resources/rces\\_intro.pdf](http://www.unep.org/Training/downloads/resources/rces_intro.pdf) (Size: 4,084MB)

*The document is an introductory guide to some of the major schemes implemented for imparting environmental education in formal and informal education systems.*

**13<sup>th</sup> National Children’s Science Congress (NCSC), 2005** (from [V. R. Raghavan](#), Oxfam Great Britain, Kolkata)

Current Science, Vol. 91, No. 4; 25 August 2006

<http://www.ias.ac.in/currsci/aug252006/410.pdf> (Size: 18 KB)

*Article explains the focal theme of the 13th NCSC was "Harness Water Resources for a Better Future," and outlines how child scientists undertook specific research projects on this theme.*

From [Binay Pattanayak](#), Technical Support Group-SSA, New Delhi

### **Source Book on Pupils Assessment**

National Council of Educational Research and Training (NCERT); 2006

Click [here](#) to view PDF (Size: 56 KB)

*Concept note lists some NCERT large-scale assessment initiatives of pupils to measure quality of education including environmental studies programmes.*

### **Source Book on Science Teaching**

United Nations Educational, Scientific and Cultural Organization (UNESCO); 1973

<http://unesdoc.unesco.org/images/0000/000056/005641E.pdf> (Size: 4,066 KB)

*Source Book consists of ideas contributed by teachers all over the world on easily and widely available resources and materials for teaching science, including environmental studies.*

### **Environmental Education in School**

National Council of Educational Research and Training (NCERT); December 2003

<http://ncert.nic.in/sites/publication/envstudies/contents.htm>

*Details the context and concerns, the consultation process, perspectives on EE in schools from experts, stage-wise syllabus of EE, as well as the implementation aspects.*

### **The Hoshangabad Science Teaching Programme**

By Amitabha Mukherjee, *et al.*; Multiworld.Org

<http://www.multiworld.org/taleemnet/eduexp/hstp.htm>

*Outlines the discontinued science programme, which involved teaching science in classes VI to VIII, based on experimentation and activity.*

From [Amit Kaushik](#), Resource Person

### **Integrating Environmental Education in Technical and Vocational Education (TVE) in Asia**

Punjab State Council for Science and Technology and UNESCO; September 2003

Click [here](#) to view PDF (Size: 1.4 MB)

*Report provides an overview of the initiatives implemented by countries to integrate EE and Sustainable Development training into TVE at Senior Secondary level schooling.*

### **Programmes and Resources for Environmental Education and Training: An Introductory Guide**

United Nations Environment Programme (UNEP); March 2004

[http://www.unep.org/Training/downloads/resources/rces\\_intro.pdf](http://www.unep.org/Training/downloads/resources/rces_intro.pdf) (Size: 4 MB)

*Document is a guide to environmental leadership programmes and on-going training courses relevant to environmental education and training.*

### **Indian Initiatives in Environment Education**

By Rajaram S. Sharma; Regional Institute of Education, Mysore

Click [here](#) to view document (Size: 65 KB)

*Paper outlines NCERT's efforts in addressing environmental sustainability issues through its curriculum frameworks in general and in environment education in particular.*

### **Environmental Education Finally Finds a Place in India's School Textbooks**

By Shilpa Shet; InfoChange News and Features; August 2003

<http://www.infochangeindia.org/features126.jsp>

*News article highlights the fact that 800 schools have a new and improved syllabus that promotes an understanding of environmental issues.*

From [Ramya Gopalan](#), Research Associate

### **Learning about the Global Environment by Eating Hamburgers!**

Examples of EE Activities, The Global Development Research Centre (GDRC), Japan

<http://www.gdrc.org/uem/ee/primaryschool/hamburger.html>

*Explains the Hamburger scenario presented to school kids to educate them about the environmental impact of a simple action especially resources usage like water and energy.*

### **Scheme of Environmental Orientation to School Education - Guidelines for Assistance for Innovative Projects**

National Council of Educational Research and Training (NCERT), New Delhi

[http://ncert.nic.in/sites/publication/envstudies/EOSE\\_GUIDELINES\\_FINAL.pdf](http://ncert.nic.in/sites/publication/envstudies/EOSE_GUIDELINES_FINAL.pdf) (Size: 35 KB)

*Provides guidelines for project cells under project areas to design and organize educational programmes in schools, with respect to local environmental concerns.*

### **Highpoints of NCERT's Model Syllabus for Environment Education**

Down to Earth, Science and Environment Online

[http://www.downtoearth.org.in/html/ncert\\_syllabus.htm](http://www.downtoearth.org.in/html/ncert_syllabus.htm)

*Highlights various aspects and provides a plan for implementing environmental education syllabus in schools with required time allocation and critical evaluation process.*

### **Beyond Books– Lessons Plan on Environment**

Gobar Times Magazine- Environment for Beginners

[http://www.gobartimes.org/20061231/gt\\_covfeature.htm](http://www.gobartimes.org/20061231/gt_covfeature.htm)

*Traces the evolution of the work towards integrating environment into school curriculum from the learning process in ancient India to the Supreme Court Directive issued in 2003.*

### **Route Map: Effective Environment Education**

By Summiya Yasmeen; India Together; August 2003

<http://www.indiatogether.org/2003/aug/edu-envteach.htm>

*Reports on the contours, content and debate on environment education in India identifying relevant organizations and experiences, as well as EE primers and help lines.*

### **Environmental Education - Revised Curricula**

By Rasika Dhavse; India Together; November 2003

<http://www.indiatogether.org/2003/nov/edu-curricula.htm>

*Brief on a study, which evaluates the efficacy of the school curricula at the state and national level in the field of environment education in eight states with revised textbooks.*

### **Environmental Education Book 9**

By R. Rajagopalan, Oxford University Press

Ordering details and abstract available at: [http://www.oup.co.in/search\\_detail.php?id=143994](http://www.oup.co.in/search_detail.php?id=143994)

*Books 9 and 10 covers NCERT's new syllabus and attempts to raise sensitivity and awareness of learners with their surroundings by integrating text, pictures and stories in the book series.*

### **Environmental Education in Third World Schools: Rhetoric or Realism?**

By Graham Vulliamy; Earth and Environmental Sciences, The Environmentalist, Vol. 7, No. 1, March 1987

<http://www.springerlink.com/content/f38040x1432836r5/>

*Paper concludes with some positive lessons for those wishing to see a concern for environmental issues pervade the curriculum of schools in the Third World.*

### **Energy and Environmental Education in Thailand-Pilot Study Report**

By Nuanchan Potar, Orathai Moolkum and Chaiyod Bunyagidj; World Conference on Green Productivity; 2002  
Click [here](#) to view PDF (Size: 204 KB)

*Paper from 2nd Conference reviews the "Rung Arun" (Dawn) Project, that was designed to enhance environmental awareness in Thailand's primary and secondary schools through an integrated process.*

### **Internet and EE in Japanese Schools**

The Global Development Research Centre (GDRC)  
<http://www.gdrc.org/uem/ee/4-1.html>

*Note focuses on the intersection of the increasing use of computers and internet and the integration of environmental issues into regular and extra-curricular school activities.*

### **Introducing PRA Techniques in the Learning of Environmental Education in Southern Peru**

By Sonia Gomez Garcia and Jose Pizarro Neyral; PLA Notes; February 2001  
[http://www.iiied.org/NR/agbioliv/pla\\_notes/pla\\_backissues/documents/plan\\_04002.pdf](http://www.iiied.org/NR/agbioliv/pla_notes/pla_backissues/documents/plan_04002.pdf) (Size: 68.82 KB)

*Article presents some of the participatory techniques used in the project "Asignatura Experimental de Educación Ambiental" (Experimental Course in Environmental Education).*

### **GIS for Environmental Education: A Pilot ArcView Application for the Journey North Program**

By Andy Lyons; University of Florida, Journey North, Data Explorer; April 1998  
[http://web.dcp.ufl.edu/ashwiniw/urp6271/project\\_example/jnorth.html](http://web.dcp.ufl.edu/ashwiniw/urp6271/project_example/jnorth.html)

*Focuses on the use of GIS for EE through the development of a pilot ArcView application to be used in conjunction with the Journey North program a K-12 web-based EE program.*

### **Environmental Education Review - Formal Education Sector (Schools)**

Curriculum Corporation for Environment Australia; 2003  
<http://www.environment.gov.au/education/publications/ee-review-schools/background.html>

*Reviews EE curriculum and highlights a set of Environmental Education Indicators developed to provide a detailed map of the curriculum documents being analysed.*

### **Environment Education Policy for Schools**

NSW Department of Education and Training, Curriculum Support Directorate; 2001  
Click [here](#) to view PDF (Size: 531.9 KB)

*Provides guidelines on the management of school resources in accordance with ecologically sustainable practice and serves as a starting point for addressing global environmental issues.*

### **Environmental Education in Polish Primary Schools**

By Elbieta Buchcic and Magorzata Grodziska-Jurczak; International Research in Geographical and Environmental Education Vol. 13, No. 3; 2004  
<http://www.channelviewpublications.net/irgee/013/0264/irgee0130264.pdf> (Size: 97 KB)

*Analyses present form of EE in primary schools, which should benefit in the future from environmentally friendly attitudes and popularization of environmental issues in society.*

## ***Recommended Organizations***

From [Binay Pattanayak](#), Technical Support Group-SSA, New Delhi

### **Center for Environment Education (CEE), Gujarat**

Ministry of Environment and Forests, Government of India; Thaltej Tekra, Ahmedabad 380054, Tel.: 91-79-26858002; Fax: 91-79-26858010; [cee@ceeindia.org](mailto:cee@ceeindia.org); <http://www.ceeindia.org/cee/index.html>

*CEE is a national institution engaged in developing programmes and materials to increase awareness about the environment and sustainable development.*

**Uttarakhand Seva Nidhi Paryavaran Shiksha Sansthan, Uttarakhand**

Jakhan Devi, Mall Road, Almora 263601; Uttarakhand; Tel: 91-5962-234430; <http://www.usnpss.org/>

*Organisation undertakes local-specific environmental education programmes in rural schools and villages in the hill districts.*

**Adharshila Learning Centre, Madhya Pradesh** (from [Rahul Banerjee](#), Khedut Mazdoor Chetna Sangath, Indore)

Adharshila Shikshana Kendra; Village Sakad; Post Office Chatli via Sendhwa; District Badwani; Madhya Pradesh 451666; [adharshila.learningcentre@gmail.com](mailto:adharshila.learningcentre@gmail.com); <http://adharshilask.tripod.com/index.html>

*Centre is an innovative school for Adivasi children where the students conduct science experiments, seek oral histories, and write plays about important issues in their community.*

**Bhartiya Vidyapeeth University Institute for Environment Education and Research (BVIEER)** (from [Ruchi Pant](#), UNDP, New Delhi)

Katraj -Dhankawadi Campus; Pune - Satara Road; Pune 411 043; Tel: 91-020-4375684; [bvieer@vsnl.com](mailto:bvieer@vsnl.com)  
<http://environment.bharatividyaapeeth.edu/html/aboutus.shtml>

*The Institutions major thrust is to spread the message of the need for pro-environmental action in society at large through a dual strategy of formal and non –formal integrated set of activities.*

From [Sagarika Gnanaolivu](#), Research Associate

**Centre for Science and Environment, Green Schools Programme, New Delhi**

41, Tughlakabad Institutional Area, New Delhi 110062; Tel: 91-011-29955124/5 or 29956394/401/399;

Fax: 91-011-29955879; <mailto:cse@cseindia.org>;

[http://www.cseindia.org/programme/eeu/gsp/gsp\\_index.htm](http://www.cseindia.org/programme/eeu/gsp/gsp_index.htm)

*Green Schools Programme envisages self-assessment of environmental practices of schools by their students using the green schools manual.*

**C. P. R. Environmental Education Centre, C.P. Ramaswami Aiyar Foundation, Tamil Nadu**

No.1, Eldams Road; Alwarpet, Chennai 600 018; Tamil Nadu; Tel: 044-24341778/6526/37023; Fax: 91 -44-24320756; <http://www.cpreec.org/>

*Centre conducts a variety of programmes to spread awareness and interest among children on aspects of the environment and ecology.*

**WWF- India, Environment Education Programme, New Delhi**

World Wide Fund for Nature Secretariat, 172-B Lodi Road New Delhi 110003; Tel. 91-11-4150-4797; Fax: 91-11-4150-4779; [http://www.wwfindia.org/about\\_wwf/what\\_we\\_do/education/index.cfm](http://www.wwfindia.org/about_wwf/what_we_do/education/index.cfm)

*Programme strives to strengthen individual and institutional capacities for nature conservation and environmental protection, by promoting education awareness.*

***Recommended Portals and Information Bases***

From [Ram Boojh](#), UNESCO, New Delhi

**United Nations Decade of Education for Sustainable Development**

Click [here](#) to view site

*The interactive website details issues, news, documents and key themes related to United Nation's Education for Sustainable Development.*

**Ministry of Science and Technology** (from [V. R. Raghavan](#), Oxfam Great Britain, Kolkata)

[http://dst.gov.in/scientific-programme/s-t\\_ncstc.htm](http://dst.gov.in/scientific-programme/s-t_ncstc.htm)

*Website elaborates on the various schemes and programmes undertaken by the Government of India to promote EE and environmental awareness.*

**Research at BVIEER** (from [Ruchi Pant](#), UNDP, New Delhi)

<http://environment.bharatvidyapeeth.edu/html/research.shtml>

*Covers details and finding of the projects - Strategy for Enhancing Biodiversity Education and Awareness and Study of Status of Infusion of Environmental Concepts in School Curricula.*

From [Sagarika Gnanaolivu](#), Research Associate

**Environmental Education for Kids**

<http://dnr.wi.gov/EEK/>

*Electronic web magazine for children to learn about the environment in a fun filled manner.*

**Environmental Education: Creating an Environment to Educate About the Environment**

<http://www.gdrc.org/uem/ee/>

*Website elaborates the various dimensions of EE, detailing the aims and objectives of EE, framework and resources.*

From [Ramya Gopalan](#), Research Associate

**EE Happenings**

[http://www.cseindia.org/programme/eeu/env\\_happenings.htm](http://www.cseindia.org/programme/eeu/env_happenings.htm)

*Details initiatives undertaken by CSE towards training teachers in EE, integrating EE in schools and workshops/field trips conducted for students to understand environmental issues.*

**North American Association for Environmental Education (NAAEE)/EE Link**

<http://eelink.net/pages/EE-Link+Introduction>

*Provides for Environmental Education on the internet, designed as a resource to support students, teachers and professionals that support K-12 environmental education.*

**U.S. Environment Protection Agency, Teaching Centre**

<http://epa.gov/teachers/>

*Provides information for teachers on material they can use while teaching EE, ways to actively involve students and available grants and other opportunities to gain recognition.*

**Environmental Education– Resources for Sale, New South Wales Department of Education and Training**

<http://www.schools.nsw.edu.au/learning/resourcesforsale/yrk12focusareas/environed.php>

*Offers relevant material on EE like best practices, individual case studies/projects and guidance on implementing EE etc along with their purchase information.*

**Education for Sustainable Development** (from [Amit Kaushik](#), Resource Person)

[http://www.cseindia.org/esf/india\\_esd.asp](http://www.cseindia.org/esf/india_esd.asp)

*Site provides info on “education for sustainable development”- approach that views education as a way to balance human and economic well-being with cultural traditions and respect for environment*

***Recommended Upcoming Events***

From [Ramya Gopalan](#), Research Associate

**“Environmental Education towards a Sustainable Future: Partners for the Decade of Education for Sustainable Development,” 4th International Conference on Environment Education, 26-28 November 2007**

Centre for Environment Education (CEE), Ahmedabad; <http://www.tbilisiplus30.org/index.htm>

*Aims to help set the roadmap for progress in the EE journey since Tbilisi, 1977 through to the UN Decade of Education for Sustainable Development (DESD), 2005-2014.*

**“Call for Papers,” Journal of Education for Sustainable Development (JESD)**

The Editor, Centre for Environment Education, Thaltej Tekra, Ahmedabad 380054; [jesd@ceeindia.org](mailto:jesd@ceeindia.org)

<http://www.ceeindia.org/cee/callpaper.html>

*Journal seeking research articles, reports and essays on important research programmes and initiatives in education for sustainable development of the environment that will help advance and shape the field*

**Recommended Training Course**

**“Diploma in Environmental Education,” Centre for Environment Education, Deadline 1 May, Course June 2007 (from [Ramya Gopalan](#), Research Associate)**

Green Teacher Secretariat, Centre for Environment Education, Nehru Foundation for Development, Thaltej Tekra, Ahmedabad; 380054; Tel.: 91-79-2685-8002; Fax: 91-79-2685-8010; [greenteacher2007@ceeindia.org](mailto:greenteacher2007@ceeindia.org); <http://www.ceeindia.org/cee/GT.html>

*One-year Distance Diploma Programme to become a “Green Teacher” includes two contact sessions of 3-5 days each and 4-5 months of project work aimed at enriching knowledge and skills in EE.*

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**Responses in Full**

**R. K. Vohra, Army Public School, Udhampur**

Although Environmental Education stands declared one of the compulsory subjects by the Hon'ble Supreme Court of India and the market is flooded with books on the subject, there still exists a lack of quality material that can create an interest amongst students for the subject. The Central Board of Secondary Education recommends at least two periods a week for the subject and recording the performance of students in the form of grades. But it has been seen that students, particularly of the classes which have to appear in Board exams, take the subject as a burden and feel still more taxed by the additional workload. Another problem is that of arranging teachers with adequate interest in and knowledge of the subject. An average teacher of this subject is seldom able to even define the term ecology.

Before teaching the subject on the ground, it is more important to create interest in students for the subject, along with an awareness that they need to know about and recognise their environment so that they can participate actively in saving it for present and future generations. Environmental education should therefore be more and more activity-based rather than theoretical, so that students may find it interesting and may own and adopt it for themselves. They should be motivated to undertake small research projects based on the soil, geography, vegetation and climate of their area and locality.

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**N. K. Agarwal, Geological Survey of India (G.S.I.), Dehradun (response 1)**

I am an earth scientist who has worked during the last 30 years in Arunachal Pradesh, Assam, Meghalaya, Mizoram, Garhwal Himalayas, etc. My feeling is that Environment Education (EE) in school curriculum is necessary and the module should have interdisciplinary inputs. EE is the most difficult subject in terms of where and how to begin the basics of environment. It may not be advisable to leave environment studies and knowledge only to NGO's. Instead, specialised departments of the State and Central Government, who have been working on earth resources of all kinds, should be appropriately involved.

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**Alka Bhargava, Ministry of HRD, New Delhi**

Environment Education should be joyful learning for young inquisitive minds. Instead of relying only on routine chapters in routine prescribed textbooks, it could perhaps be more outdoor, interactive and with a lot of field functionaries to answer the queries in the minds of the kids as well as generate more curiosity. EE may not be necessarily be a part of the 'examined and passed' subjects, so that children do not view it merely as another exam to pass, but more fun.

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**Shradha, DAV Public School, Shimla**

Environment education has been introduced as a compulsory area of teaching, only on paper, but nothing concrete has been done on ground. It is very essential to focus on such an integral aspect and we need to make our youngsters aware about the environment. But awareness doesn't necessarily begin with books.

My point is that we can introduce endless subjects, from value education to sex education to environment education, and still remain absolutely ignorant about what really is to be done. This is primarily because practicalities are not given due consideration. A student is as it is burdened by the never ending traumas of other subjects and examination pressure; where on earth would she/he get time to read about a Tsunami, when haunted by Trigonometry.

We need an integrated approach to this area of vital importance. Like a short story about the nobility of a fruit giving tree can give a more profound message than two pages about the types of vegetation we have. Practical tasks, projects and a real interaction with the environment can further enhance their commitment.

Just as charity begins at home, the school, parents and children need to join hands and work together. A goal-oriented strategy needs to be worked upon, which should be fulfilled by the end of the academic year. The role of celebrities and politicians can also be considered for enhancing the interest of children.

Children are very innocent and accepting, our role is to make them respect their environment. This can be done more rewardingly only with sincere efforts from us. It is time to learn from mistakes of the past and realize the significance of the present in making a better future.

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**George, Community Services Trust (CST), Salem, Tamil Nadu**

It is high time we think about imparting Environmental Education to our younger generation through the school curriculum. We have to learn a lot also from our traditional practices and indigenous knowledge systems in the preservation and propagation of environmental ethics. Tribals have a wide knowledge base on this and we need to explore it. In addition, there is a need for a component on Environment compulsorily in the school curriculum and students need to be encouraged to take up independent research and innovations in this sector.

Kids Saving the Planet is a non-profit organisation, which aims at bringing environmental education into schools utilising the Internet. They are looking for teachers to participate in their needs analysis survey. In return, they offer a free web page for the schools. Members can disseminate this information to their neighbouring schools, students and teachers.

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**Ajit Seshadri, The Vigyan Vijay Foundation, New Delhi**

It is indeed very pleasant to exchange notes and propagate sound principles and practices on EE in schools and other institutions. I am attaching a concept note on making an Eco-park at institutional campuses, which can facilitate and sustain EE. There is also more to be gained from these concepts. We have been trying to work with institutions like those in NCR-Delhi and have managed some success through eco-clubs etc.

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#### **A. Prabakaran, Public Action, New Delhi**

From the late eighties onwards, there was a vigorous campaign in schools and colleges to protect the environment. The establishment of Pollution Control Boards and their efforts to educate the younger generation through painting, elocution and essay writing competitions have created a remarkable awareness. In the late nineties, many State Governments and central institutions like IGNOU had started including environment as an essential subject. But now environment education seems to be at a low ebb. To catalyze interest, especially in the age of global warming, an enthusiastic and ambitious project of educating young people is an urgent necessity at this crucial hour. Waking up the government, NGOs and other stakeholders through mass campaigns can help.

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#### **Satyendra Singh, Gayatri Education Society, Rewa, Madhya Pradesh**

As far as EE is concerned, as part of the CBSE curriculum, we face two main problems in teaching, i.e., non-availability of qualified teachers in EE (postgraduates in Sciences are hired mostly to teach EE, who have almost no background of the subject and are absolutely handicapped when it comes to practical teaching). Secondly non-availability of practical learning aid in environmental education. If approached, government bodies are reluctant to provide any kind of assistance - the Forest, Irrigation, Public Health and other relevant departments which can be of help in imparting quality environment education are passive. The most they want to do is organize a quiz or a painting competition to be able to pat their backs.

Various schools organise Jungle-Camps, Nature Awareness Camps, etc., as part of their annual activity. I suggest that EE syllabus should be integrated with similar initiatives (probably someone can come up with a suitable name also for such a camp) so that children have an inclination to get out of their school and home environment to actually relate to what nature and environment is all about.

We see every now and then that a wave in education comes and all school-going kids of that area get swayed in that direction; earlier it was medicine and engineering, then came law and management, now it is bioinformatics and proteonomics. It is just a matter of what is the talk-of-town or what is selling most. I feel some policy measures can be thought of, to give due weightage by various boards (CBSE/ICSE) for kids to pursue projects/programs/careers associated with EE.

Like we have the National Talent Search Examination or Maths Olympiad, can we have something for Environmental Education to put the subject and its relevance on the national canvas? The reach of such an examination can be astounding, particularly if it is projected/organised by Central and State boards of education.

I welcome suggestions/thoughts of other community members on my perspective as I feel very strongly about the subject and would like Livleen's effort on the matter to reach a fruitful conclusion.

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#### **Jyotsna Bapat, Independent Consultant New Delhi**

The existing curriculum in Environmental education in school curriculum allows for the basic awareness of 'Global' environmental issues of climate change and their relationship with industrial growth, deforestation and development. These are rather abstract and global concepts, probably difficult to comprehend, but easy to memorise and reproduce.

This needs to be linked up with more local issues in the school's neighbourhood. Say in cities and towns the issue of poverty-linked environmental risks due to solid waste and garbage, transport needs and impact of CO2 emission increase, so that children can relate the global with local issues. It requires more creative and innovative hands-on projects for students to carry out in their holiday homework. For example, simple things like noting the frequency of a water pump in the society they live in to estimation of water needs, or timing and frequency of garbage cleaning from the neighbourhood dump. Just noting this will make them aware of urban environmental issues and their magnitude, and that can be the basis for asking intelligent questions about what can they do as individuals.

Without this global-local linkage any amount of environmental education will remain at the level of book knowledge.

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### **Anshuman Das, DRCSC, Kolkata**

- Declaring Environment Education as a compulsory subject is a positive step, but the students are suffering due to improper background preparation
- Textbooks published by many State Governments are repetitive, and full of information without any lucidity. Sometimes 2-3 complicated concepts are mentioned in a single sentence. The exercise at the end of textbook will force children to memorize by rote. This is just like any other 'subject'. In order to pass the exams some have made an easy guide book which has also been published. To me, a guideline for the teachers would more useful than a textbook for the student!
- There is an exhaustive list of activities, but teachers in government schools are not capable of doing such activities as it was not taught in their 'B. Ed.' Sometimes, schools/guardians are not ready to accept activity based methods as they are completely perplexed.

Therefore, the whole thing boils down to transacting a subject and having a written examinations

NCERT says that "...it has been felt that although a fair amount of information about the environment is being given through textbooks, it has not succeeded to generate a concern that may lead to effective action for conserving and further improving the environment... the further course of study in EE should emphasis the emotional and attitudinal aspects of the learners' personality along with the requisite cognitive component ..."

In West Bengal, some NGOs are giving inputs and are trying to use this opportunity to introduce activity-based methods. There are some successful cases also.

I am engaged in education, especially science and environment education for the past 10 years with a village-centric eco-group. I have slowly started building a rapport with the formal schools too. We as an organisation have produced several student-generated materials and other resource materials based on our experience that we are eager to share.

In addition, National Teachers' Science Congress has kept this year's topic as Environment Education, and it would be interesting to observe the outcome of those deliberations.

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### **V. R. Raghavan, Oxfam GB, Kolkata**

I appreciate the action of the Education and Water Communities in raising this issue now. Environmental Education as part of the curriculum for some time now has been seen as more of a routine teaching experience in many schools. However, my personal experience working with children has revealed that there are numerous ways in which children explore the environment and learn from these experiences. I place before you a few such instances:

- Promotion of ECO CLUBS in schools (Centre for Environment Education, through their school education program) provides adequate opportunity for children and teachers to discuss environmental issues and initiate various learning forums for children to participate, such as through Drawing, quiz competitions, essay writing, etc.
- National Children's Science Congress (an initiative by Science and Technology Ministry started back in 1993), which is an annual fete at District, State and National level to promote environmental awareness among children. Different age groups of children with support and assistance from teachers, research institutes, NGOs, develop small case studies in the areas of science, environment, communication and present them at various forums organised by Department of S&T, Government of India. My experience in working with children during 1993-96 as Regional Coordinator for National Children Science Congress in Andhra Pradesh is that children come up with innovative ideas and develop various environmental related project case studies and have won laurels (some even abroad). For example, a few children from a rural school came up with a project on noise pollution. The methodology was a very striking one. A group of 40 children from 7th -9 th standard selected various traffic zones and formed a group of 3-4 members to observe traffic patterns for 3 days. They recorded the type of motor vehicles which passed by, calculated the decibels, and came up with noise pollution levels over the period of a specific day. They also conducted interviews with traffic constables, street vendors, cobblers etc. This study was an eye opener to the town administration and helped them in regularising traffic in town. There are many examples of such innovative ways of learning one's own environment.
- The school environment awareness programmes facilitated by Gandhi Peace Centre through pictorial methods and short stories are very attractive.

The methodology of learning is more important than the subject content. If EE is made a subject in line with other subjects, it will be doing more harm than good. There is a need for open-ended opportunities for children to explore, to know about their own environment and take up issues on their own.

I also suggest that teachers need to be exposed to different learning methodologies and explore beyond text books.

**N. K. Agarwal, Geological Survey of India (G.S.I.), Dehradun (*response 2*)**

Strangely, I find that most of the contributors so far have not really defined what the core issues in the curriculum need to be. Only restricting the vision to garbage etc. is not enough. Geo-environment in its totality needs an interdisciplinary approach and vision. The interaction of man with land-water-air and other life forms has to be the basis of Environment studies. With already loaded school bags, a lot of thought has to be put into the design of curriculum. My personal feeling is that besides a separate subject, all the subjects inclusive of physical, life and arts need to be re-designed to make them interdisciplinary, and EV should be made an activity for various themes related to man-land-water-air interactions. Environmental degradation is inevitable, what we have to learn is to minimise it and to develop "good and efficient practices" of resource development and management.

**Ahmed Fahmi, UNESCO, New Delhi**

I think it is also important to differentiate between integration of environment education in the school curriculum and its infusion. While the former looks at ways of supplementing the existing core of environment education which I believe is a state taught subject up to class VI in formal education in the country, I believe, however, that one should be thinking of comprehensive coverage of the multitude aspects of our natural environment through infusion in the curriculum. By this, I mean that references to the natural environment, whether it be issues pertaining to plants, animals, ecology, earth, and the atmosphere, should be part of the basic sciences taught in early-late primary and early secondary school curriculum both in formal and non-formal education. Noise pollution (mentioned by the colleague from Oxfam), for example, entail elements of all the basic science. If one can

intelligently infuse this topic in mathematics, physics, chemistry, and/or biology lessons, then the notion of 'Noise pollution' can be appreciated and understood practically and hence comprehensively. There is also a point of transfer of knowledge that warrant consideration in my opinion and that is the mutual exchange of knowledge from conventional (modern) systems of education and those that are traditional. There are far more schools and students in rural India than there are in urban cities and towns and it seems to me that there a clear de-coupling of the school education materials, particularly in the sciences, from these two pole systems. Practical environment science projects such as the one mentioned on Noise pollution and many others could offer many ideas for enhancing environmental education in India for urban and rural student and teachers populations alike.

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**Binay Pattanayak, Technical Support Group (SSA), New Delhi**

It gives me pleasure to participate in a discussion centered on strengthening of environmental education in the State curriculum and textbooks. As a part of the Pedagogy Unit of the Technical Support Group (DPEP & SSA), I have been associated with the pedagogical renewal process in several States including Uttarakhand, Chhattisgarh, Assam, Orissa, Andhra Pradesh, Maharashtra, Kerala, etc. including in the activities related to curriculum and textbook renewal, specifically in the area of environmental studies. In all these States there was lot of enthusiasm while undertaking such activities in the name of "greening of textbooks" as it gave them a chance to include their local experiences, resources and environmental issues and initiatives in their textbooks. It was particularly satisfying in States like Uttarakhand and Chhattisgarh, which are naturally and culturally very rich; being new States they took this as an opportunity to improve the quality of their textbooks. The textbooks of such States reveal many interesting examples from local contexts. Such processes also have involved number of NGOs, local resource persons, seniors citizens, etc. who have been able to contribute the process in significant manner.

At the same time, it has been seen that States could have benefited more had there been some orientation for them in the light of the National Curriculum Framework (NCF) 2005. Several States have renewed their textbooks and curriculum prior to the development of NCF 2005. There was a small problem while doing the same. It has been proved repeatedly that one may not be able to do justice to curriculum/textbook renewal without a good understanding of the aims of education. In many States, there were attempts to "green" textbooks, but due to insufficient clarity on the aims of education, the textbooks turn out to be emotional initiatives that add local flavour but lack sound pedagogical direction. One needs to think in terms of "what sort of society do we visualize through a curriculum/ textbook renewal". Otherwise, it may carry glimpses of local flavour, but its utility may lead to confusion and biases. Hence, I strongly feel a clear perspective needs to be drawn while refining curriculum and textbooks. In addition, it need not be done in isolation, but as part of a holistic curriculum renewal.

For environmental awareness among teacher educators and teachers, we have been carrying our different activities under SSA. Please see the following link <http://www.solutionexchange-un.net.in/education/cr/res18020701.doc> that gives some impression about our approach to environmental education. There are many such examples before the country including the well known Hoshangabad Science Teachig Programme (Eklavya - MP), Aas Paas ki Khoj, Khojbin (MP & Rajasthan), Environmental Studies Camps and Nature Study camps (Manavik - Orissa), Environmental Education (Uttarakhand Seva Nidhi Paryavaran Shiksha Sanstha - Almora), Environmental Camps (CEE - Ahmedabad), etc. which can provide us ample experience for improving the quality of environmental education. There are several other organisations promoting similar activities in collaboration with these groups.

For further ideas one may like to look at the National Curriculum Framework, 2005, on the NCERT website, NCERT's Source Book on Pupil's Assessment in the area of environmental studies, etc. I also feel that UNESCO's source books on science teaching and VSO's source book on science teaching are brilliant examples for educational workers in the field of environmental education.

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## **Ram Boojh, UNESCO, New Delhi**

This is a very interesting discussion indeed.

Members have come up with useful suggestions and approaches to Environment Education (EE), basically various ways EE is being practiced in the classroom and imparted in the outdoors through Nature. In fact, the whole meaning and context of EE has undergone revolutionary change during past few years. In India, this is attributed to a great extent to the Supreme Court (SC), which directed the Government to take immediate steps to enforce compulsory education on environment in a graded way. (Supreme Court Direction no. 4, dated 18-12-2003, writ petition (civil) 860 of 1991, MC Mehta Vs Union of India)

The need for EE was stressed way back in 1986 in the National Policy on Education (NPE) which stressed that 'Protection of the Environment' is a value which along with certain other values must form an integral part of curriculum at all stages of education. Para 8.15 of the Policy states: "There is a paramount need to create a consciousness of the Environment. It must permeate all ages and all sections of society, beginning with the child. Environment consciousness should inform teaching in schools and colleges. This aspect will be integrated in the entire educational process". The National Council of Educational Research and Training (NCERT) brought out detailed curriculum guidelines and model syllabi for classes I to X reflecting ideas of the NPE where the approach was to adopt innovative teaching and learning approaches.

NCERT formulated a model syllabus soon after the SC directive for adoption by every State. The road map for this consists of:

- Curriculum review and revision;
- Preparation of educational material;
- Teacher training;
- Examination reform;
- School habitat improvement.

Further impetus to all this has been provided by the National Curriculum Framework (NCF) 2005, which is based on the report "Learning without Burden" (1993). To implement the NCF, 21 National Focus Groups were formed under a National Steering Committee chaired by Prof. Yash Pal. Environment education was dealt by the "Habitat and Learning" focus group.

The NCF focuses on five guiding principles for curriculum development:

- connecting knowledge to life outside the school;
- ensuring that learning shifts away from rote methods;
- enriching the curriculum so that it goes beyond textbooks;
- making examinations more flexible and integrating them with classroom life; and
- nurturing an overriding identity informed by caring concerns within the democratic polity of the country.

The Ministry of Environment & Forests, Government of India is also running a scheme for strengthening EE in the school system to help the State Education Departments to comply with the SC directive.

However, in spite of these efforts at various levels, there are still some concerns in transacting the EE in the educational processes and system in the country. Considering the cultural and ecological diversity of the country, EE should address issues such as locale specificity, social context, access to education and participation of children in schools etc. Making children sensitive to local environmental issues in their own vicinity is another important EE concern. EE can also provide the necessary perspective on how human life can be reconciled with environmental crises, so that survival, growth and development remain sustainable. EE can make education and learning a joyful, inclusive and meaningful experience for children, taking them away from a textbook culture.

This is to provide opportunities of learning by doing, involving children in activities that challenge them to think and try out what they are learning.

EE is not a discipline as such but a perspective, a way of looking at the world around us. Therefore restricting it to curriculum and textbooks will do much harm to the movement. Rather, environment has to be mainstreamed and infused into every discipline to become a life long and continuing process. The UN Decade of Education for Sustainable Development (UNDESD) also emphasises these aspects. EE therefore is about developing knowledge, skills, values and attitudes for a better quality of life and a sustainable world. The broad focus therefore for our educational system should be on learning rather than teaching, developing critical thinking, empowering rather than indoctrination, exposing students to the real-life world, natural and social, in which they live and promoting positive environmental actions in order to facilitate the move towards sustainable development. In order to make these happen, the teaching-learning in our educational institutions should reorient towards learning about the environment, through the environment and for the environment.

A realistic plan in this regard would be to:

- Mainstream EE through infusion in all subjects, at all levels;
- Specifying time and space for projects and fieldwork from existing periods of SUPW, science and other subjects;
- Developing Evaluation mechanisms particularly tools and techniques for evaluation of projects and fieldwork;
- Making available facilities and opportunities for EE - schools as a laboratory for EE transaction and, wherever possible, as a resource centre for the community.

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**Kewal K. Likhyani, IP2REVENUES, LLC, Hockessin, DE, USA**

As a follow up to Mr. Ahmed Fahmi's comments, I believe in incorporating environment related topics into practice and test questions in textbooks. It is an excellent way for students to learn and get a quantitative feel of environmental problems and solution options. Some examples:

- How much chlorine would be needed to kill 25%, 50% or 100% of bacteria in a water treatment plant of a certain size?
- How long would it take for the bacteria to be airborne if the food waste is dumped outside walls of the house?
- How much CO and CO<sub>2</sub> each car puts in the atmosphere per hour with/without a catalyst converter?

For early education, graphical presentations could be included in the textbooks so that students could merely look up the charts and answer questions. In the later high school curriculum, particularly for the science students, they could be taught how to calculate these effects. The quantitative numbers can make long lasting impressions among students and their parents.

In fact, schools could hold "Green competitions" which would go a long way to raise awareness and deep sense of "what every home or slum dweller needs to do to prevent most problems at source for their own good", e.g. dumping food waste at collection points instead of outside their homes.

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**Rahul Banerjee, Khedut Mazdoor Chetna Sangath, Indore**

A major problem in this country is the education of *adivasi* children. In Madhya Pradesh for instance, the government has a school system in place in the Bhil *adivasi*-dominated districts in the southwest but it is woefully inappropriate for their education. The syllabi and teaching methods of the education system are very alien to the culture of the Bhils. There is insufficient staff in these schools, which are mostly multi-grade single teacher schools. Teachers prefer to stay in the towns and market villages and only visit the schools occasionally. Very few Bhil children get educated as a result of this mismatch. Those that do, treat their own culture as something

primitive and sub-human in accordance with the prevailing modernist assumptions and distance themselves from it and their own community. This has resulted in the vast majority of Bhils remaining unequipped to participate effectively in the modern economy into which State policies are relentlessly pushing them.

There is a school run by an *adivasi* mass organisation, the *Adivasi Mukti Sangathan* called the *Adharshila* School, which is attempting to evolve an appropriate schooling system and curriculum for the Bhils. A review of the functioning of government schools had shown that effective teaching of *adivasi* children of illiterate parents required that they be drilled even after regular schooling hours. Since this was not possible with day scholars, it was decided to run a residential school. Secondly it was decided, as far as possible, to make parents pay in cash and kind for the education of their children so as to try and make the day to day running of the school financially self-sustaining. This, in turn, meant that the school would have to make the children proficient enough to perform well in the Board examinations at the class five level to accord with the expectations of the parents, most of whom would naturally be paying for an education that could get their children jobs later on. Thus the syllabus and teaching would have to take care of both the needs of inculcating a critical attitude towards modern development in the children as well as providing them with the skills to make it good in the modern sector. Obviously, this was a tall order and requires a lot of hard and committed innovative work on the part of the teachers.

The school started from scratch without textbooks and the language used was *Bareli*, a dialect of *Bhilli*. The conducting of local environmental and historical surveys and writing down of the rich oral literature of the *Bhilli* creation myths was used to acquaint the children with the basics of language, history, environment and arithmetic and in the process create primers. One such survey, which was both entertaining and educative, was conducted to find out how, if at all, the teachers were teaching in government schools and then comparing the results with the procedures being followed in the *Adharshila* School. The local environment provided material for scientific learning through observation and analysis, and local history as related by elders was recorded to prepare history lessons. The children have conducted surveys of health, nutrition, famine and soil and water conservation and created reference books on all these subjects. Later, as the children became proficient in studying, the standard Hindi texts conforming to the syllabus of the Board of Education were introduced. In addition to their studies, children have to put in two hours of labour everyday on the three-acre farm of the school so as to ensure that they do not lose touch with their peasant farmer roots. Possibly for the first time academic learning has become fun for *Bhil* children in a systematically run school environment. More details are available at the following website: <http://adharshilask.tripod.com/contact.html>.

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### **Ruchi Pant, UNDP, New Delhi**

It has been a pleasure to draft a response to your query. It reminded me of the good old days, weeks, months and years spent in the verdant Eastern Himalayan region, setting up and heading the regional office of a conservation organization.

Part of my portfolio comprised initiating environment/ conservation education in the region which happens to be a global hotspot for biodiversity and vulnerable to various threats. Hailing from a law and policy background, EE was not my forte and had to put in much effort to find the most appropriate mechanism and strategy to introduce EE in the schools, colleges and the forest villages in the region. Interacted with the who's who of this practice area across the country and concluded that merely following the orders of the apex court as directed in the M.C. Mehta case (now 15 years old) would not be the most effective way of truly implementing the order. I thought of going beyond the usual. I got completely immersed in the project at the cost of my various other portfolios and also to the annoyance of the President of the organization.

I share some of my experiences:

- Since the towns of Kalimpong, Darjeeling and Kurseong are known for the presence of innumerable schools and every one in these towns happens to be associated with the schools in some way or the other, we decided to begin work with schools. One of the biggest challenges was to motivate the heads and the management of the institutions. We decided to take them away from their routine and bundled about 25 heads in a bus and took them to a nearby forest reserve, where we spent 2 days with a resource person hailing from a Community Learning Centre from a remote part of Assam. The sessions were planned in such a way that there are no lectures but were dotted with games and interesting activities. The principals were so charged by the end of the programme that they promised their full support and even formed a small group naming themselves – People for Environmental Action in Kalimpong (PEAK). It took us no time to initiate EE programmes in 20 schools; some of the schools allotted an hour a week for students of classes 6 upwards immediately. The next challenge was to tackle the problem of resource persons for so many schools. We asked the schools to identify 2 teachers from each school to be trained over a period of time. Initially training wasn't a problem but to keep them motivated over a period of time was a big task. We organized orientations, exposure visits and also developed a handbook for teachers to continue with activities in these regularly allotted classes. Schools employed different strategies – some decided to grade the students for their involvement in such activities, others just let them learn. There was no way for us to get directly involved with the students while the schools were on, due to the paucity of human resources. This led us to the idea of holding a 7 – day camp during the long winter vacation. It was a non- residential programme in order to keep the expenses low and also to keep it affordable to the poorest child/ student in the town and nearby rural areas. The camp programme included various activities such as games, creative work, reading, writing, nature walk, bird watching, role-play and community interaction. The goal was to reach out to as many students as possible in the town and nearby villages and give them quality time for which we needed a large team of volunteers. We visited the local college, B.T. and B.Ed colleges for orientation programmes to muster volunteers. Army has a strong presence in the region and the officer's wives have plenty of time and energy to spare for such causes. We included them; with the schools shut, some motivated teachers and young Principals also joined the team. The ratio of volunteers to students was 1: 5. This was found to be a useful tool followed by regular classes' rest of the year.
- Media workshops were organized for senior students with the help of the EE and Gobar times' team of the Centre for Science and Environment to develop skills to raise issues and voice concerns. Students were trained to become investigative journalists specializing in environmental matters. The 4 – day workshop included a few lectures on print media especially news dailies. According to the interest of the student, they were segregated into different groups to investigate issues pertaining to waste management in the town of Kalimpong, the dwindling forest cover in the neighbouring forests and its affect on biodiversity, drinking water, etc. The teams interviewed a wide range of stakeholders including officials from the municipal corporation, forest corporation, etc. The investigations revealed a major scam worth Rs. 40 crore. The issue became so sensitive that the printer refused to print the issue of Gobar Times fearing the backlash from the political party in power.
- Our team felt that working with the schools was not adequate to inculcate in students a habit to translate and transform these activities and actions into regular practice. We found that the religious leaders had a blind following so we decided to green them as well. We found various sects and religions spread across the region, some of whom we had never heard of earlier – Christians, Muslims, Buddhists, Kabirpanthis, Pranamis, etc. With assistance from Alliance for Religion and Conservation, we added a new component to our education programme. Sacred texts were browsed to look for conservation related messages to be spread by focusing on training the religious leaders so that the parents and children could be addressed for more sustained results. Street plays were prepared and enacted.
- Consumer Education came up as an important thematic area to be dealt with while developing modules for camps and also for a handbook that was developed for teachers and volunteers. It is important for students to understand the linkages of impacts on the environment of various processes such as Manufacturing, use and disposal, which gets covered under the subject of ecological footprint of a person; it is highly pertinent for students as a consumer to take informed decisions while making purchases. It is important to make a child realize how the purchase and use of a product in a place could be linked with the impacts being felt in a far off place.

- While developing curriculum for any courses to be introduced in schools, one should have a mix of local resource persons in the team so that their knowledge and experience gets translated in to development of a locale specific curriculum.

With regard to your first question, let me bring to your notice two research projects undertaken a few years ago by the Bhartiya Vidyapeeth Institute for Environment Education and Research based in Pune. It will be useful to have a look at the findings of the research. The projects are '**Strategy for Enhancing Biodiversity Education and Awareness**' funded by the world Wide Fund for Nature- India and the Biodiversity Support Program which is a USAID Consortium; and '**Study of status of infusion of environmental concepts in school curricula and the effectiveness of its delivery**' through the India Environment Management Capacity funded by the Ministry of Environment and Forest, Government of India, New Delhi through the World Bank. The details of the projects could be reached at <http://environment.bharatvidyapeeth.edu/html/research.shtml> and the findings could be obtained from the Institute.

Finally, I would say that it is most important to ensure that any mode of transfer of knowledge would be effective when the learning is translated into action and becomes a practice and gets incorporated into the value – system of the child/ person. The value-systems are eroding which is leading to deterioration of the environment and therefore the need for the apex judiciary to intervene in the matter. Conservation values were inherent in our customary practices, which is why we still find pristine lakes in high altitude areas and dense forest cover in areas inhabited by communities where value-systems are still intact and people rely on traditional knowledge and wisdom. It thus becomes, important to include regard for traditional knowledge systems in our curriculum.

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*Many thanks to all who contributed to this query!*

*If you have further information to share on this topic, please send it to Solution Exchange for the Education Community at [se-ed@solutionexchange-un.net.in](mailto:se-ed@solutionexchange-un.net.in) and/or Solution Exchange for the Water Community in India at [se-ed\\_se\\_wes@solutionexchange-un.net.in](mailto:se-ed_se_wes@solutionexchange-un.net.in) with the subject reading "Re: [se-ed][se-watr] Query: Status of Environment Education in the School Curriculum- Experiences. Additional Reply."*

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