

**Geep** GLOBAL ENVIRONMENTAL EDUCATION PARTNERSHIP

*Sharing ideas to create a more just and sustainable future through the power of environmental education*

## CASE STUDY

# Compulsory Environmental Education in India

**CONTRIBUTOR**

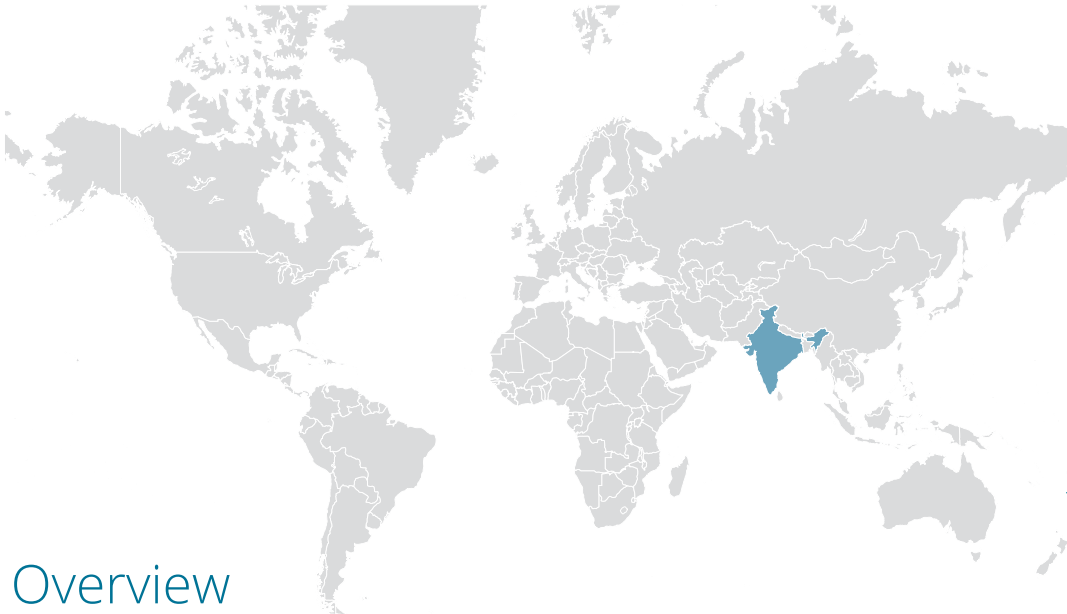
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## Compulsory Environmental Education in India



GOALS KEY

[United Nations Sustainable Development Goals](#) addressed

### Overview

This case study describes the development, successes, and challenges of a compulsory environmental education (EE) program in India.



India adopted the infusion approach to EE throughout the formal education system; serving students ages 6 – 18. The infusion approach entails incorporating EE into the existing curricula of various subjects, as well as the development of project-based activities.

This case study illustrates how:

- Indian legislation arrived at the requirement of compulsory EE for all levels of formal education.
- The infusion approach, based on integrating EE through existing curricular opportunities, was implemented at each class level (or grade).
- EE was implemented based on grade level, with higher classes experiencing EE immersion through projects in conjunction with exam preparation.
- Textbooks and project books addressed EE, but teachers and students needed additional support to engage directly with the natural world.





## Background

India is one of the few countries in the world where environmental education (EE) is compulsory at all levels of formal education. This outcome was achieved through the efforts of the National Council for Education Research and Training (NCERT) in response to a Public Interest Litigation (PIL) regarding compulsory EE, filed by Shri M. C. Mehta in 1991 in the Honorable Supreme Court.

In response to the 1991 PIL, the Supreme Court declared, **“We accept on principle that through the medium of education, awareness of the environment and its problem related to pollution should be taught as a compulsory subject.”** Following this declaration, in December 2003, the NCERT prepared a model syllabus for EE. On July 13, 2004, the Supreme Court directed “the syllabus prepared by the NCERT for Class I to XII shall be adopted by every state in their respective schools.” It further directed “NCERT be appointed as a nodal agency to supervise the implementation of this Court’s order.” The agreement was finalized in its current form in 2010.

Compliance with the Supreme Court order is mandatory and applies to all states and union territories. In fact, it is one of the few orders that apply to the entire formal education system in India. NCERT has consulted with state governments to provide support for implementation. Simultaneously, per input from the National Curriculum Framework (NCF) expert group on Habitat and Learning, India adopted the infusion approach to compulsory EE in schools.

## Approach

NCERT mandated that in order to be compliant, a separate subject for EE was not a necessity. Instead, EE could be taught through infusion—the integration of EE into science, social studies, mathematics, language, and other subjects. Infusion was a suitable approach, as environmental topics and issues are multidisciplinary. Additionally, EE teaches students to solve problems by pulling together knowledge and experiences from a wide variety of situations and subjects.

The decision to follow the infusion approach was an outcome of a nationwide process, set up by the Ministry of Human Resources and Development (MHRD) in 2004, to develop a National Curriculum Framework (NCF), a national steering committee, and 21 national focus groups. One of these focus groups—**Habitat and Learning**—submitted recommendations incorporated into the 2005 NCF.



### **The Habitat and Learning focus group recommended that:**

*As humanity endeavors to move onto a path of sustainable development, even as it enters the Information Age, it is evident that we need a new paradigm for education. The group delineated the objective of EE as, 'The main focus of EE should be to expose students to the real-life world, natural and social, in which they live; to enable them to analyze, evaluate, and draw inferences about problems and concerns related to the environment; to add, where possible, to our understanding of environmental issues; and to promote positive environmental actions in order to facilitate the move towards sustainable development. To achieve these goals, the curriculum may be based on:*

**Learning about the environment | Learning for the environment | Learning through the environment**

A major focus of the NCF is on EE as a tool to promote critical thinking and problem-solving approaches, as opposed to memorizing textbook content. This approach recognizes that holistic thinking is at the heart of EE, which aligns with the new NCF infusion paradigm intended to replace sectoral thinking with multidisciplinary thinking to promote environmental understanding and actions.



To achieve this, the NCF Habitat and Learning group identified six major areas for action: curricular revision, materials development, conventional media and Information and Communication Technology (ICT), teacher preparation, evaluation systems, and school habitats. This case study focuses primarily on the impact of curricular revisions and materials development on the prevalence of EE in all levels of Indian schools.

Per the recommendations of the 2005 National Curriculum Framework, NCERT recommended the following system for incorporating EE into classroom curricula:



- a. Classes I and II (ages 6-7):** EE is taught through activities integrated into the core subjects of reading, writing, and mathematics. For example, students may study shapes in mathematics by identifying shapes in the natural environment.
- b. Classes III to V (ages 8-11):** EE is taught as a standalone subject, called Environmental Studies (EVS), with a textbook called My Environment that aims for students to learn about the environment in the context of their own lives and communities.
- c. Classes VI to X (ages 12-16):** EE is taught by the infusion approach primarily in science and social sciences. For example, students studying decomposition in science might complete an EE-related project as part of the learning unit. In all subjects, EE-based questions comprise ten percent of the total marks for both formative and summative assessments.
- d. Classes XI and XII (ages 17-18):** EE is part of students' Interdisciplinary Projects in electives and General Studies as students choose their own disciplines. These classes focus on project-based learning. For example, a student studying commerce might complete a project that focuses on the concept of green economy. NCERT also published project books for students of Classes VI to X (Age 12 to 16 years) for use as part of the project-based learning infusion approach. The goal of the project books is to build capacity for critical and multidisciplinary thinking, as well as to develop a positive and problem-solving attitude among students. The projects were also encouraged through Jawaharlal Nehru National Science, Mathematics, and Environment Exhibition (JNNSMEE) for Children, an organization that aims to develop critical thinking about global issues to maintain healthy and sustainable societies in today's environment.

Many other programs have supported the implementation of the NCF, like the Centre for Environment Education's [Paryavaran Mitra](#) (Friend of Environment) program, which launched in 2010. This program developed materials for teachers and trained them on the pedagogy of project-based learning.

While the infusion approach is approved for all class levels, exam boards, and state education systems, states can make independent adaptations to their curriculum as needed. For example, at the Higher Secondary stage in Maharashtra, India's second-largest state, several academic focus areas are available to students, such as arts, sciences, and commerce. However, these focus areas do not allow for easy EE integration. Because infusion is not possible at this stage, the EE curriculum is taught as a separate subject that students of all academic areas must take.

# Evaluation Plan

Evaluation of the infusion approach across levels focused on two areas:

- 1) analysis of EE infusion in textbooks, and**
- 2) analysis of the outcomes of student EE projects.**

## 1) Analysis of EE infusion in textbooks

Textbooks for Classes I to XII (ages 6 - 18) were analyzed by NCERT to determine the degree to which EE infusion was present. The [report](#) found that significant content related to environmental topics was present in the textbooks. This finding indicated that all states had complied with the Supreme Court directive and infused EE content into the textbooks. Other national and state government jurisdictions have also contributed many EE initiatives to the infusion process.

In Maharashtra, the Board of Higher Secondary Education has taken considerable efforts to implement EE. As mentioned earlier, EE is a separate and compulsory subject at the higher secondary stage in Maharashtra for all disciplines. A set of textbooks have been prepared for Classes XI and XII (ages 17 and 18), titled Environment and Sustainable Development. Topics covered include systems thinking, population, knowledge growth, resource use, energy, and climate change. Project and activity ideas are included as well.

## 2) Analysis of outcomes of student EE projects

Maharashtra again provides an example of how EE infusion can be evaluated and adapted to unique local needs. In Maharashtra, the Higher Secondary Board evaluated the extent of implementation of EE at the XI and XII classes. Discussions and interactions with teachers revealed that implementation was considered inadequate for a few possible reasons. In India, at the higher secondary stage, students focus primarily on preparing for college admissions examinations, especially for professional colleges. Additionally, science and engineering students may skip school entirely and instead attend coaching classes for college exam preparation.

In other cases, teachers report that although there are two periods of EE per week in the timetable, these periods are sometimes used for math or science instruction.

In other schools, where independent student projects serve as the primary method of EE infusion, the projects were not completed. Among the projects that were completed, many of the topics were not related to environmental or sustainability investigations. Additionally, teachers reported leniency in their grading of the EE assessments. The EE assessments take place at the school level, and these grades are included in the final exam given to students just before graduation. A high EE score increases the overall student pass percentages, which is an indicator of the school's overall success. As a result, teachers graded liberally, even in cases where students did not put effort into or complete projects.

With these findings, the Maharashtra Higher Secondary Education Board has changed the method of EE assessment. External examiners now visit each school and conduct a review of the students' project reports.

## Outcomes

The results of the efforts of NCERT and the implementation of the NCF has allowed EE to be systematically infused at all levels of school education in India, and there is increasing awareness among stakeholders about the importance of EE implementation.

Despite this major initiative, it appears that students still have inadequate exposure to their 'habitat'; there is little active learning from the natural and social worlds around them. EE learning and training opportunities for students and teachers remain largely textbook and classroom-based, which does not enable them to fully achieve the goals of the EE infusion approach, as described in the NCF. This has resulted in tasks and activities with less of a focus on process, a necessary component of effective EE.

As part of the solution, NCERT has identified the need to support and encourage states to undertake summer and winter camps for teachers, students, and the community to address local environmental issues. These camps serve a variety of purposes:

1. **Students focus on developing action plans for plausible solutions to local environmental issues**, such as domestic water pollution. These camps primarily address the human dimensions of environmental issues.
2. Camps for students and their teachers aim to **empower the schools to adopt EE through hands-on opportunities** to learn in the natural environment. These camps most often involve camping and focus more on ecological issues.
3. Teacher training camps are intended to **build the capacity of teachers to implement EE through instruction and experiences** with EE experts in outdoor education settings.
4. Camps may also serve to increase the popularity and use of the NCERT EE project books, as **teachers and students see the value of EE through their environmental camp experiences**.





## Lessons Learned

- Prescribed activities are sometimes taught as material to be memorized, rather than as an opportunity for students to build critical thinking and problem-solving skills that EE can provide.
- Motivation and capacity building of teachers is a key element in the success of the EE infusion initiative, as pedagogy, particularly in project-based learning, is important in influencing responsible environmental behavior.
- Implementing changes is a challenge for a large country like India. The most important aspect of change in terms of building capacity of teachers is using the textbooks with the infused content of EE to take up the perspectives adequately along with the science and social subject that they have been teaching for years.
- The infusion approach requires adaptability and patience to accommodate localized needs and limitations.





# Resources

- [NCERT Website](#)
- [NCF](#)
- [Project Books by NCERT](#)
- [EE infusion Report](#)
- [Teachers' Handbook on Environmental Education For Classes XI-XI](#)
- [Learning Outcomes in EE](#)
- [Paryavaran Mitra](#)

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