

PROJECT BOOK IN
ENVIRONMENTAL EDUCATION
FOR CLASS X



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

ISBN 978-81-7450-987-1

First Edition

August 2009 Bhadrapada 1931

PD 100T VSN

© *National Council of Educational Research and Training, 2009*

Rs 25.00

Printed on ??

Published at the Publication Department by the Secretary,
National Council of Educational Research and Training,
Sri Aurobindo Marg, New Delhi 110 016 and printed at ?.....
.....

ALL RIGHTS RESERVED

- ❑ No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.
- ❑ This book is sold subject to the condition that it shall not, by way of trade, be lent, re-sold, hired out or otherwise disposed of without the publisher's consent, in any form of binding or cover other than that in which it is published.
- ❑ The correct price of this publication is the price printed on this page. Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.

OFFICES OF THE PUBLICATION DEPARTMENT, NCERT

NCERT Campus Sri Aurobindo Marg New Delhi 110 016	Phone : 011-26562708
108, 100 Feet Road Hosdakere Halli Extension Banashankari III Stage Bangalore 560 085	Phone : 080-26725740
Navjivan Trust Building P.O.Navjivan Ahmedabad 380 014	Phone : 079-27541446
CWC Campus Opp. Dhankal Bus Stop Panihati Kolkata 700 114	Phone : 033-25530454
CWC Complex Maligaon Guwahati 781 021	Phone : 0361-2674869

Publication Team

Head, Publication Department	:	<i>Peyyeti Rajakumar</i>
Chief Production Officer	:	<i>Shiv Kumar</i>
Chief Editor	:	<i>Shveta Uppal</i>
Chief Business Manager	:	<i>Gautam Ganguly</i>
Editor	:	<i>Vijayam Sankaranarayanan</i>
Assistant Production Officer	:	?

Cover and Layout

Shweta Rao

FOREWORD

The National Curriculum Framework (NCF) – 2005, recommends that children’s life at school must be linked to their life outside school. This recommendation has been implemented in the new textbooks published since 2006, in all major subjects. In the context of environment-related awareness, NCF-2005’s vision implies an approach which cuts across the traditional boundaries separating one subject from another. According to this approach, knowledge of environmental concerns and the activities, which might deepen this knowledge and develop a positive attitude, need to be infused in the subject matter of all areas of the school curriculum at different stages. *The National Focus Group on Habitat and Learning*, which amplifies the NCF-2005 perspective, says: “The human habitat displays tremendous variability in space and time and its understanding has to be locale specific albeit in the context of a global vision. A great deal of the knowledge of the environment lies with India’s barefoot ecologists, the people at the grassroots...”

NCF-2005 perceives school children as ecologists in their own right who need to be nurtured by a flexible school routine and teachers who engage with children in the construction of knowledge. In addition to the environment-related subject matter and activities incorporated in the syllabus and textbooks of all the major subjects, the National Council of Educational Research and Training (NCERT) has now decided to bring out project books for students of Classes VI to X. The books comprising this series attempt to build capacity for critical and multi-disciplinary thinking and a positive and problem-solving attitude. They aim at exposing students to the real-life world around them, both in nature and society, in order to enable them to examine, assess and interpret the problems and concerns related to the environment. The ultimate goal is to promote a socio-cultural ethos which facilitates India’s attempt to pursue the path of ethically sound and sustainable development. The activities included in this series of books require extensive and continuous observation and

documentation which would enable students and teachers to notice patterns in phenomena. Uploading of the results of such projects on publicly accessible websites will gradually help the nation to create a transparent and comprehensive database on the environment.

The success of this effort crucially depends on the interest and enthusiasm that school principals, teachers, parents and civil society in general show in encouraging children to carry out the projects and activities outlined in the present series. It is extremely important that students' project work is assessed in a holistic manner, giving due regard to the motivation and enthusiasm of each student rather than through the conventional system of evaluation which ignores individuality and originality.

NCERT appreciates the hard work put in by the Project Book Development Committee in preparing this series and we are especially grateful to Professor Madhav Gadgil for guiding the work of this Committee. Several teachers contributed to the development of this book; we are grateful to their principals for making this possible. We are indebted to the institutions and organisations which have generously permitted us to draw upon their resources, material and personnel. NCERT is thankful to Professor Mrinal Miri and Professor G.P. Deshpande who co-chaired the National Monitoring Committee appointed by the Ministry of Human Resource Development to oversee the implementation of NCF-2005. We thank Dr Kiran Chhokar, Programme Director, Centre for Environmental Education, Delhi, for her invaluable inputs during the meeting of the National Monitoring Committee. As an organisation committed to systemic reforms and continuous improvement in the quality of its products, NCERT welcomes comments and suggestions which will enable us to undertake further revision and refinement of this important series.

New Delhi
9 January 2009

Director
National Council of Educational
Research and Training

NOTE TO THE STUDENTS

Environmental issues have become a topic of discussion and debate in every nook and corner of the world. The print as well as the electronic media have been giving special focus to these issues. At this very crucial juncture, it is but our responsibility to contribute every possible bit to safeguard our environment. We already have enough knowledge about environmental issues pertaining to our locality, state or country. Let us now become active participants in these issues so that we ourselves work on the problems, find out the causes, and also come out with certain solutions and share our findings with our society.

You must be familiar with some of the environment related concerns having read about them in various textbooks. You have also been carrying out projects since Class VI on some of the related issues. In continuation of the important role that you have been playing through your projects towards conserving the environment, we recommend that you carry out projects this year too.

This project book contains a set of twenty projects of which you are expected to carry out a minimum of two. With the experience that you have had in the previous classes, we hope that you will be more meticulous while working on the projects. As in the previous classes, select appropriate projects on which you will be able to work without going too far from your locality. Modify the methodologies suggested wherever you feel it is necessary but in consultation with the concerned teachers.

As you work on the projects, some of which could be group projects, give maximum cooperation to your friends. Follow official procedure whenever you

need to visit institutes, offices, etc. Be humble and soft spoken while taking an interview or obtaining information and do not hurt the sentiments of others. Whenever you encounter problems in the course of your project, we advise you to consult your teachers.

Earnestly work towards completing your projects successfully. The efforts that you have made and will make in the future, will contribute towards building a better world to live in. Be the one who cleans up the river and not the one who says the river is dirty.

NOTE TO THE TEACHERS

The textbooks of different stages, from Class VI to Class IX, irrespective of the subjects, have been carefully and adequately infused with environmental issues and concerns wherever relevant. Ample opportunities have been provided to students in the textbooks to actively engage themselves in activities pertaining to environmental concerns. This project book has also been prepared with the same objective — to further students' involvement and active participation in environmental issues. This will enable them to understand the environmental problems in their vicinity, work on them to obtain first-hand information, and come out with their own solutions. This book contains twenty projects with background, methodology, conclusion and suggestions for follow-up actions. The topics have been chosen keeping in view the environmental concerns that have been discussed in various textbooks for the class. An attempt has been made to make the projects workable in different corners of the country. However, modifications in the methodology or in the title itself may be made to meet the diverse local-specific environmental concerns of different regions.

By the time the students reach Class X they have gained expertise to work on the projects and may not have much difficulty executing the projects by themselves. But with the Board examination round the corner, students may not be very enthusiastic to work on the projects. It is at this stage that the teachers should make extra efforts to give them the much-needed encouragement. The role of the teacher as a facilitator and a guide will still be instrumental in the successful completion of the projects. For this, teachers would be required to assign appropriate projects to each student, modify and fine-tune the methodologies, keep track of the developments and also help

the students wherever necessary to complete the task smoothly. Teachers are expected to ensure that students take up as many projects as possible with the minimum being two projects each.

Evaluation strategy can be prepared independently by the teacher concerned to evaluate the projects. The teacher concerned will decide whether evaluation should be done for every step of the project or on completion of each project. Whether marks or grades are to be allotted is left to the discretion of the teacher or the school authorities. Whatever pattern the teacher or school employs for evaluation, the marks or grades should be shown in the students' report cards. There should be no pass or fail grading. Every student should have completed a minimum of two projects at the end of the academic session.

Last, but not the least, this attempt of introducing a project book is to bring about an attitudinal change in the students towards environmental concerns and to nurture them to become concerned and responsible citizens.

PROJECT BOOK DEVELOPMENT COMMITTEE

CHAIRPERSON, ADVISORY GROUP IN ENVIRONMENTAL EDUCATION

Madhav Gadgil, *Emeritus Professor*, Agharkar Research Institute, Pune

MEMBERS

Jaishree Sharma, *Professor*, Department of Education in Science and Mathematics, NCERT, New Delhi

R. Joshi, *Lecturer (SG)*, Department of Education in Science and Mathematics, NCERT, New Delhi

Sunita L. Varte, *Lecturer*, Department of Education in Science and Mathematics, NCERT, New Delhi

MEMBER-COORDINATOR

Chochong Vareichung Shimray, *Lecturer*, Department of Education in Science and Mathematics, NCERT, New Delhi

ACKNOWLEDGEMENT

The National Council of Educational Research and Training acknowledges the contributions of the following faculty in the development of the projects: Mily Roy Anand, *Reader*; Aparna Pandey, Ashita Raveendran, Jaya Singh, M.V. Srinivasan, Tannu Malik, *Lecturers*, DESSH, NCERT, New Delhi; Snehlata Prasad, *Reader*, DOL, NCERT, New Delhi; Kirti Kapur, Sanjay Kumar Suman, Naresh Kohli, R. Meganathan, Varada M. Nikalje, *Lecturers*, DOL, NCERT, New Delhi; Anjni Koul, *Lecturer*, DESM, NCERT, New Delhi. NCERT sincerely acknowledges the valuable contributions of the following academics in reviewing and refining the manuscript of this book: V.B. Bhatia, *Professor (Retd)*, Delhi University and *Chief Advisor* of Science textbooks for Classes VII and VIII published by NCERT, New Delhi; Vandana Saxena, Kendriya Vidyalaya No. 3, Delhi Cantt, New Delhi; Anuradha, Sardar Patel Vidyalaya, Lodi Estate, New Delhi; Nutan Punj, Kendriya Vidyalaya BSF, Chhawla, New Delhi; Suchi Bajaj, Springdales School, Pusa Road, New Delhi; Saroj Sharma, Mother's International School, New Delhi; Lalita S. Kumar, *Reader*, Indira Gandhi National Open

University, New Delhi; Kalyani Krishna, *Reader*, Sri Venkateswara College, New Delhi; Prabuddh Kumar Mishra, *Research Scholar*, Delhi University. NCERT also sincerely acknowledges the contributions of D. Lahiri, *Professor (Retd)*, DESM, NCERT, New Delhi throughout the development of this project book.

NCERT gratefully acknowledges the suggestions received from Neeladri Bhattacharya, *Professor*, Jawaharlal Nehru University, New Delhi and Vinod Raina, BGVS, members of the Sub-committee of the National Monitoring Committee. The guidance of Professor Hukum Singh, *Head*, DESM, at different stages of the development of the project book is also acknowledged.

NCERT is thankful to Albon Ada von Stockhausen, David Buhiril and Achan Mungleng for letting us use their invaluable photographs; and *The Times of India* for the clippings.

The contributions of the APC office, administration of DESM, the Publication Department and the Secretariat of NCERT, New Delhi, are duly acknowledged.

CONTENTS

<i>Foreword</i>	<i>iii</i>
<i>Note to the Students</i>	<i>v</i>
<i>Note to the Teachers</i>	<i>vii</i>
1. Pollination: an interaction of plants and insects	2
2. Observing the 3 'R's	4
3. Conserving natural resources	6
4. Optimum use of groundwater	8
5. Impact of low-cost imports on our economy and environment	10
6. Employment in semi-rural areas	12
7. Lots of water and yet no water!	14
8. Do we need zoos?	16
9. Landscape, culture, people and their relationships	18
10. Household wastes	20

11.	The plight of rag-pickers	22
12.	Water bodies in the neighbourhood	24
13.	Impact assessment of developmental projects	26
14.	Insect sting and its home remedies	28
15.	Oral health and hygiene	30
16.	Awareness about common ailments	32
17.	Disaster management	34
18.	Education for all	36
19.	Healthy domestic environment	38
20.	Depletion and degradation of natural resources	40

