

SMALL SCIENCE

A series in
primary science

TextBook
Class 3

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Based on the theme 'Look for science in small things!', the cover depicts a common
garden snail on the leaf of *Colocasia (arbi)* in Hindi, its preferred food plant.

The neologisms 'TextBook' and 'WorkBook' are indicative of the
innovative and distinct approach of *Small Science*.

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GENERAL PREFACE

The Homi Bhabha Centre for Science Education (HBCSE) has been active in research and field work since 1974. Interdisciplinary scholarship at the Centre has been developed around a doctoral program in Science Education. As one outcome of this research and development, about ten years ago, textbooks, workbooks and teacher's books in primary science were brought out by HBCSE.

The books received warm and appreciative response from all quarters - teachers, students, parents, professionals and also Government agencies. At the time of first publication some of the ideas in these books appeared radical and unconventional. Today these ideas have become part of the discourse of education in our country. We are therefore very happy that the Oxford University Press has taken on itself the job of publishing and distributing these books on a much wider scale.

The National Curriculum Framework 2005 has prepared 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. Often however there remains a gap between the generally agreed objectives of the curriculum and their actual translation into textbooks and teaching practices.

The books brought out by HBCSE reflect an attempt to close this gap as much as possible. It is for the users of these books to decide if this attempt has been successful.

Arvind Kumar

PREFACE TO SMALL SCIENCE CLASS 3

The Small Science books have emerged out of a process of research, field-work and classroom trials. Their activity-based approach is based on the idea that first-hand concrete experiences at an early age gradually strengthen the child's capacity to construct abstract formulations. Curriculum units are therefore developed around simple, cognitively and contextually appropriate, activities and exercises which help children explore and understand the world around them.

Small Science discourages memorisation of text, focusing instead on acquisition of tools of learning: namely, observation, design drawing and construction, along with basic scholastic skills of speaking, reading, writing and calculating.

The books interweave a story about two curious children, Mini and Apu, who learn many things by observing, doing, inquiring and reflecting on their experiences. Questions stimulate students to observe and think beyond the book, while stories and poems enliven their reading. The WorkBook lays out a format for recording results of the activities and exercises. The same format enables continuous assessment of the student's work.

The Teacher's Book provides conceptual guidance and practical hints. Much effort has gone into providing the teacher with background information relevant to the Indian socio-cultural, geographical and natural-historical context. Results of classroom trials too are conveyed through first-person accounts in the Teacher's Book.

These books are supplemented by a Teacher's Book in Environmental Studies for Classes 1 and 2 which is available from the Homi Bhabha Centre for Science Education (HBCSE), Tata Institute of Fundamental Research, Mumbai.

Do write and tell us if you liked the books; and please send us your ideas for improving them.

Jayashree Ramadas

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Jayashree Ramadas

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Chapter 1

So many living things!

Chapter 2

Looking at plants

Chapter 3

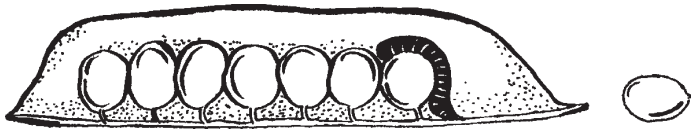
Grow your own plant

Chapter 4

Looking at animals

Have you ever watched a puppy play with a ball, a spider build a web, or a tree bloom with colourful flowers? Have you rolled a leaf to make a whistle? Have you listened to, and tried to imitate, the call of a bird? How dull the world would be, without living things!

In the next few weeks, you will look at living things, talk and write about them. Watch with care, and ask questions. You may not find the answers at once, but you will learn, and you will enjoy!



Pea Tale

Mini and Apu were shelling peas with Dada (and eating some too)! Mini was about to pop a pea into her mouth, when Apu cried, "Wait!"

A little green caterpillar lay curled around the pea. "Is it alive?" Mini touched it with her finger.

The caterpillar moved, but held on to the pea. "I'll put it back in the pod. Later we can leave it out in the garden."

"Do you know", said Dada, "in a few weeks this little green caterpillar will fly away - it will be a little brown moth then!" Apu and Mini looked in wonder at the caterpillar.

"Or a bird might find it first, and eat it up!" said Mini. Apu made a face at her.

"One day you too can watch a caterpillar turn into a moth or a butterfly", said Dada, "after you find out some more about living things, and how to take care of them."

"Let's start right away", cried Apu. "how many living things can we see in this garden, Mini?"





*Hush, hush, don't make a sound,
Walk softly, searching on the ground,
Under stones they creep and hide,
In puddles, ponds, they swim and dive*

*Some stand still, with roots so deep,
Home to others, that crawl or sleep,
On branches, barks and leaves they stay,
Or spread their wings, and fly away!*

Search for living things!

1. In the classroom

Make a list of all the living things in your classroom. You, your classmates and your teacher are living. What are the other living things in the classroom?

2. Outside the classroom

Now list the living things that you see in your school grounds, or near your house.

Look for different kinds of plants and trees. Look closely on the ground, under stones, inside puddles or ponds, in bushes, on branches, leaves and barks of trees, in the air, and in the sky. See who can notice and write down the largest number of living things.

(Ask your teacher the spellings of names that you do not know.)

Take Care!

Do not go too deep into grass or bushes. Do not put your hand into cracks, or turn over large stones. You may get a nasty surprise!



3. Summer and rains

Choose a small patch of land near your home or school. Count how many different kinds of plants and animals you see there during the summer season. How many of these plants are trees?

Look again after the rainy season has started. The old plants now look greener. But you also see many more, and many different kinds of small, baby plants. As the days go by they grow bigger.

You also see new animals. Look for frogs, earthworms, and different kinds of insects, like caterpillars, butterflies, beetles and flies.

Count how many different kinds of plants and animals you see in the rainy season.

Think! Think!

Where did all these new plants and animals come from?

Where were they hiding in the summer?



Remember this

We see many different kinds of living things around us. All these living things are either plants or animals.

Plants stay fixed on the ground; animals move around.

When it rains, we see new plants, and new animals.

Know these words

living thing	summer	animal	sprouts	burrows
plant	rainy	insect	moves	climbs
grass	season	caterpillar	flies	grows
bush		beetle		
tree				

EXERCISES

Name and draw

1. A plant that:
 - a. Climbs on other trees
 - b. Grows in water
2. An animal that:
 - a. Moves on the ground
 - b. Flies in the air
 - c. Lives under the ground
 - d. Hides under stones
 - e. Climbs on trees and bushes
 - f. Lives in water

Short questions

1. Give examples of these living things:
 - a. These living things always stay fixed on the ground.
 - b. These animals have no legs.
 - c. We have two legs. Which other animals have two legs?
 - d. These animals have four legs.
 - e. These animals have six legs.
 - f. These animals have eight legs.
 - g. These animals have so many legs, they are difficult to count.
 - h. These animals have hair on their body.
 - i. These animals stay on the undersides of leaves.
 - j. You see these animals in the rainy season.
2. Why do walls and rocks look green in the rainy season?

What's same? What's different?

1. Give two similarities and two differences between:
 - a. A mango tree and a peepal tree
 - b. A caterpillar and an earthworm
2. Find the odd one out:
 - a. coconut, frog, chikoo, mango
 - b. mosquito, butterfly, crow, bee
 - c. frog, cat, fish, crocodile

Talk and write

1. Remember and say any poems that you have learnt about any living thing (plant or animal).
2. Write five sentences about the plants in your school ground.
3. Write five sentences about the animals in your school ground.

Play with words

1. Make sentences with:
grass, tree, fruit, caterpillar, bulbul
flies, burrows, grows
2. Now make some more sentences. Each sentence should use two or more of these words.

Ask a question

1. Ask questions about the plants and animals you saw while doing the activities.
Think of how you will try to find the answers.

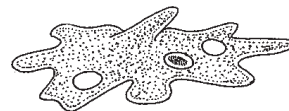
DID YOU KNOW?

• *There are so many different kinds of living things on the earth, people have still not finished counting all of them! Of all the different kinds of living things we see, the maximum number is of insects.*

• *Some living things are so small, we cannot see them! There are countless numbers of them all around us: in the air, in the soil, in the water, and even inside us!*

A microscope makes things look much larger than they are. If you look into a drop of pond water through a microscope,

you might see this very tiny animal (Amoeba)



or this very tiny plant (Nostoc).

