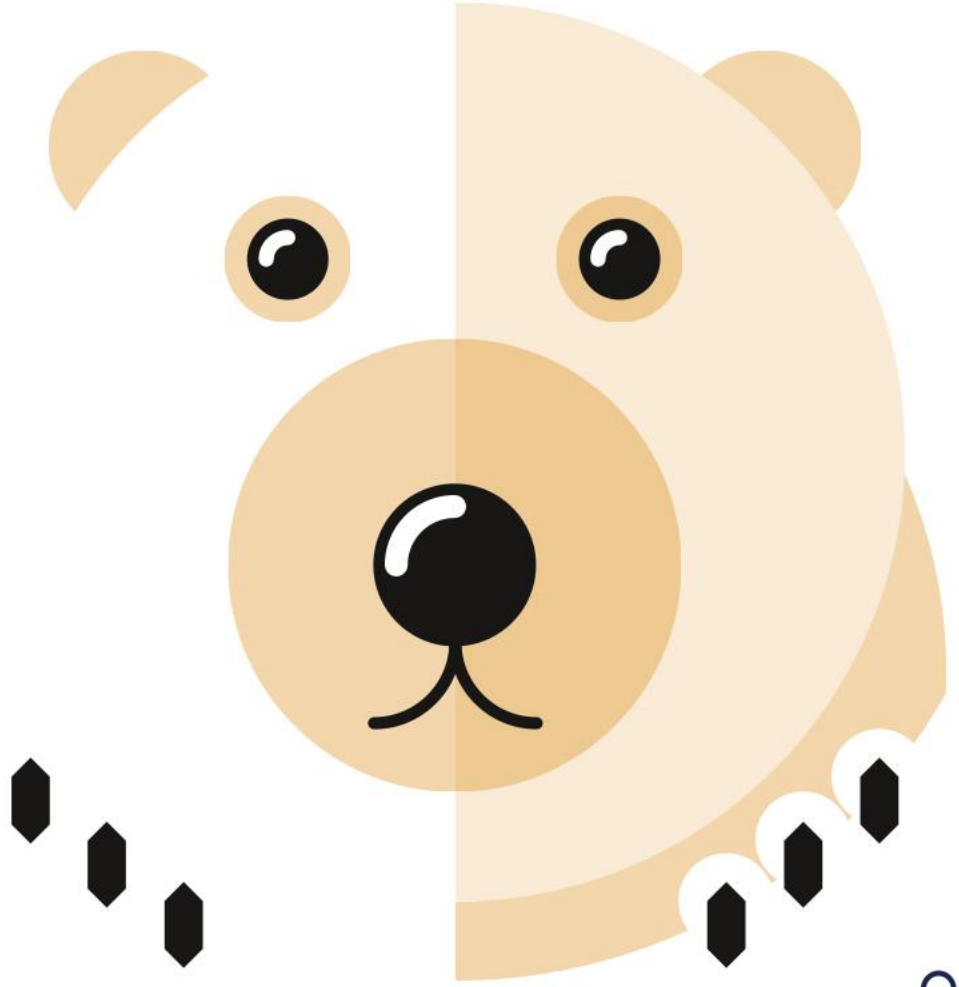
Oxford International Resources

2

Science

Workbook

Second Edition



Primary

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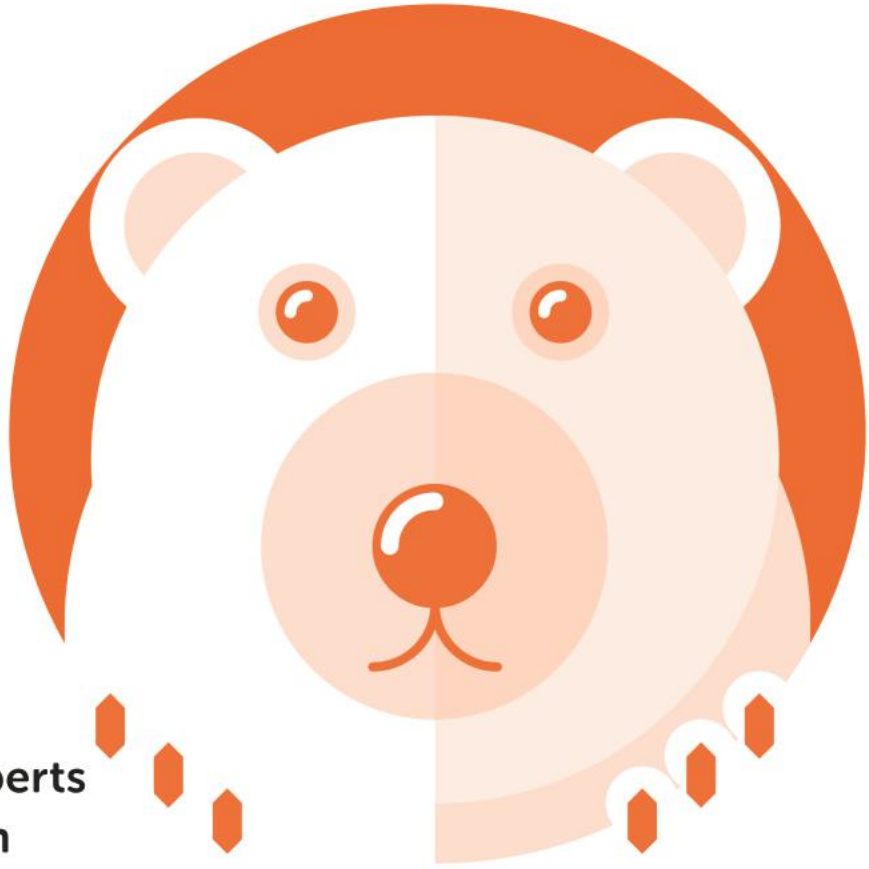

Deborah Roberts
Terry Hudson

Alan Haigh
Geraldine Shaw

Language consultants:
John McMahon
Liz McMahon

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Contents

How to Use this Book

The Workbook for *Oxford International Primary Science* supports the Student Book that children are using in their science lessons for this year.

The Student Book includes some pair, group and whole-class activities, hands-on tasks and write-in tasks to test students' understanding and help them learn. It is important to extend these tasks. This Workbook enables students to build on what they have learned in the Student Book to develop a secure understanding of scientific concepts.

Encouraging students to think about and apply their growing skills and knowledge helps them consolidate their understanding and work scientifically. This helps with confidence. Students also have opportunities to see that science is relevant all around them – both inside and outside the classroom.

Students may find it useful to complete an investigation planning form. This sets out all the stages of the investigation. A proforma is provided in the Teacher's Guide. Find out more at:

www.oxfordprimary.com/international-science

Structure of the book

This Workbook is divided into five units plus a Support for Teachers and Parents section and a Quiz:

Support for Teachers and Parents

Unit 1 Living and Growing

Unit 2 Growing Plants

Unit 3 Habitats and Food Chains

Unit 4 Uses of Materials

Unit 5 Day and Night

Quiz Yourself

What you will find in each unit

There are four types of lessons:

Key words and introduction lessons encourage students to read, spell and use the scientific vocabulary in the unit.

Activities build on the work in the Student Book. These help with developing language skills, developing scientific enquiry skills, applying mathematical knowledge and securing understanding rather than just recall. The Support for Teachers and Parents notes on pages 6–11 give you advice on how to help students with each activity.

What I have learned encourages students to talk about what they have learned, reflect on what went well and revisit any areas they need to check. This encourages a growth mindset.

Investigate like a scientist enables students to apply what they have learned in practical contexts.

What you will find in the lessons

Icons show the nature of each task:

 **Discuss**: Students are encouraged to discuss and communicate scientific ideas and approaches. They can work in pairs or small groups for discussion tasks.

 **Investigate**: Students are encouraged to plan, ask questions and record results for each investigation. They are asked to observe closely, make predictions and compare their results with others. Sometimes you will use different equipment, which is available in school. You may also ask students to carry out a test in a different way, to make sure they are safe.

 **Language support**: This icon highlights activities that provide language support through writing frames or word banks. Students are encouraged to write, read and record short answers.

 **Hints and tips**: Students are encouraged to think about tips to make investigations safer or more effective.

Stretch zone: Students are encouraged to extend their understanding.

 **Mindful moments**: Students are encouraged to think about and reflect on what they have learned. This supports students' well-being.

 **What went well**: Students are encouraged to talk about what went well in each module to secure their understanding.

Student Book

Throughout the Workbook, you will find links to the Student Book. Students can refer to information in the Student Book to help them complete activities.

Teacher's Guide

The Teacher's Guide that accompanies this book provides lesson notes and answers for each page.

Support for Teachers and Parents

1 Living and Growing

What students will learn

This unit helps students to understand more about animals and plants, and what they need to stay healthy. They will also study how people stay healthy by eating a balanced diet, exercising and following hygiene rules. Students will:

- find out that animals need water, food and air
- find out that animals and plants are living things
- explore things that have never been alive
- name different animals and plants and where they live
- find out why we need a healthy diet
- explore why exercise is important
- learn about good hygiene
- discuss that babies grow into adults
- give examples of some animals and their offspring.

Key words

adult, diet, exercise, grow, hygiene, movement, offspring, parent, teenager, toddler

Scientific enquiry skills

This unit helps students to develop and practise the following scientific enquiry skills.

Scientific enquiry skill	Page
Ask questions	14, 20, 24
Use equipment	19
Observe	15
Measure	15, 19
Compare	19, 25
Notice patterns	15, 18, 25
Record	16, 19, 20, 22
Carry out tests	19, 20, 23
Group/classify	14, 16, 17, 22
Use secondary sources	12, 22
Communicate findings	13, 18, 21

Ways to help

- Encourage students to use key words when they discuss their work.
- Set out a range of objects that have never been alive so students can handle them.
- Ask students questions about the animals and plants they see locally.
- Ask students to think about what they eat and why they need to eat it.
- Play games by asking students to suggest healthy meals and unhealthy meals.
- Display hygiene rules and reminders in the classroom.
- Display pictures of different adult animals and their offspring.

Helping with activities

The following guidance gives you advice on how to help students with each activity.

Which foods do animals eat?
Explain that students will have to use some of the foods more than once.

Finding fruits and vegetables
Make a large class version of the results so that students can share and compare their findings.

Healthy eating
Help students to produce circles to represent plates. You could allow them to write down their healthy breakfast on a paper plate and display it.

Match the words
Discuss each word with students. Encourage them to say each word out loud.

Exercise and energy
Remind students of the link between moving a lot and using up a lot of energy.

Heart rates
Take special care to make sure that students practise taking a pulse, and help with the timing.

Hand-washing investigation
Remind students to wash their hands for 20 seconds each time to make the test fair.

Hygiene poster
Obtain some health leaflets and posters from local health centres to display. This will give students some ideas.

Your family timeline
Place pen marks or put tape on the pieces of string to help students to split it into the correct divisions.

Measuring heights
Demonstrate the height measuring technique to point out the need for the ruler to be horizontal.

Reproduction
Point out that the words can be written across the page or downwards.

How tall are animals?
Remind students to draw the bar for each animal up to the height on the y-axis.

2 Growing Plants

What students will learn

This unit helps students to understand more about how plants grow and develop. Students will:

- explore how seeds and bulbs grow into flowering plants
- discover that plants need light, water and the right temperature to grow.

Key words

bulb, germination, grow, light, plant, seed, temperature, water

Scientific enquiry skills

This unit helps students to develop and practise the following scientific enquiry skills.

Scientific enquiry skill	Page
Ask questions	29, 36, 37, 38, 40
Use equipment	31, 32, 41
Observe	28, 29, 32, 33, 38, 39
Measure	30, 31, 32
Compare	32, 34, 37, 38
Notice patterns	32, 35, 37, 38
Record	31, 34, 38, 39
Carry out tests	30, 31, 37, 38, 39
Group/classify	34, 36
Use secondary sources	33
Communicate findings	32, 35

Ways to help

- Display the key words.
- Obtain a variety of seed packets and display these.
- Encourage students to grow plants from seeds.
- Help students to find pictures of different plants and fruits showing seeds.
- Explain that plants need light to help them make food. Animals cannot do this.
- Show examples of bulbs and let students plant some.
- Let students work outside to observe plants and where they grow.
- Encourage students to predict what happens if plants cannot have light or water.
- Allow students to talk to each other as much as possible to share ideas.

Helping with activities

The following guidance gives you advice on how to help students with each activity.

Measuring plants
Allow students practice measuring different objects as well as the plant and lines.

Investigating sunflowers
Point out that there will be some variation in the rate of germination and growth of the sunflowers. This is why scientists use averages.

Investigating different seeds
Have a large class results table at the front so that students can share and compare their findings.

Why flowering plants spread seeds
Make an example of the helicopter seed model to hand around the class so students can see how it is cut and folded.

Recording measurements
Explain that small objects are measured in centimetres or even millimetres and large objects in metres or even kilometres.

How a seed changes into a small plant
Point out that students should compare their seeds with the pictures showing the stages of germination.

Which parts of the plant are eaten?
Display some fruits and vegetables so students can look at some examples of plants we eat as food.

Survey of plants used for food
Select a local market or large shop and visit or write to obtain permission for your visit with students.

Do plants need light to grow?
Remind students that only one variable (light) should be changed and everything else should be kept the same.

Recording results
Explain that students should colour in the plant pictures so they represent what their plants looked like in the investigation.

Water the plants
You can support some students by reminding them that plants without water will wilt.

Making an animal with plant hair
Encourage students not to copy the example in the picture – they should design their own.

3 Habitats and Food Chains

What students will learn

This unit helps students to understand more about where animals and plants live and what these habitats provide for these living things. Students will:

- discover living and non-living things
- explore different animals and plants and where they live
- identify different habitats
- explore how animals get their food from plants and other animals
- understand ways to care for the environment.

Key words

adapted, environment, food chain, habitat, living, micro-habitat, minibeasts, non-living, pollution

Scientific enquiry skills

This unit helps students to develop and practise the following scientific enquiry skills.

Scientific enquiry skill	Page
Ask questions	52, 55, 59
Use equipment	44, 49, 50, 52, 58, 61
Observe	45, 47, 49, 50, 51, 52, 54, 59, 60
Measure	52, 55, 59, 60
Compare	50, 51, 52, 54, 56
Notice patterns	48, 52, 53, 56, 59, 60
Record	44, 48, 51, 55, 56, 57, 59, 60
Carry out tests	48, 52, 55, 57, 59
Group/classify	47, 50, 51, 54, 56, 60
Use secondary sources	55, 58, 61
Communicate findings	46, 57, 58, 59, 60

Ways to help

- Read out all of the keys words and ask students to say which ones they have heard of before.
- Collect photographs of different habitats to act as examples.
- Download examples of food chains that contain pictures of living things.
- Take students outside to explore some local habitats.
- Set up some micro-habitats with students – such as bug hotels.
- Display pictures of habitats that have been damaged, to stimulate discussion.
- Obtain and display information about local conservation groups and their work.

Helping with activities

The following guidance gives you advice on how to help students with each activity.

What can living things do?
Create some space in the room so that students have room to act out the life processes.

Grouping
Pre-plan your route around the school so students can observe many living, non-living and once-living things.

Small creature investigation
Point out that the small animals show some variation in their responses and that is why scientists will repeat investigations and work out averages.

Odd one out
Allow students access to books or the internet to research their favourite wild animal as a stretch zone activity.

Plant and animal groups
Ask students to suggest some differences between plants and animals, and make a class list before they start their survey.

Different environments
Stress that plants can be found in the sea as well as on land, and give the examples of sea grass or seaweed.

Which habitats do minibeasts prefer?
If students are collecting minibeasts, insist they use a plastic spoon and wash their hands immediately afterwards.

Different habitats
Explain that students should annotate the picture with arrows and labels. Discuss one example first.

How do animals adapt to their habitats?
Encourage students to compare the length of the animals' legs and necks. How is each animal adapted to its habitat?

Some animal adaptations
Remind students not to touch any minibeast and to make sure they do not damage any habitats. They should carefully return any minibeast to its habitat.

Making food chains

Remind students that all food chains start with a plant (producer).

Humans in food chains
Remind students that if a human only eats plants they are herbivores or vegetarians. Carnivores will eat meat – which includes fish and seafood.

Natural and human damage
Explain that once students have decided whether an example of damage is the result of a natural or human cause, then they link that to the correct heading.

Investigating deforestation
Point out that setting up the sand tray is much easier if the sand is damp rather than dry.

Litter survey
Ask students to compare their litter survey results and produce a class table. They can then use this to produce bar charts.

Pollution spoils our environment
Provide large sheets of poster paper and plan an area where posters can be displayed. They could form an exhibition that others could be invited to see.

4 Uses of Materials

What students will learn

This unit helps students to understand more about materials and their properties. They will study how materials are changed, including by heating and cooling. Students will:

- find out about the different properties of materials
- explore why different materials are used for different purposes
- discover how the shapes of some materials can be changed by squashing, bending, twisting and/or stretching
- explore and describe the way some everyday materials change when they are heated or cooled
- find out that some materials can dissolve in water
- understand that some materials occur naturally and others are human-made
- sort materials into groups based on their properties.

Key words

absorbent, hard, human-made, material, natural, properties, soft, waterproof

Scientific enquiry skills

This unit helps students to develop and practise the following scientific enquiry skills.

Scientific enquiry skill	Page
Ask questions	65, 68, 69, 70, 71, 78, 82, 83, 85
Use equipment	68, 70, 71, 72, 78, 79, 82, 84
Observe	64, 67, 68, 70, 71, 76, 77, 78, 79, 80, 81, 82, 83, 84, 86
Measure	68, 70, 71, 72, 77, 79, 84, 85
Compare	64, 68, 70, 73, 76, 77, 78, 79, 83
Notice patterns	66, 68, 70, 71, 72, 73, 75, 77, 78, 80, 84
Record	66, 67, 68, 70, 72, 74, 75, 77, 78, 79, 81, 82, 84, 85, 87
Carry out tests	67, 68, 70, 71, 72, 76, 77, 78, 79, 80, 81, 82, 83, 85
Group/classify	66, 67, 69, 70, 73, 74, 75, 86, 87
Use secondary sources	67, 75
Communicate findings	64, 69, 70, 71, 72, 75, 77, 78, 80, 81, 83, 84

Ways to help

- Display the key words and ask students to read them out.
- Display a range of different materials in the room.
- Identify places to take students around school to see different materials being used.
- Ask students questions about how they have changed the shapes of objects.
- Encourage students to feel a range of different materials.
- Create a feely box so students can touch objects without seeing them.
- Encourage students to link the properties of a material with what it is used for.
- Play games by asking for unsuitable materials for certain jobs; e.g. paper hammers.

Helping with activities

The following guidance gives you advice on how to help students with each activity.

Using properties
Lay out various objects that match the properties (soft, hard, shiny and see-through) so students have a good choice to select from.