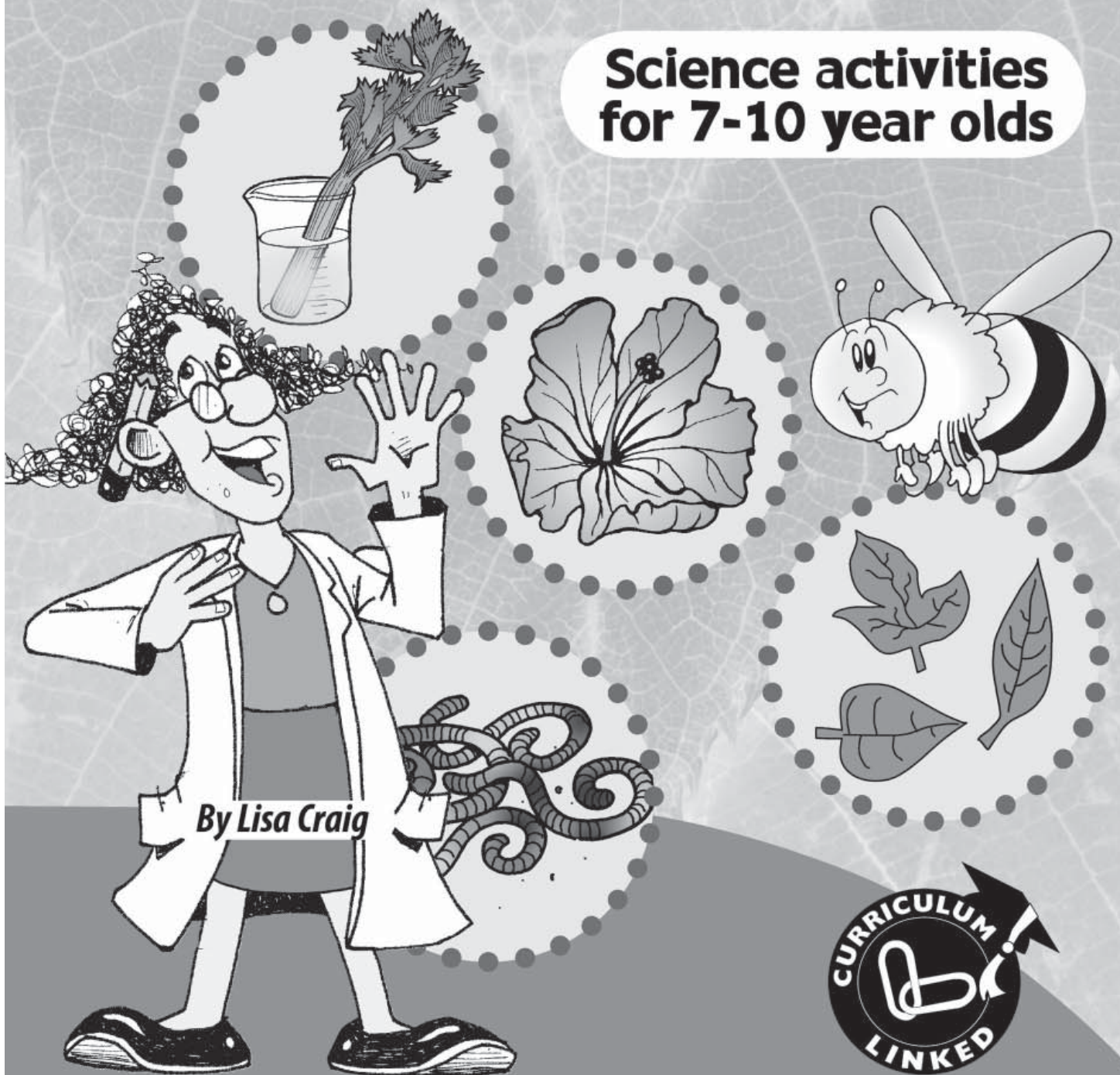


Science in the Garden

Science activities
for 7-10 year olds



By Lisa Craig



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Teachers' Notes

Science in the Garden is the first of two books which are designed to encourage primary children to engage with the living laboratory that they will find on their classroom doorstep. The garden theme should appeal to children and teachers alike as it is accessible and encourages close encounters with fuzzy critters, flowering plants, seeds, trees and leaves. Nearly all of the activities in this book are practical and this should motivate children to learn, remember and have fun while 'doing'. The resources needed for the practical activities are easy to assemble and the tasks are simple to set up and can be simplified or made more difficult for students of different age groups and abilities. All of the activities are curriculum linked and are created to develop scientific thinking, skills and processes.

The garden theme is used to explore:

- *the anatomy of plants, insects and animals*
- *the classification of living things*
- *the garden as an ecological system*
- *plant, insect and animal adaptations*
- *garden biodiversity*
- *the conservation of natural resources*
- *health, nutrition and safety*
- *fieldwork studies.*

A set of teaching notes accompanies each activity sheet. The teaching notes include an overview of the concepts covered in each lesson, detailed step-by-step instructions, suggestions for extension activities and recommended web site resources. Particular effort has been made to develop scientific literacy through a variety of text types and specific skills, for example: drawing and labelling diagrams, note-making, using graphic organisers, writing reports and framing enquiry questions. Wherever appropriate, links to other content areas of the curriculum have been incorporated. Answers can be found at the back of the book.



Teachers' Notes

A Pobblebonk's Breakfast

Concepts and Objectives:

- Talking about a frog's diet.
- Identifying the characteristics of a frog that help it to eat.
- Recognising that a frog lives where it can find food.
- Understanding that there are different types (species) of frogs and that the pobblebonk is one type.
- Recognising that the pobblebonk frog gets its name from the sound that it makes.



Teaching Ideas

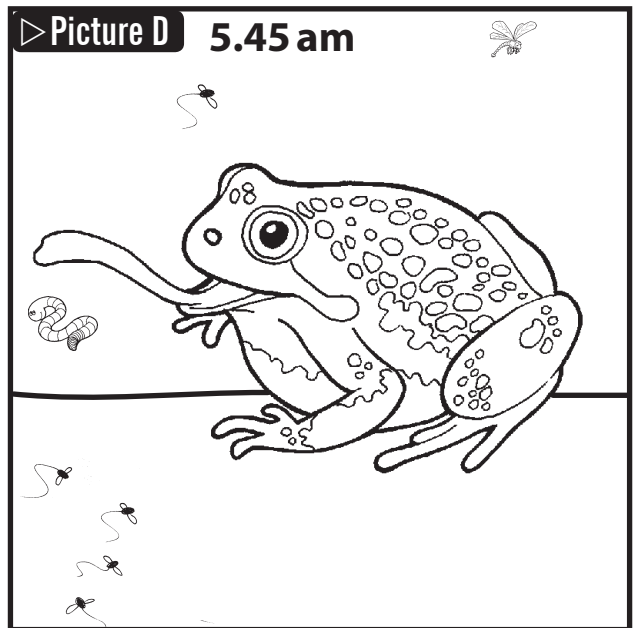
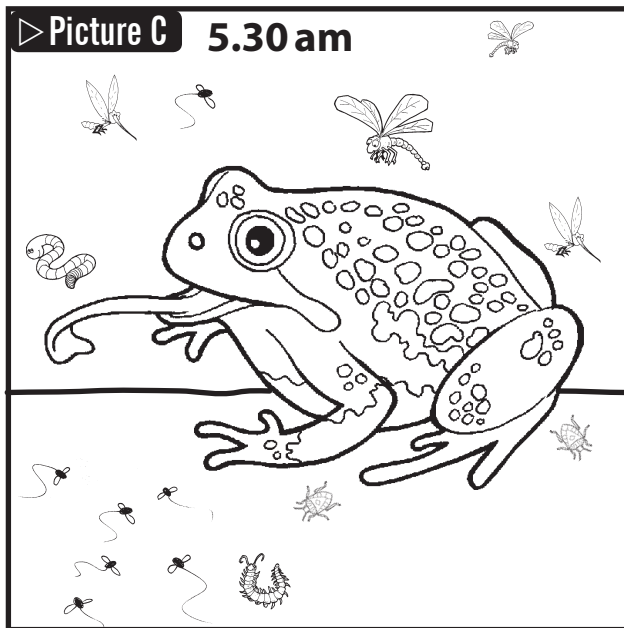
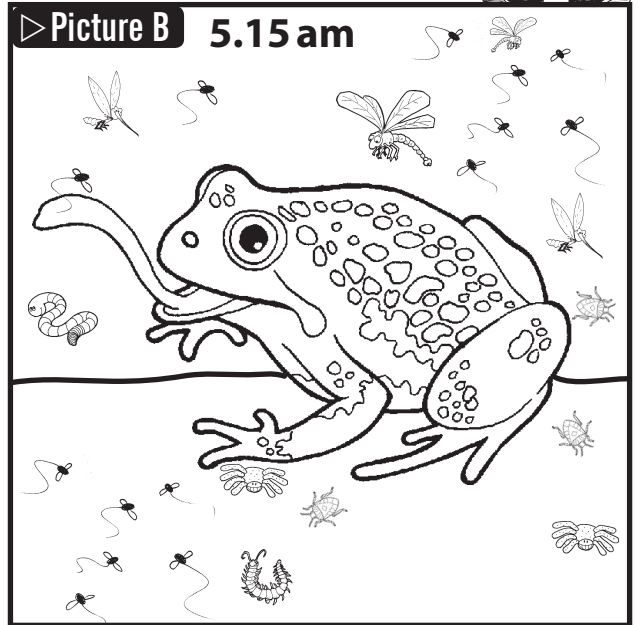
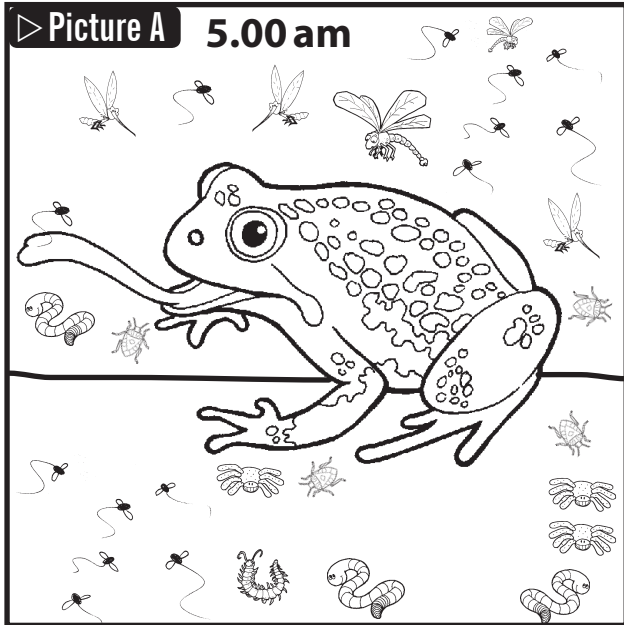
1. Hand out the activity sheet. Ask students to look at Picture A. Tell them that it is breakfast time (5.00 a.m.) and the frog is hungry. Ask the children to identify what a frog normally eats by looking at the pictures. You could write the names of the animals on the board and they could label each picture by copying the words.
2. Ask the children to look at Pictures B, C and D and identify what the frog has eaten in each picture.
3. Ask the children how a frog catches and eats its food (long, sticky tongue).
4. Discuss where a frog needs to 'hang out' to catch and eat its breakfast. Ask the children to draw and colour some backgrounds for each frog to show where a frog lives.
5. Tell the children that the frog is a pobblebonk frog and this is a well-known type of frog. Discuss the fact that there are different types of frogs. You may like to list some on the board for them to copy.
6. Tell them that the pobblebonk frog gets its name from the sound that it makes which sounds like 'plonk and blonk'.

Find out more websites:

- ▶ <http://frogs.org.au/>
- ▶ www.frogsaustralia.net.au/

Activity

A Pobblebonk's Breakfast



- What has the frog eaten by 5.15? _____
- What has the frog eaten by 5.30? _____
- What has the frog eaten by 5.45? _____
- How does a frog catch and eat its breakfast? _____



Teachers' Notes

A Diving Beetle

Concepts and Objectives:

- Drawing a scientific sketch of a diving beetle using symmetry and labelling and colouring it accurately.
- Recognising that the drawing represents one type of beetle (the diving beetle or cybister tripunctatus) and understanding that animals often have scientific names.
- Talking about a diving beetle's features and how these features help it to adapt to its pond habitat.



Materials:

- Pencil and ruler.

Teaching Ideas:

1. Distribute the beetle activity sheet. Tell the class that they are going to complete a scientific sketch of a beetle. Draw the group's attention to the symmetry of the illustration and the need to include the same details on both sides. Using a pencil, children can complete their sketches of the beetle.
2. Ask the children to label their sketches using the words from the box. Model for the class how a scientific sketch is labelled with straight lines almost touching the features. Labels are not written on the sketch, but to the side. Circulate as the children label their sketches helping them space their labels of the beetle's body parts.
3. Tell the children that there are many different types of beetles and this one is the diving beetle. Give them the beetle's scientific name (cybister tripunctatus) and get them to copy it onto the sheet.
4. Tell them that a diving beetle can often be found in a garden pond and that it's good to find a diving beetle in a pond because this is a bioindicator that the body of water is healthy. They may want to draw the diving beetle in its natural habitat on the back of the sheet or mark this on the sheet.
5. Discuss how the beetle's features allow it to live in its habitat, i.e. it can stay under water for long periods because like a scuba-diver, it takes its own air supply with it by trapping air bubbles under its wings before it dives. It does this by floating on its back with its abdomen facing upwards.
6. Ask the group what other interesting features (adaptations) the beetle has to help it survive in its aquatic home. Note its round, smooth body and the hairs on its back legs. Also mention how its body shape helps it to be a voracious hunter in the water.

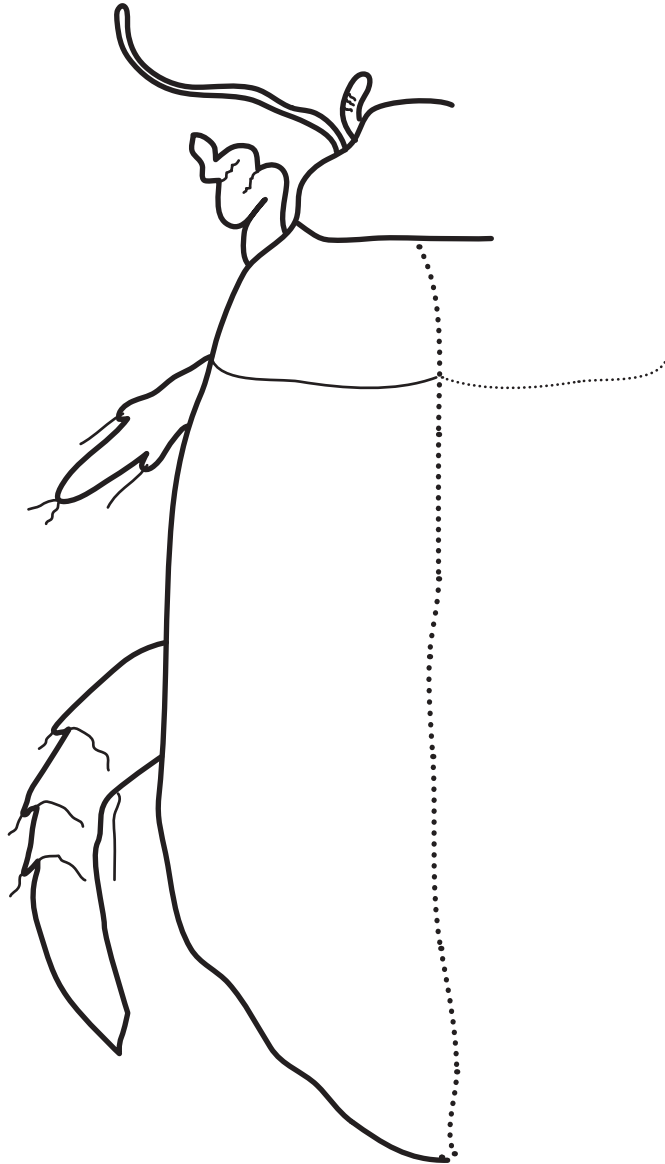
Find out more websites:

- ▶ <http://australianmuseum.net.au/Beetles-order-Coleoptera>
- ▶ <http://www.teachers.ash.org.au/jmresources/minibeasts/minibeasts.htm>

▶ Activity

A Diving Beetle

- Finish drawing the diving beetle with a pencil.



Where could I find a diving beetle?



- Label the parts of the beetle with words from the box.

head abdomen thorax antennae mouthparts

- Write out the diving beetle's scientific name.



Teachers' Notes

Parts of a Plant

Concepts and Objectives:

- Labelling plant parts.

Materials:

- Potted plant.

Teaching Ideas:

1. If possible, bring a potted dandelion to class, but any other potted plant will do. Ask the children if they can name any of the parts of the plant. Use the potted plant to connect the names with the plant's structure. Ask the children to label the parts of the plant (roots, leaves, stem, flowers, seeds).
2. Ask the children to highlight the following:
 - The popular name: *dandelion* and the scientific name: *taraxicum officinalis*.
 - The 'mini-beasts' working underground.
3. The class might like to know that the humble dandelion is actually a herb and all parts of the plant can be used for medicinal purposes, such as a tonic to boost the immune system and a salve to ease sunburn. The young leaves of the plant can also be eaten in salads. All in all, it is an extraordinary little plant.
4. Tell them that in different countries the beliefs about the plant change. Some cultures believe that if you blow all the fluffy seeds off the dandelion with one big breath, you will find your true love and that the dandelion seeds will carry your thoughts to a loved one. Another belief is that when you blow on a dandelion's seeds, the number of seeds that don't blow away represent the hour of the day. The Portuguese believe that blowing on a dandelion's seeds is an indicator of how bald your father is going to be!

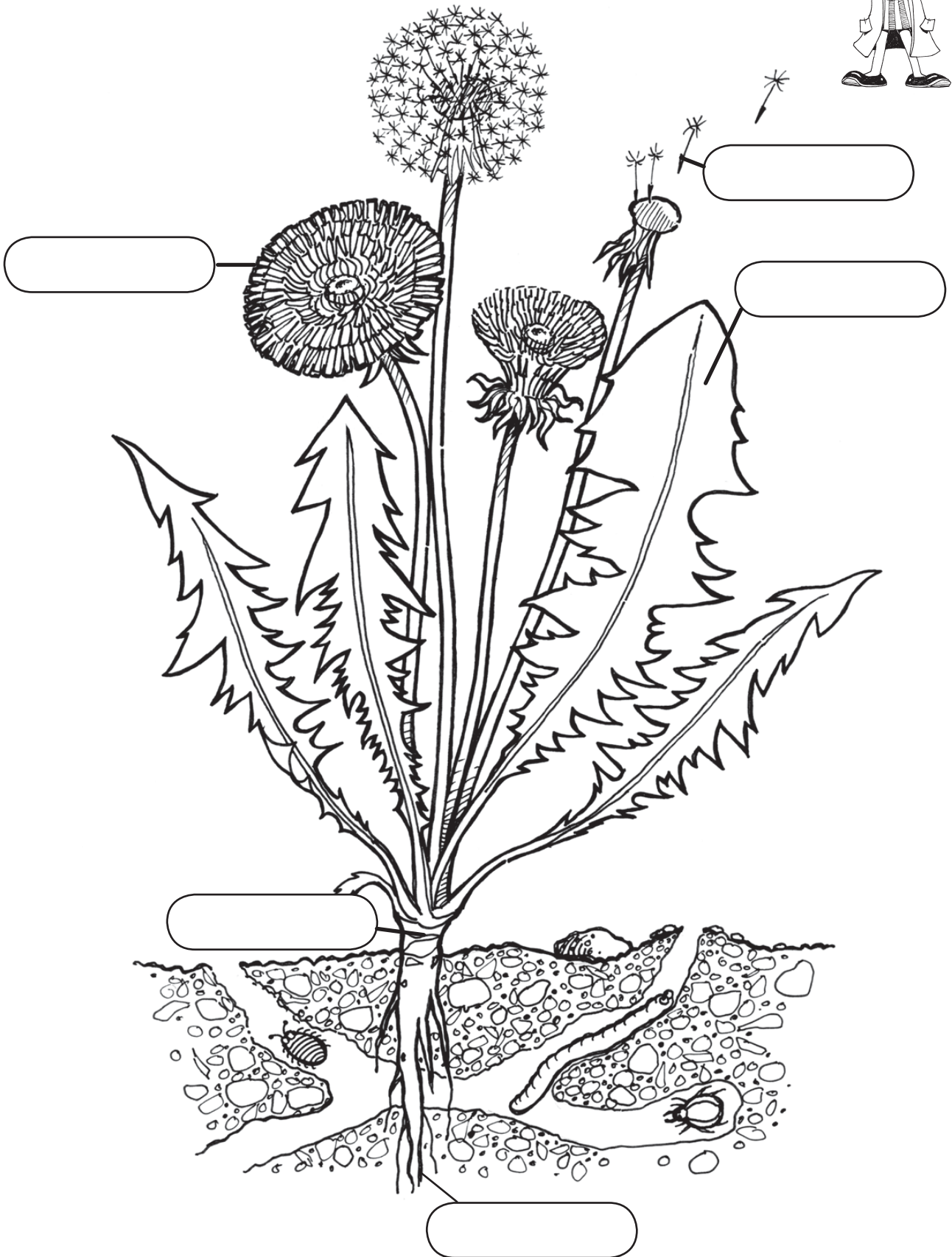


▶ Activity

Parts of a Plant

■ Label the *dandelion (taraxicum officinalis)*.

What is a *taraxicum officinalis*?





Teachers' Notes

Parts of a Tree

Concepts and Objectives:

- Connecting parts of a tree with their functions.
- Describing the life cycle of a tree.
- Interpreting a diagram.
- Labelling parts of a tree.



Teaching Ideas:

1. Hand out the activity sheet and ask the children if they can identify the parts of the tree: roots, trunk, bark, branches, leaves, buds, flowers and fruit. Ask them to label the diagram using the words from the text box. Revise the function of the roots (absorb water and nutrients from the soil), tree trunk (gives support and transports water and sap), bark (protects tree - like skin) and leaves (absorb light, produce sugar sap, absorb CO² and release O² and water vapour) in the life processes of trees. Children could copy these functions onto their activity sheets.
2. Draw the children's focus to the tree diagram. What does the diagram show us about the changes a tree goes through in a year? This apple tree is deciduous, whereas most Australian trees are evergreen. Ask the class to explain the cycle of life for a tree using the diagram and by adding to it: seed germinates; tree grows; tree flowers; tree produces fruit; tree releases seeds and after a hopefully long life, tree dies. They could show this life cycle on their own drawing of a tree.
3. If the weather permits, take a quick stroll outside with the class to look at trees in the school grounds. Quiz them on the parts of the trees using the terminology introduced in STEP 1. When the children have returned to the classroom, ask them to draw their own tree and label the parts.

Find out more websites:

- ▶ www.realtrees4kids.org/
- ▶ www.treesforlife.org.au

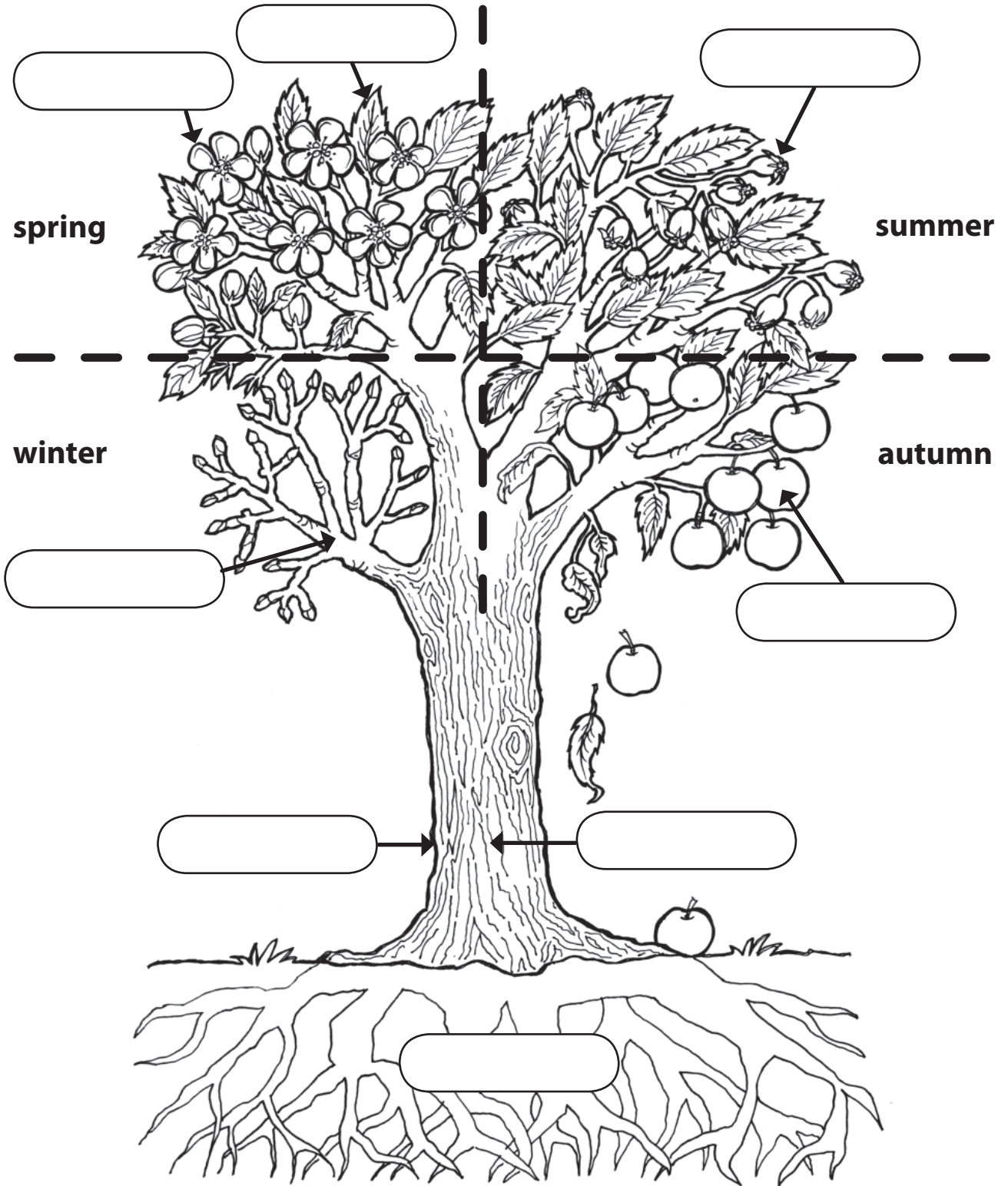
▶ Activity

Parts of a Tree

What are the different parts of a tree?



■ Label the parts of a tree with the words from the text box.



- trunk
- branches
- roots
- bark
- flowers
- fruit
- leaves
- buds