

# HOW DOES YOUR GARDEN GROW?



## LESSON 3: WHAT WOULD HAPPEN IF A PLANT LOST ITS LEAVES?

### Key vocabulary:

investigation, question, fair test, change, measure, leaf/leaves, features, function, leaflet, stalk, veins, surface, edge, lobes, tip, food

### Resources:

KWL grid from lesson 1, plants, e.g. busy lizzie, geranium or primula (two plants for Challenge 1; three plants for Challenge 2 and four for Challenge 3)

### LESSON SUMMARY:

In this lesson children will set up a fair test investigation to find out the effect of removing the leaves from a plant. They will make observations over the next few weeks and summarise their findings in lesson 11. By the end of these lessons children will know about the importance of leaves for plant growth. In the ongoing Our Changing World module children learn about plants that lose their leaves naturally as part of their seasonal growth cycle.

### National curriculum links:

Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers

### Working scientifically links:

Setting up simple practical enquiries, comparative and fair tests (lesson 3); gathering, recording, classifying and presenting data in a variety of ways to help in answering questions (by end of lesson 11)

### Learning intention:

To plan and set up a fair test investigation to find out the effect of removing the leaves from a growing plant

### Success criteria:

- I can help to plan an investigation to answer the question: What happens if a plant loses its leaves?
- I can decide what to observe or measure to collect my results.
- I can recognise when a test is fair.

### Scientific enquiry type:

Carrying out comparative and fair tests

**Health and safety:** Teach children to avoid touching their eyes whilst handling plants. Always wash hands after handling plants, seeds or soil. Warn children about attractive-looking fruits and seeds, especially those that look like edible ones that might be poisonous.

### EXPLORE:

Show the children the KWL grid (Lesson 1, Resource sheet 2) including the information and questions about leaves from the last lesson.

Ask: *What features do leaves have? What do leaves do?*

Show children the plants that will be used for the investigation. Ensure that children know that these plants are growing and that there are at least two of each type of plant.

Ask: *What do you think would happen to a plant if it lost all of its leaves? What if it lost some of its leaves?*

Capture children's ideas on the whiteboard.

Ask: *How could we find out?*

### ENQUIRE:

Tell the children that in their groups they will be carrying out a challenge to plan a fair test to answer the question: What happens to a plant if it loses its leaves? The challenges are differentiated by complexity and the number of variables to manage and record.

Tell them that every group will use the fair test interactive planning tool to turn their ideas into an investigation plan. Show them all how to do this by creating an example plan by selecting responses to the following questions:

1. *What will you change about the plants?* It is important that they recognise that it must be the number of leaves.

2. *What changes do you think might happen to the plant that you could observe or measure?*  
Using children's ideas from the Explore discussion, identify and note some possible measurements or observations that could be made, such as the appearance of the plant (colour, wilting), whether the plant grows taller, whether it grows new leaves. If the plants are in flower then children can also make observations of what happens to the flowers.
3. *How often will you make your observation or measurement?* Every other day or twice a week should be sufficient – it may depend on the type of plant.
4. *What will you do with your plants during the investigation to make sure that it is a fair test? What else will the plants need to keep them alive? What would happen if you didn't water them? (They would all die whether they had leaves or not.) Would it be fair if we put the plant with no leaves on the windowsill and the plant with all its leaves in the cupboard?*

**Challenge 1** Children investigate how removing all the leaves affects plant growth.

Children investigate the question: How does removing all the leaves affect how a plant grows? The investigation will compare plants with all their leaves and with no leaves. Provide each group with two similar-sized plants of the same type and an investigation diary Resource sheet 1. Support the children with identifying and recording what they will change, measure and keep the same. Children record their results using photographs or drawings with simple descriptions or labels, e.g., wilted, flowers dead, growing taller.

Ask: *What are you changing? Would it be fair if ...?*

**Challenge 2** Children investigate how removing some leaves affects plant growth.

Children investigate the question: How does removing some of the leaves affect how a plant grows? The investigation will compare plants with all their leaves, plants with some leaves and plants with no leaves. Provide each group with three similar-sized plants of the same type and an investigation diary Resource sheet 2. Children will record their results using photographs and drawings with more detailed observations and some quantitative data, e.g., the number of new leaves that have grown.

Ask: *What are you changing? What are you observing? What are you keeping the same?*

**Challenge 3** Children investigate how removing different amounts of leaves affects plant growth.

Children investigate the question: How does removing different amounts of leaves affect how a plant grows? This investigation will compare plants with all their leaves, some leaves removed, most leaves removed and all leaves removed. Provide each group with four similar-sized plants of the same type and an investigation diary (Resource sheet 3). Children will record their results using photographs and drawings with descriptions and quantitative data, e.g., height, number of new leaves.

Ask: *What are you changing and measuring? How will you make your investigation fair?*

Ensure all children complete the front page of their investigation diary and record their initial observations/measurements of the plants.

### REFLECT AND REVIEW:

Ask a child from each group to share their work.

Ask: *What do you think will happen to your plants? Why? Who is going to water your plants and when? What observations or measurements are you going to make? When will you do this?*

Ask the other children whether they think the test is fair.

### EVIDENCE OF LEARNING:

Listen to the children as they are planning their tests and look at the planning in their diaries.

Did they make suggestions to help to plan the investigation – what we could do, what we could observe/measure, and so on? Can they state what they are changing and measuring? Can they recognise an unfair test? Can they state what they are keeping the same to make the test fair?

Observe and listen to the children during the Reflect and review discussion.

Can children say what they think will happen to a plant if all/some of the leaves are removed? Can they give a reason why they think this?