

HOW DOES YOUR GARDEN GROW?



LESSON 2: WHAT DO WE KNOW ABOUT LEAVES?

Key vocabulary:

leaf/leaves, features, function, leaflet, stalk, veins, surface, edge, lobes, tip, food, serrations

Resources:

Mini-whiteboards, pens, flip chart or large whiteboard, sets of leaves (different sizes, colours, textures and shapes with 10–12 per set), a class set of one type of leaf, such as oak, sycamore, beech or birch, magnifying glasses (one per child), digital camera(s), the KWL grid from lesson 1

Key information:

It is necessary at this stage for children to recognise that there are many shades of green, but that not all leaves are green, a common misconception for some. They should notice that the upper surface is often a darker green than the lower surface, the reasons for which will be considered later in the lesson. You should also tell them that for plants to grow, they need to use sunlight to make their own food. This happens in the leaves and the green pigment is needed for this. Photosynthesis is a very abstract idea which will need to be revisited regularly. At this stage, however, children do not need to know the term nor understand how it happens.

LESSON SUMMARY:

In this lesson children will make close observations of a variety of leaves, using manual and digital magnifiers. By the end of this lesson children will be able to describe the different features of leaves and know that the leaf is where the plant makes its food.

National curriculum links:

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

Learning intention:

To make detailed observations of the similarities and differences in a variety of leaves, and relate these to the function of leaves

Scientific enquiry type:

Grouping and classifying

Working scientifically links:

Identifying differences, similarities or changes related to simple scientific ideas and processes

Success criteria:

- I can make observations about leaves.
- I can describe similarities and differences in leaves.
- I can describe the function of a leaf.

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:

Give each child a mini-whiteboard. Distribute the class set of leaves (one each or one between two if they are large leaves) and the magnifying glasses. If possible display the leaf using a digital presenter. Ask children to make a list on their whiteboards of all the things they notice about the leaf including colour, shape, texture, size and smell.

Ask children to work in pairs to write a definition of a leaf on their mini-whiteboards, and then share this with another pair. Collect common words and ideas on a flip chart or large whiteboard.

Show slide 1 of Slideshow 1, which shows images of six very different leaves. Confirm that they are all leaves.

Ask: *What do you notice? Do you want to change your definition? Why?*

ENQUIRE:

Organise children into groups and tell them that their challenge is to make close observations of some more leaves, and to notice how they are the same and how they are different. The challenges are differentiated by the level of observation and knowledge required, with Challenge 2 requiring a broader vocabulary than Challenge 1. Challenge 3 requires children to identify features common to all leaves and to begin to relate these to function. The challenges are presented on Exploring Leaves Slideshow 2 to be displayed on the board, or printed out and placed in the centre of the table.

Provide each group with a set of leaves and magnifying glasses. Children doing Challenge 1 will need two identical sets of leaves. The real leaves can be supplemented with pictures but first-hand experience is essential.

Challenge 1 Children compare and identify leaves.

Children use observations to compare and identify leaves. Ensure children look at each of the leaves very carefully.

Ask: *What colour is it? What shape is it? How does it feel? What else do you notice about it?*

Ask one child to pick a leaf and describe it to the others in the group without showing it to them.

Ask: *Can you work out which leaf is being described?*

Challenge 2 Children sort and classify leaves.

Children sort the leaves according to their different features. Children make close observations of the leaves, identifying the key features. Ask them to choose one feature, such as colour, serrations, texture, whether there are lobes or leaflets, and sort the leaves into groups using these criteria.

Ask: *What criteria have you chosen? Which group does this leaf go into? Why?*

Tell children to label the groups, such as rough, smooth, and record their sorting using a camera. Then sort again according to different criteria, and record. They can compare their photographs later to see how the sets were different for the different criteria.

Challenge 3 Children observe features of leaves.

Children find out which features all leaves have and think about why. Tell children to make close observations of the leaves, identifying the key features. Ask them to make a list of features which all the leaves have and a list of features which only some leaves have.

Ask: *Why do you think all leaves have this feature? What do you think it is for? Do you think there are any plants whose leaves do not have one of the features that all the leaves you have observed have?*

REFLECT AND REVIEW:

Talk about the different features of leaves that the children have noticed. Remind the children that the leaf's function is to make food for the plants using sunlight.

Ask: *How do the features of the leaves that you have observed (flat, thin, large surface area, leaf stem, veins) help them to do their job? What helps the leaf to stay spread out? Why do you think many leaves are darker on top?*

Ask the children, in pairs, to think of a statement about leaves for the What we have learned section of the KWL display (Lesson 1, Resource sheet 2). Agree a class statement and add it to the display. Move any questions which have now been answered from the What we want to know section.

EVIDENCE OF LEARNING:

While the children are working, consider the following. Are children using the magnifying glass correctly? Can they describe what they are observing? Do they recognise similarities and differences? Are they choosing suitable criteria and using them to sort the leaves?

Look at their What we have learned statements.

Do they know the features of a leaf? Can they state that leaves make food for the plant? Can they relate some features of a leaf to their function in making food?

Key information:

The veins on the leaf help it to stay spread out as well as transporting water and other substances. The darker upper sides of leaves contain more green pigment as they face the sun.