

HOW DOES YOUR GARDEN GROW?



LESSON 6: WHY DO PLANTS NEED STEMS?

Key vocabulary:

root, stem, trunk, leaf, predict/prediction, water, nutrients, explanation

Resources:

Celery, carnations and challenge diagrams from lesson 5, magnifiers, sharp knife (teacher use only), large paper, pens, pencils, scissors, glue, camera, KWL grid from previous lessons; access to computers would be helpful

LESSON SUMMARY:

In this lesson children will use the results of the observation-over-time investigation that they set up in Lesson 5 and information from a video to produce information texts to explain the function of stems. By the end of the lesson they will know that the stem transports water from the roots to the leaves and flowers and holds the leaves and flowers up to the sun and air.

National curriculum links:

Investigate the way in which water is transported within plants

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

Learning intention:

To present information about the functions of the stem

Working scientifically links:

Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

Success criteria:

- I can describe the results of my investigations.
- I can explain what these show about the way in which water is transported in plants.
- I can present my findings, from secondary sources and investigations, about how water is transported in plants.

Scientific enquiry type:

Observing over time and using secondary sources of information

EXPLORE:

Remind children about the statement they are investigating: Water goes up the left of the stem to the left-hand side of the plant, and the right of the stem to the right-hand side of the plant. Ask them to look closely at their celery and carnations.

Ask: *What has happened? Was your prediction correct?*

When children have observed the whole carnation and celery, cut slices of the celery above and below the split so that they can see where the different colours are. Ask children to compare what they can see with the diagrams they made in lesson 5.

Ask: *What is the same? What is different?* The carnations and celery could be photographed to become part of the presentation of findings. Show carnations from children in challenge groups 1 and 2 to the children who completed challenge 3.

Share the additional statement for challenge group 3: The leaves help plants to take up water. Discuss the findings from this group about how quickly the water was taken up. Observe that the coloured water has been drawn into the leaves.

ENQUIRE:

Show the animation *What does a stem do?* (Animation 1) which explains the different functions of a stem, to transport water from the roots to the leaves and flowers and to hold them up to the air and sun.

Ask: *How does the animation help to explain what you have observed in the carnations and celery about the way water is transported in plants? How does it help to explain the observations of celery with and without leaves? What else does the stem do?*

Tell the children that their challenge is to present their findings about plants, their stems and water transport. The challenges are differentiated by the method of presentation. For all challenges there should be an emphasis on children demonstrating how they have learned about stems as well as what they have learned.

Ask: *How do you know this? What did you do to find this out? What do your findings show?*
Allow children to choose which challenge to complete, then group them (mixed ability).

Show the challenge slide (Slideshow 1). Discuss the different ways the information could be presented.

Challenge 1 Children produce a page about plant stems for a children's website.

Children work in pairs, ideally using a computer, to produce a page about plant stems for a children's website about plants. The page must include:

- labelled photographs
- descriptions of the functions of the stem
- a summary of what the children found out about stems from their investigations.

Challenge 2 Children produce a poster titled 'Why plants need stems'.

Children produce a large information poster for children their age, entitled 'Why plants need stems'. It must include:

- labelled drawings or photographs and diagrams
- annotations describing the functions of the stem
- a summary of what they found out about stems from the investigations.

The children work in groups of two to four.

Challenge 3 Children prepare a short presentation.

Children prepare a short presentation suitable for an assembly or for showing to another class describing the functions of the stem.

The presentation can use PowerPoint slides but must also include:

- demonstrations of the results of their investigations
- oral explanations of what they learned about the functions of stems from their investigations
- use of drama or props to show the functions of the stem.

These children will work in groups of three to five.

REFLECT AND REVIEW:

Children carrying out Challenge 3 make their presentations to the rest of the class. These could be videoed. Ask children to identify strengths (or 'stars') and an improvement point (or a 'wish'). Tell children that the posters and web pages will be displayed for the rest of the class to look at. Identify a time, when all the class have had chance to look at them, when peer feedback on these can be discussed.

Agree a class statement about stems for the What we have learned section of the KWL display. Move any questions that have now been answered.

EVIDENCE OF LEARNING:

Review children's website pages, posters or presentations.

Can the children describe their observations? Have they related their observations to their predictions? Can they state what their observations show about the way in which water is transported and about the involvement of the leaves in this process? Do the different presentations of the investigations include the information that the stem holds the leaves up in the air and it moves water from the roots to the leaves?