



Stage 2: Plant Reproduction

Learning objective:

- To understand how flowering plants reproduce

Stage Overview:

In this stage, the children revise their Year 3 Science learning with an active Vertical Relay starter (concept from Talk-less teaching by Isabella Wallace and Leah Kirkman) and build on this to understand the processes involved in sexual reproduction in plants. After dissecting flowers and closely examining their key parts, the children are asked to write a description of the processes of pollination and fertilisation before narrating and producing a slow-motion animation to demonstrate the process.

Materials needed:

- Unlabelled flower diagrams to annotate in vertical relay x12
- 1 flower for each pair (lilies and alstroemerias work well)
- Magnifiers
- Large strips of paper
- Plasticine
- Stop-motion animation app

Presentation notes:

<p>Slide 3: Vertical Relay starter</p>	<ul style="list-style-type: none"> - Display several copies of the unlabelled flower diagrams around the classroom (one for each group). - Divide the children into mixed ability groups of no more than 6 children. - Ask then children to stand in a line in front of their group's diagram. - Explain that when you say go, they will be challenged to label the diagrams with any information they can remember from their Year 3 plant learning as quickly as they can. - Each child is allowed to add one piece of information before passing the pen to the next child (like a relay baton) and then moving to the back of the line. - Explain that this is a race and they are competing with the other teams to be the first the label the whole diagram correctly with as much information as possible.
<p>Slide 4: Parts of the flower</p>	<ul style="list-style-type: none"> - Explain that flowers that have both male and female parts are known as 'perfect flowers'. - Display the labelled flower diagram and talk through the names of the male and female parts of the flower and their functions.

Slide 5: The stamen	<ul style="list-style-type: none"> - The male part of the flower, the stamen, consists of an anther held up on a filament. Pollen grains are produced by the stamens.
Slide 6: The carpel	<ul style="list-style-type: none"> - The carpel is the female part of the flower. It consists of the stigma, the style and the ovary which produces the ovules.
Slide 7: Reproduction in plants	<ul style="list-style-type: none"> - Two processes need to take place in the flower for seeds to be made: pollination and fertilisation.
Slide 8-9: Pollination	<ul style="list-style-type: none"> - Pollination takes place when the pollen from the male part of one flower (the stamen) travels to the female part of the same or another flower (the carpel). This can happen when pollinators, such as insects or birds, brush against the stamen of the first flower when they are drinking its nectar. Grains of pollen brush off the top of the stamen (the anther) and onto the pollinator. - Then, when the pollinator travels to a different flower, the grains of pollen from the first plant fall off them and stick to the sticky top of second flower's carpel (the stigma).
Slide 10: Fertilisation	<ul style="list-style-type: none"> - Once the pollen grain has stuck to the stigma of the second flower, a pollen tube grows through the style of the carpel until it reaches the ovary which contains ovules. Fertilisation takes place when the pollen grain joins together with an ovule in the ovary. - The fertilised ovule will then become a seed.
Slide 11: Practical exploration	<p>Activity 1: Give mixed-ability pairs a flower to examine and dissect. Model identifying the male and female parts and use questioning to reinforce the purpose of each part.</p> <ul style="list-style-type: none"> - Ask each pair to carefully dissect their flower and examine each part using a magnifier. - Children could then arrange each dissected part of their flower separately on large strips of paper or in their books and label them. - Encourage pairs to discuss the parts they are labelling and how they are involved in pollination and fertilisation while they are working. - When all parts are labelled, you may wish to display the children's posters on the working wall.
Slide 12: Application of learning	<p>Activity 2: Ask the children to use their learning from the lesson to write an explanation of the processes of pollination and fertilisation in plants in their own words using numbered steps.</p> <ul style="list-style-type: none"> - At each stage, children could draw a detailed, labelled diagram of the parts of the flower being described. <p>Activity 3: In groups, ask children to apply today's learning to produce a stop-motion animation with plasticine to describe flower pollination and fertilisation and narrate it using their written outcome from Task 1 as a script.</p> <ul style="list-style-type: none"> - Allow the children to share their animations with their peers and assess their spoken language skills during the presentations.

Slide 13: Vertical relay round 2

- Repeat the vertical relay activity for the starter to demonstrate the progress that has been achieved to the children. They should now be able to label all parts of the flower that are involved in reproduction easily.

Links to the National Curriculum:

Science	Living things and their habitats Notes and guidance	<ul style="list-style-type: none">- Describe the life process of reproduction in some plants and animals.- Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants
English	Spoken language	<ul style="list-style-type: none">- Speak audibly and fluently with an increasing command of Standard English- Participate in discussions, presentations, performances, role play, improvisations and debates- Gain, maintain and monitor the interest of the listener(s)