

Flower Power

Recommended Lesson Plan for Self-Guided Kit



AOs	<u>Living World</u>			<u>Integrate with:</u>	
	1.1	1.2	1.3	Mathematics	- geometry
	2.1	2.2	2.3	Drama	- communicating and interpreting
	3.1	3.2		Environmental Education	- interdependence
	4.1	4.2	4.3		- biodiversity

Site	Jan - Mar	Rock Garden, Herbaceous Borders, Roses (Lower Garden)
	Apr - Sep	Winter Garden Glasshouse, Camelias (Lower Garden)
	Oct - Nov	Rhododendron Dell & Azalea Garden (Upper Garden)
	Dec	Rock Garden, Herbaceous Borders, Roses (Lower Garden)

Preparation

- ❖ Flowers for dissection will be given to you when you collect the kit.
- ❖ 10 flags will need to be positioned in the Winter Garden for the Treasure Trail (L1-2).

Please bring

- ❖ Pencils and photocopied worksheets: Parts of a Flower; Treasure Trail (L1-2) or Patterns in Pollination (L3-4).

Activities

- 1** **Lifecycle** **5 mins**
- ❖ Ask students to construct a lifecycle using the wooden model pieces and explain that you are going to find out how flowers produce seeds.
- 2** **Flower dissection** **30 mins**
- ❖ All students need 1 flower & 1 'Parts of a Flower' sheet to each with tape to share.
* *Choose 2 students who don't mind dressing up.*
 - ❖ Dissect the flowers together, discussing the function of each part and the variety that can be seen in nature before you tape it onto the sheet.
 1. Stem - note strength of stem & water transport. Snap off stem and tape onto sheet. * *Put on skirts.*
 2. Petals - look at pattern (stripes and spots guide pollinators) and colours (NB: honeybees can't see red but can see UV). Peel off a petal and tape onto sheet. * *Put petal costume around shoulders.*
 3. Sepal - turn flower upside down and identify small petal-like structure (may be absent on some flowers). Peel off sepal and tape onto sheet. * *Fold green sepals on costume over student's face to demonstrate how sepals cover the young bud.*
 4. Anthers - look at the 'sticks' inside the flower. Ask students to imagine their finger is a bee trying to drink the nectar inside the flower. Can they see any pollen on their finger? They can visit another student's flower with their bee finger and brush the pollen onto the 'different stick'. Look closely at the anthers, to see where the pollen comes from. Pull off all anthers and tape onto sheet. * *Ask students to stick pollen balls onto costume anthers.*

5. Stigma & Ovary - identify the stigma and peel off all petals and anthers. Explain how the pollen lands on the stigma and grows through the tube to the ovary where it fertilises the seed. Snap off stigma, open ovary with fingernails and look for seeds inside, then tape both down. Name and collect all sheets and tidy up before the next stage.
6. Pollination - Ask students to name the parts of the costume, what is missing? * *Add the stigma hats.* What will happen next? * *Choose another student to demonstrate how a pollinator (butterfly puppet) picks up pollen while drinking nectar from the flower, then flies to another flower and deposits the pollen on the stigma.* Students take turns as various pollinators (bees, bats, birds etc) taking pollen from anther to stigma. When complete, reiterate how the pollen grows through the tube to the ovary (students' toes) where the seeds are made; the ovary (their feet) then swells to become the fruit. Ask the student flowers what fruit they would like to be. * *Remove costumes slowly - petals first, then stigma, then stem and the fruit fall to the ground.* Other students can be animals who come and eat the fruit and spit out the seeds to complete the cycle.

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Flowers of the Winter Garden Glasshouse 20-30 mins

Levels 1-2: Treasure Trail

- ❖ In the Winter Garden Glasshouse, you should have already set up 10 flags beside plants that match the questions.
- ❖ Students can work in groups with Treasure Trail worksheet. Emphasis should be on discussion about the plants, not on right or wrong answers.

or

Levels 3-4: Patterns in Pollination

- ❖ In the Winter Garden Glasshouse students choose 4 different flowers to sketch in detail. They will need to annotate their sketches to indicate colour of different parts and any special details they find hard to draw. Remember to label anthers and stigma.
- ❖ Students work in pairs with Patterns in Pollination worksheet. Each student will have the opportunity to draw 2 flowers and identify the pollinator that matches the 2 flowers their partner is drawing. Emphasis is on discussion of the plant's characteristics not right or wrong answers.

Follow Up

- ❖ Health
Make a plant parts salad - e.g. root (carrot), stem (celery), leaf (lettuce), flower (cauliflower), fruit (tomato), seed (nuts or sunflower seeds).
- ❖ Art / Technology
Design and draw or build flowers and pollinators that match each other.
- ❖ Environmental Education
Plant native flowering plants in the school ground that will attract native wildlife; kowhai, kakabeak, rata, harakeke (flax), kotukutuku (fuschia).

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