

3rd grade - FLOWERS: Reproductive plant parts

objective: Students will learn to identify key parts of a flower by dissecting real flowers in the garden such as petunias and nasturtiums. They will understand the roles those parts play in plant reproduction: how fertilized flowers produce seeds.

supplies: enough examples of perfect flowers (both male and female parts) such as petunias, fuchsias, nasturtiums, etc. for students to dissect alone or in pairs.

time: 45 min

5 min overview: general plant knowledge

Gauge student prior knowledge: why are plants important? What do they do for us humans? What do we call a person who studies plants? (botanist – botany is the study of plants). Hold up a plant yanked out of ground and ask about plant parts and their purpose:

roots – do what? anchor plant/absorb nutrients & water

stem – supports plant, holds it upright (stability)

leaves – photosynthesis – energy from sun

flower – makes seeds (reproduction)

what is a seed? – baby plant (embryo inside)

(Kory) 10-15 min: tour of flowers in garden

Take students on a short walk through garden and point out different kinds of flowers – prompt questions: why do they all look different? Do they all have the same parts? No – some are **simple** (just one flower) and some are **composite** (lots of mini flowers inside), some are **perfect** (have male and female parts) and some **imperfect** (only one or other sex). Let's look at examples of each!

1. **(Sandy)** Show students a **Mirabilis or 4 O'Clock flower** which is a simple flower – it makes just 1 seed! Now look at a **sunflower** and explain that each sunflower head is made up of many small flowers - a compound flower - with ray florets on the outside and disc florets in the center. Break the flower in two and let them examine the inside. Show them seeds forming. **Marigolds** are also compound flowers. See many seeds!

http://www.backyardnature.net/fl_marig.htm.

http://www.ehow.com/how_8591681_describe-parts-sunflower.html

<http://urbanext.illinois.edu/gpe/case4/c4facts1a.html>

http://www.ehow.com/facts_4798758_parts-sunflower.html

2. **(Kory)** Show students **squash or begonia** flowers – they are imperfect - Imperfect flowers have either male or female parts but not both – they must cross pollinate to make seeds! Squash plants make both kinds of flowers. If the same plant cross pollinates you get a pumpkin – but what happens when a pumpkin crosses with a **zucchini**? You get a weird zumpkin! That's how new varieties appear in nature!

<http://www.gardeningknowhow.com/edible/vegetables/squash/female-male-squash-blossoms.htm>

“Begonia plants are **monoecious**, with unisexual male and female flowers occurring separately on the same plant; the male contains numerous **stamens**, and the female has a large inferior **ovary** and two to four branched or twisted **stigmas**.”

Some fruit and nut trees are either male or female so you must plant two trees to make sure they can cross pollinate each other or you won't get any fruit! Show students the **hops** plant – this only has the female flowers – not male! So no seeds produced in this garden! <https://en.wikipedia.org/wiki/Hops>
http://fruitandnuteducation.ucdavis.edu/generaltopics/AnatomyPollination/Flower_Anatomy/

3. **(Sandy)** Show students some examples of **Perfect flowers** (like tomato or nasturtiums) which have both male and female parts in the same flower – these can self pollinate! Let's look more closely at their parts.

15-20 min: dissecting flowers

(Kory & Sandy) Draw a diagram of flower on whiteboard or sidewalk or school brick wall and while drawing ask students to label parts and talk about the purpose of those parts:

Petals – showy colorful part – attracts pollinators

Sepals – like green 'leaves' of the flower at base

Pistil (female part) includes:

Ovary – has ovules (eggs) inside that will become seeds once fertilized

Style – long tube that holds the stigma – pollen grains travel down to fertilize ovary

Stigma – sticky part at top of pistil that pollen sticks to

Stamen (male part) includes both:

Filament – skinny long thread that holds/supports the Anther

Anther – has pollen on top

(Sandy & Kory break class into 2 groups)

Students each receive a **nasturtium** flower (if enough to go around! Or they work in pairs) and told these are edible flowers. Demonstrate how to break apart and find all parts. Students dissect their nasturtiums and if they can identify all the parts they may eat what they've dissected – nasturtiums have a peppery flavor! See if students can find nasturtium seeds forming on the plants in garden. OR students each receive a **petunia** flower (not edible!) to dissect.

****Expansion****

On picnic tables, lay out various examples of different seed shapes, each seed type on a plate – These seeds were all the result of fertilized flowers! Ask students to recall their seed dispersal knowledge and ask them to guess how each seed disperses and how they know – some seeds might disperse in multiple ways!

Also lay out book or prints with pictures of old botanical drawings of cross sections of plants showing flowers and seeds. Explain to students that before there were cameras or film, scientists also had to be artists! Tell them the story of the Harvard Museum Glass flowers hand blown by the Blaschkas – a way to preserve botanical specimens the way you might see stuffed (taxidermy) animals in museums too.

Reference book: *The Plant Hunters* by Anita Silvey (at Butterfield Library!)

<http://www.amazon.com/The-Plant-Hunters-Stories-Adventures/dp/0374309086>

<http://hmn.harvard.edu/glass-flowers> AND https://en.wikipedia.org/wiki/Glass_Flowers

Composite Flowers - Sunflowers



