How do plants attract pollinators?

Learning Objectives:

- Understand how and why plants attract insects.
- Understand how different flower shapes attract different insects.

Key Topics: Science

Location: Indoors and outdoors

Equipment: Paper and pens.

Key Words: Flower, Petals, Pollen, Nectar, Pollination.

Activity 1: Flower Rewards

Flowers offer rewards to insects in exchange for them helping to fertilise their eggs and produce seeds.

What do you think this reward is? We are looking for two answers.

Pollen is produced in the flower by the anthers. Pollen is carried by insects from one flower and left on the stigma of another. Pollinating insects such as bees and hoverflies eat pollen and this helps them to produce eggs. Bees also collect pollen as food for their young (the grubs) as it is a good source of protein that helps them to grow.

Nectar is a sweet sugary liquid which is eaten by insects. It is a good energy food. Honeybees make use of nectar by turning it into honey.

Pollen and nectar are the rewards that a flower gives to pollinators.

Activity 2: Attracting the insects

Flowers need to make themselves attractive to make insects come and visit.

How do you think they do this?

In your class, discuss the things that would make you want to visit something - what would attract you? Now think about what would attract an insect to a flower.

Walk around your school grounds looking at flowers and fill in the table below.

Draw the flower	What colour(s) is it?	Does it smell?	What shape is the flower? (see the flower shape section)	Can you see any insects visiting the flower?

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Have a look at your table and discuss the results in class. Are there any flowers that have more insects visiting them than others? Are any colours or flower shapes more popular than others with the insects?

Flower Shapes

When a pollinating insect such as a bee visits a flower, they need access to it's pollen and nectar.

Flowers come in lots of different shapes. Some flowers are shaped so that lots of different types of insects can visit them but others have special shapes so that only certain types of insects can visit. Look at the examples below:

Bowl-shaped

Meadow buttercup *(Ranunculus acris)*

Bowl-shaped flowers such as buttercups have a ring of anthers in the middle with lots of pollen. They are accessible to most insects but are mainly visited by flies, honeybees and solitary bees. Watch how they will walk round in circles to collect the pollen.

Bell-shaped

Bluebell (*Hyacinthoides non-scripta)*

Bell-shaped flowers are favourite feeding places of bumblebees with long tongues. They can crawl into the long tube and use their long tongues to reach down to the nectar at the base of the flower.

The garden bumblebee (*Bombus hortorum*) has a very long tongue.

Pea-shaped

Field bean (*Vicia faba)*

These flowers have a large upper petal, two large side petals and two lower petals that are often fused together and called the keel.

When a bee enters the flower to drink the nectar, its weight pulls down the keel and the anthers and stigma touch the bee's fur. The pollen sticks to the bee which it then takes to another flower.

Daisy-shaped

Daisy *(Bellis perennis)*

Flowers in the daisy family are not what they seem. Looks closely and you will see that the centre of the flower is made up of many smaller flowers. Oxeye daisies are a favourite of bumblebees.

Some flowers such as Dahlias have flower shapes that make it very hard or impossible for bees to get to the pollen and nectar, or they provide no food for them at all.

Dahlia

Colour and pattern

Some flowers like this cornflower are brightly coloured to attract insects.

This bee orchid has a pattern that mimics a bee to encourage bees to come and visit the flower.

Smell

Plants also use smell to attract an insect to their flowers.

In class think about how flowers smell? Do they smell nice? Do you think insects would like the smell?

The Titan arum gives off a smell of rotting meat which attracts flies to visit the flower.

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