

***Inspired by Insects* Science Club – Teacher's Notes**

Session 1 – What is an Insect?

Session Outcomes

Children will:



reflect on their understanding of and experience of insects



understand that not all invertebrates are insects



be able to name some characteristics of insects



be able to classify invertebrates into 2 groups: insects and not insects



begin to classify insects into groups corresponding to the *Big 5* orders of insects.

Resources and preparation:

- *Inspired by Insects* Presentation
- *HOPE for the Future* Photo Resources, cut so that the children can sort the images. You could also use insect specimens for the sorting activities, if available.
- Sorting hoops
- *Inspired by Insects Big 5* Order labels

Session Plan:

Slide 1 – What will the children be doing at the *Inspired by Insects* Science Club?

- Finding out about the wonderful world of insects on our doorstep
- Learning how to classify, find and collect insects
- Making insect hotels and using them to carry out an insect investigation
- Contacting museum experts to find out even more about insects (During the Science Club you have a 'direct line' to the museum to ask questions, send in photos and share findings of your investigations.)

Slide 2 – Look at the range of invertebrates on the slide and begin by asking the children about their own experiences of insects.

Have you ever seen insects like this? Where? Can you name any of them? Do you have a favourite insect? Do you have an insect experience you would like to share? Are there any animals on the slide that you think aren't insects? Why?

Challenge misconceptions about spiders, woodlice, centipedes etc being insects.

Activity:

Give the children some images from the Photo Resource to sort into three groups – insect, not insects and any that they are not sure about. Make sure they have some of the animals from Sheet 5 which includes some non-insect invertebrates, and from Sheet 6 which includes larval forms of insects.

Questions for the children to think about:

Which ones are insects? Which ones are not insects? How do you know? What makes an insect an insect? Can you think of at least 2 characteristics of insects?

Common misconceptions include that the following are insects: spiders, centipedes, woodlice, millipedes, worms, snail, slugs. Also, the children may have found the photographs of insect larvae confusing because many do not have obvious characteristics of insects. For example, they may not have wings, antennae, an exoskeleton or 6 clearly visible legs. Explain that at different stages of the insect lifecycle insects can look very different from the adult form. The classic characteristics of an insect often only apply to the adult stage of the life cycle.

Support children's understanding of the characteristics of an insect by using:

Slide 3 – Characteristics of insects:

- 6 legs arranged in 3 pairs
- 3 distinct body parts – head, thorax, abdomen. Note that in insects that undergo complete metamorphosis (such as butterflies and beetles) the 3 distinct body parts are only seen in the adult stage of the lifecycle.
- 2 antennae – these are sense organs but not for touch as the common name 'feelers' would suggest. They sense smell and sometimes humidity and are made up of lots of individual joints allowing them to be highly mobile.
- Exoskeleton – insects have hard outer skeletons, not internal bones like humans and other mammals. Again, this is often only seen in the adult stage of the lifecycle. In some insects the exoskeleton looks like hairs (think of the body of a butterfly) but this is in fact made from the same hard material that, for example, a beetle's hard wing cases are made from. The material is called *chitin*.
- Most adult insects have at least one pair of wings. Many insects, however, have stages of their lifecycle that do not have wings.

Slide 4 – *Why are these not insects?*

This slide shows a variety of animals which are commonly found in school grounds that children may mistakenly think are insects.

- Spiders (Arachnid) have 8 legs and 2 distinct body parts.
- Millipedes (Myriapod) have segmented bodies with a two pairs of legs on each segment. The animal with the highest number of legs on the planet is the millipede species *Illacme plenipes* which has 750 legs!
- Centipedes (Myriapod) have segmented bodies with one pair of legs on each segment.
- Woodlice (Crustacean) have 7 pairs of legs.

Slide 5 - Scientists love to sort (classify) animals into groups and give them names. *Why do you think that is?*

The main reason is so that people can be sure that they are talking about the same species. This helps scientists to:

- Monitor biodiversity and any changes in insect populations, for example, as a result of climate change or other forms of human impact
- Understand genetic connections between species and groups which helps us to understand how insects evolved
- Target conservation projects precisely and evaluate their effectiveness
- Identify types of insect (groups or species) in order to understand whether they are in decline or extinct.

Activity:

Using the insect images from Photo Resource 1,2,3 and 4, and/or specimens from the previous activity, invite the children to think of ways they could put the insects into groups. Discuss their ideas.

Explain that scientists sort animals into groups called *orders*.

Video:

Watch the video: [The Bug Five!](#) with Dr Lindsay Turnbull from the University of Oxford which explores the 5 most common insect orders in the UK.

Slide 6 - recap the Big 5 orders from the video.

- Beetles –Coleoptera
- Butterflies and moths – Lepidoptera
- Flies – Diptera

- True Bugs – Hemiptera
- Bees, wasps and ants - Hymenoptera

Activity:

Look at the images/specimens of insects again.

Can you sort the insects into the Big 5 orders?

You could do this as a whole group using hoops and the labels provided or in smaller groups. The species and orders are on the back of the images but encourage the children to have a go without looking, then check their answers. Review the children's ideas together. Explain that over the next few weeks you will be looking for insects in the school grounds and carrying out an investigation, so knowing about the Big 5 orders will help you to classify what you have found and to collect data.

Slide 7 – During the *Inspired by Insects* Science Club, the group will be able to contact insect experts (entomologists) at the museum. Watch the video:

Get in touch!

You can:

- ask questions about insects or the insect collection at the museum
- send in photographs of insects that you find for ID
- tell us what you discovered in your investigations.

Encourage the children to think of a question for the museum and send them to us at hopelearning@oum.ox.ac.uk

Slide 8 - Looking ahead to next week: Going outside and exploring the insects in your local environment.