



Flowers And Insects



Flowers and insects





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Basic Information

This section details the time allocation for this unit of work, links to other subjects and Assessment for Learning opportunities.

Timings

This unit of work is intended to last about 7 weeks.

The following suggested timings are approximate guides and are dependent on each school's individual context.

	No of Hours	No of Weeks
Entry Point, Knowledge Harvest, Explain the Theme	6	$\frac{3}{4}$
Science	16	2
Geography	4	$\frac{1}{2}$
Art	10	$1 \frac{1}{4}$
Music	4	$\frac{1}{2}$
Society	4	$\frac{1}{2}$
International	6	$\frac{3}{4}$
Exit Point	6	$\frac{3}{4}$

Links to other IPC subjects

ICT & Computing

This unit has been specifically updated to cover the learning goals for ICT & Computing. Although ICT & Computing does not appear as a discrete subject in the unit, relevant ICT & Computing learning goal coverage has been added to the route planner.

Language Arts and Mathematics links

Suggestions of how to include links to Language Arts and Mathematics are provided where appropriate at the end of each learning task.

Learning Goals

Art Learning Goals

Children will:

1.01 Know about some of the forms used by artists in their work

 **1.02 Be able to use a variety of materials and processes**

 **1.03 Be able to suggest ways of improving their own work**

 **1.04 Be able to comment on works of art**

1.05 Understand that the work of artists can be seen in a wide variety of places and situations

Geography Learning Goals

Children will:

1.04 Know about the weather and climatic conditions in particular localities and how they affect the environment and the lives of people living there

1.05 Know that the world extends beyond their own locality and that the places they study exist within a broader geographical context

 **1.12 Be able to use secondary sources to obtain simple geographical information**

 **1.14 Be able to communicate their geographical knowledge and understanding in a variety of ways**

International Learning Goals

Children will:

1.01 Know that children within the class and school have different home countries

1.02 Know the names and approximate locations of the home countries of children within the class (and/or school)

1.03 Know about some of the similarities and differences between the lives of children in the different home countries and in the host country

 **1.04 Be able to respect one another's individuality and independence**

 **1.05 Be able to work with each other where appropriate**

Music Learning Goals

Children will:

1.02 Know a number of other pieces of music

1.03 Know how a number of musicians including some from their home country and the host country use musical elements to create different effects and for different purposes

 **1.04 Be able to recognise and explore ways in which sounds can be made, changed and organised**

 **1.06 Be able to play simple rhythms with a steady beat**

1.10 Be able to listen carefully to pieces of music and comment on them

1.13 Understand that musical elements can be used to create different effects


Science Learning Goals

Children will:

1.01 Know that scientific enquiry involves asking questions, collecting evidence through observation and measurement

 **1.02 Be able to pose simple scientific questions**

 **1.03 Be able to identify ways of finding out about scientific issues**

 **1.04 Be able, with help, to conduct simple investigations**

 **1.05 Be able, with help, to gather information from simple texts**

1.06 Know about the basic conditions needed for living things to survive

1.07 Know about the differences between living things and things that have never been alive

1.08 Know that living things grow and reproduce

1.09 Know that the features of the school environment affect the types of living things found there

1.10 Be able to sort living things into simple groups

1.11 Be able to recognise living things in the school environment

1.12 Understand that different locations support different living things

1.14 Know the names and characteristics of a range of animals

1.20 Know the names of the parts of plants

1.21 Know that seeds grow into plants

1.22 Know that plants need light to grow

1.23 Know that plants need water to grow

Society Learning Goals

Children will:

1.02 Know some of the rules of groups to which they belong

1.06 Understand that they belong to a number of groups (e.g. family, school, nation)

ICT & Computing Opportunities

The table below shows you where you can cover the following ICT & Computing Learning Goals.

Task	Goals
Art Extension Task	1.3, 1.4, 1.6
Art Task 1	1.4, 1.6
Geography Task 1	1.4, 1.5, 1.6
Music Task 1	1.6
Science Task 2	1.1, 1.10
Science Task 3	1.6, 1.4
Science Task 4	1.4, 1.6
Science Task 5	1.4, 1.6
Science Task 6	1.3
Science Task 7	1.3, 1.4, 1.5, 1.6, 1.10
Science Task 8	1.7, 1.8, 1.9, 1.10
Science Task 9	1.3, 1.4, 1.6, 1.10
Society Extension Task	1.3, 1.4, 1.5, 1.6

Assessment for Learning

Are your children busy, or are they busy learning? This is the question that we need to be able to answer throughout each IPC unit – what improvements are being made to children’s learning as a result of studying this theme?

There are **three areas of learning** to reflect on, and **three types of learning** to assess.

The Three Areas of Learning: Academic, Personal and International

The three *areas* include **academic, personal and international learning**. To reflect on these, you will need access to the IPC Learning Goals for each subject (including International) and the IPC Personal Goals – a list of these can be found in Appendix A of the [IPC Implementation File](#). You can also find a full list of IPC Learning Goals in the [Assess section](#) of the Members’ Lounge.

The Three Types of Learning: Knowledge, Skills and Understanding

The three *types* of learning include **knowledge, skills and understanding**. We believe that differentiating between knowledge, skills and understanding is crucial to the development of children’s learning. We also believe that knowledge, skills and understanding have their own distinct characteristics that impact on how each is planned for, learned, taught, assessed and reported on. The implications of these differences are therefore far-reaching and deserve proper consideration.

Knowledge refers to factual information. Knowledge is relatively straightforward to teach and assess (through quizzes, tests, multiple choice, etc.), even if it is not always that easy to recall. You can ask your children to research the knowledge they have to learn but you could also tell them the knowledge they need to know. Knowledge is continually changing and expanding – this is a challenge for schools that have to choose what knowledge children should know and learn in a restricted period of time.

The IPC does not provide examples of knowledge assessment (tests or exams) as the knowledge content of the curriculum can be adapted to any national curricula requirements.

Skills refer to things children are able to do. Skills have to be learned practically and need time to be practiced. The good news about skills is the more your practice, the better you get at them! Skills are also transferable and tend to be more stable than knowledge – this is true for almost all school subjects.

The IPC supports skills tracking and assessment through the [IPC Assessment for Learning Programme](#). This programme includes Teachers’ Rubrics, Children’s Rubrics and Learning Advice.

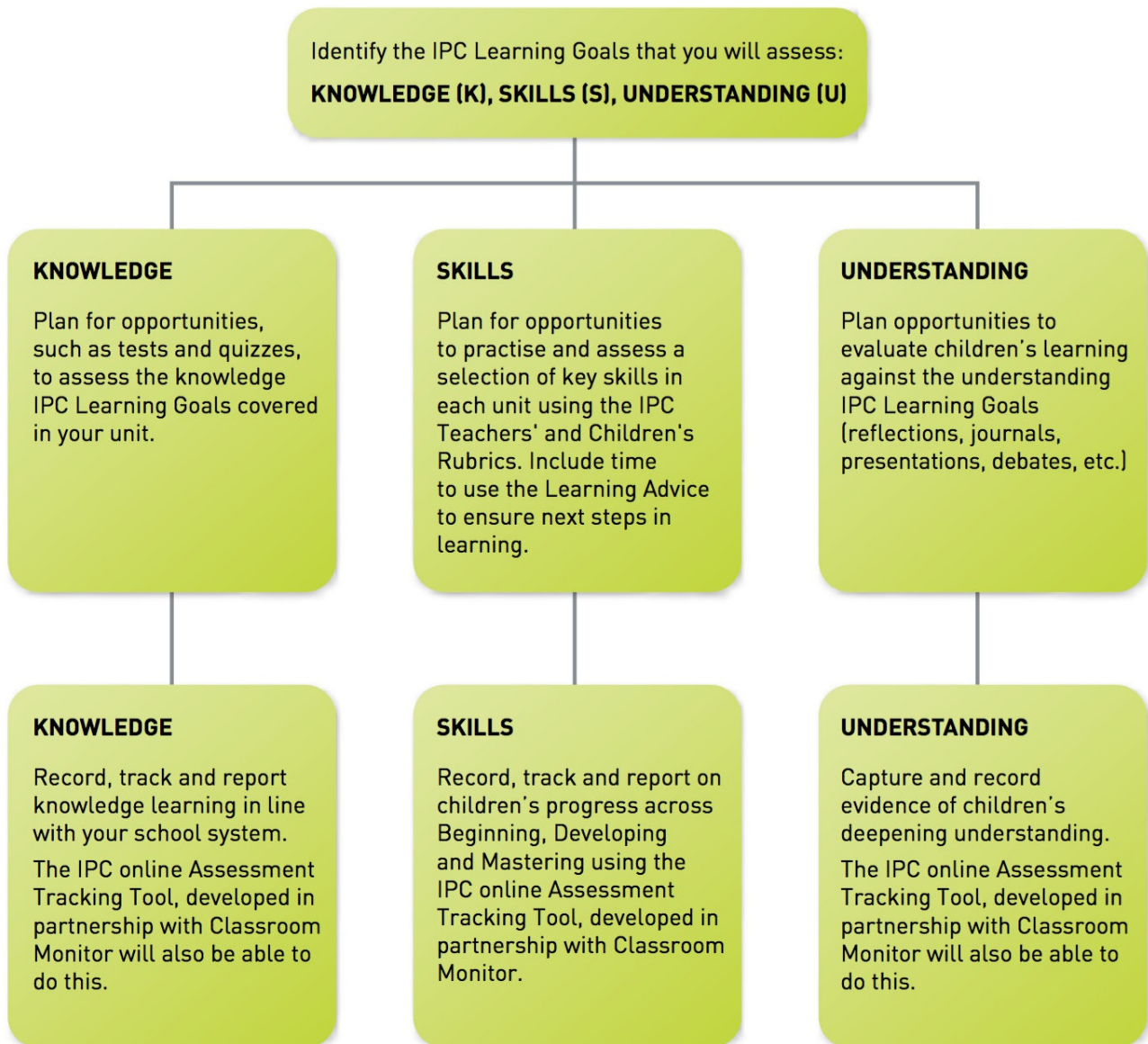
Understanding refers to the development or ‘grasping’ of conceptual ideas, the ‘lightbulb’ moment that we all strive for. Understanding is always developing.

The IPC units can’t assess understanding for you, but they do allow you to provide a whole range of different experiences through which children’s understandings can deepen.

(Please note: as well as the IPC Assessment for Learning Programme, we also offer an online Assessment Tracking Tool, developed in partnership with Classroom Monitor. Please email members@fieldworkeducation.com for more information on how to sign up to this tool.)

Planning for Assessment

Once you have planned for the different IPC Learning Goals for each subject it is important to plan for assessment opportunities within each unit of work. Assessment needs to be balanced but rigorous to ensure that the children have learned what we planned for them to learn. The diagram below illustrates the processes you may want to use to ensure this happens.



Helping Children Reflect on Their Own Learning

In addition to teacher assessment, it is also vital to include children in reflecting on their learning and setting next steps for improvement. Ask the children to carry out self-assessments throughout each unit (using the Children's Rubrics to assess skills, and other methods chosen by the school for knowledge and understanding).

They could use the following headings to list/make notes on their newly acquired knowledge, skills and



understanding – ‘new things I now **know**’, ‘new things that I can **do**’ and ‘new things I am beginning to **understand**’.

Ask the children to evaluate different aspects of their learning – what did they do well, what could improve next time and how, what did they find the most/least interesting? How did they prefer to learn – as an individual/in pairs/small groups/large groups/as a whole class? What was their preferred method of researching and recording - writing/talking/making, etc.? This evaluation aspect will also support the development of the IPC Personal Goals.

Further Information

For more information on assessment, and knowledge, skills and understanding, please refer to:

- [The IPC Implementation File](#)
- [The Assessment for Learning Implementation File](#)
- [The IPC Self-Review Process](#)

Or contact the Membership Support team at members@fieldworkeducation.com

The Entry Point

Ideally, you should start this unit when flowers and insects are in abundance in your locality. Arrange a visit to a local park, a wildflower area or garden centre to observe flowering plants. Study their different colours, sizes, shapes and forms. Encourage the children to make a note of the names of some of the flowers they see. They should also look out for any insects that are attracted to the flowers. Invite the children to record their visit by observing the wildlife closely using magnifying glasses and digital microscopes if these are available. Encourage the children to make sketches and take photographs with a range of digital devices such as cameras and iPads so that they can refer to these in forthcoming tasks.

Back in the classroom show the children how to retrieve the photos that they have taken and save them to a folder on the school network. Model how to connect the cameras or iPads to the computers to download the photos either by inserting the camera's SD card into the computer or by connecting the devices with a USB cable. When you have shown the children how to save the images to their computers, model how to print the photos out so they can be used in their books or on display.

Look at the photos they have taken - which do they like best and why? Discuss what makes their favourite photos successful, drawing attention to details such as focus, framing, lighting and subject matter.

Working in teams, the children should then display, group and label their sketches and photos, identifying the common wild and garden plants, including deciduous and evergreen trees, they have discovered. If the children are unfamiliar with the terms 'deciduous' and 'evergreen' you will have an opportunity to come back to these ideas later in the unit.

Watch film clips such as *Antz*, *A Bug's Life* or *Honey, I Shrunk the Kids*; read the children some poems or extracts from stories about gardens, insects or flowers.

The following will provide a useful starting point:

- ***The Secret Garden***, by Frances Hodgson Burnett
- ***The Spider and the Fly***, by Mary Howitt
- tooter4kids.com/classroom/insect_poetry.htm – Tooter 4 Kids website has insect poems featuring a cricket, a caterpillar, an ant and a mosquito plus a song and an insect rap.

Invite the children to make an imaginary garden of their own. Each child needs to have a shoe box, or similar-sized box. They should place it on its side and build a 'garden' inside it, using colourful pictures of flowers and insects, cut from old magazines, or their own drawings or paintings. Encourage the children to be creative, e.g. they might add a 'pond' (a small lid containing water). They can include photographs of flowers, Plasticine models of plants, insects and other small animals found in the garden. You could have a competition for the most creative garden!

ICT link: demonstrate how to use simple photo-editing software to modify how the children's photos look using simple tools such as crop, rotate, enhance and filter. If using iPads, these basic functions are available with the proprietary Photos app on Apple Macs, and iPhoto (apple.com/uk/mac/iphoto/) offers similar functionality. If using PCs, photos can be edited using Windows Photo (for more information visit windows.microsoft.com/engb/windows-live/photo-gallery.)

Knowledge Harvest

Use string and pegs or wooden sticks to mark out one-metre squares in different parts of the school grounds.

Try to use as many different environments or habitats as possible, including:

- Dry
- Wet
- Shaded
- Open
- Sunny
- Windy
- Gravelled
- Walled

Group the children in pairs or small groups – one group per environment/habitat. Ask them to search within their metre square and list everything they find there to complete the checklist (see below). Encourage them to make sketches and take photographs reminding them about what made some pictures more successful than others in the entry point. Explain that some people make their living by taking successful photos of nature and wildlife. Show the children some examples by viewing the most recent Young Wildlife Photographer of the Year awards:

- nhm.ac.uk/visit-us/wpy/gallery/2013/young.html – the National History Museum website is host to the Wildlife Photographer of the Year competition.

Look at some of the photos taken and discuss what they like about them and why they think they were selected for this competition. Show the children how to hold their digital devices steady and point out where the lens is located. If the devices allow, show the children how to zoom in and out to achieve greater levels of detail in their photos.

Things that are living now	Things that were living	Things that have never been alive

Tell the children that habitats where plants and animals live can be big such as an ocean or a forest, or small such as the space under a leaf or stone. A very small place where plants and animals live is called a 'micro-habitat'.

Are the children able to identify and name the common plants and animals that they find in the school grounds?



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Provide information books, or prepared lists of potential 'finds' for your country for reference in case the children can't name the things they discover.

Can the children categorise the things accurately? Do they recognise these differences?

Back in the classroom, display the investigations. Encourage the children to share their findings, information, drawings and photographs with each other. You will need to refer to them for Science Task 1.

The Big Idea

Have you seen any flowers today? Where did you see them? Have you seen any insects? Where did you see them? Flowers and insects need each other. Without insects there would be no flowers. And without flowers insects would go hungry.

Explaining The Theme

In Science, we'll be finding out:

- Where flowers and insects prefer to live and grow
- How and where seeds grow
- How to set up tests to discover how plants use water
- How to grow lots of different things
- How beans grow
- About the life cycles of insects
- About ants and bees

In Geography, we'll be finding out:

- About honey and silk production
- About the migration of the Monarch butterfly

In Art, we'll be finding out:

- About paintings of flowers and insects
- How to make paintings and models of flowers and insects
- How to use symmetry to make paintings of insects
- How to create a garden in the classroom

In Music, we'll be finding out:

- About the music of the famous composer, Rimsky-Korsakov
- How to create our own music

In Society, we'll be finding out:

- About keeping stick insects as pets
- About people who help us



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In International, we'll be finding out:

- About flowers and insects from the host and home countries
- About how climate and weather patterns affect life around the world
- About flowers as emblems for different countries

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The Big Picture

Insects have been living on Earth since before the age of the dinosaurs – over 300 million years ago. Entomologists estimate that there are about a million different insects with many more millions yet to be discovered.

Scientists estimate that the first flowering plants appeared about 130 million years ago – this was a long time after we had ferns and conifers.

Insect anatomy

Insects have three main body parts – the head, the thorax and the abdomen. The head of the insect has the antennae, mouth and eyes. The antennae are used for touch and smell, the mouthparts to suck, chew, bite, or sting and compound eyes (most insects have compound eyes) to see. They have six segmented legs attached to the thorax. Most have either one pair or two pairs of wings that are used for flight or appear as hard shells, also attached to the thorax.

Insects have an exoskeleton. They don't have bones but a hard exterior coat supporting their softer muscles inside. Spiders are strictly-speaking not insects but they are close relatives – both are classed as arthropods.

Metamorphosis

Most insects metamorphose throughout their life cycle – from egg to larva to chrysalis and to adult. The eggs are laid on places that provide food for the larva. These can include plants, or even inside other creatures.

If you reside within the UK, you can pre-order live butterfly kits for your classroom at:

- insectlore.co.uk/education/ – Insect Lore provide a range of live educational kits to help support natural science topics.

The live butterfly kits allow children to watch first-hand the transformation of a caterpillar, from chrysalis to butterfly!

Colonies

Bees and ants live in colonies and have specific roles to play within that colony. They pass messages to others from their colony when they have found a source of food. The ants leave a trail which other ants can 'smell' with their antennae. Bees perform a type of dance in flight. They have queens who stay inside the colony and lay eggs.

Caring for living things

If you are going to put mini-beasts in containers for classroom observation, include a handful of any vegetation or soil in which they are found. Treat all creatures with care and sensitivity (no matter how small); ensure they are unharmed and are always returned to the place where you found them as soon as possible.

What is a plant?

“A photosynthetic organism that has cellulose cell walls, cannot move of its own accord, grows in soil or water, and usually has green leaves.” *Encarta Dictionary*

Plants are essential to all life on Earth. If plants died out so would we, along with many other living things that depend on plants for their food. Link to the Milepost 1 plants- themed unit, *Greenfingers*.

Leaves

Plants have adopted different leaf designs to suit different environments. Large round leaves are perfect for soaking up the sunlight while small leaves are stronger in windswept habitats.

Deciduous trees lose their leaves when the weather turns colder and lie dormant throughout the winter months until their leaves grow again in the spring. Evergreen trees have leaves all year round. However, they do still lose their leaves sporadically throughout the year as new leaves replace old ones.

Photosynthesis

Plants are able to produce their own food. They do this by spreading out their leaves to the Sun to catch energy. They then use the Sun's energy to create nutrients and glucose (sugar) to help them grow. This process is called photosynthesis.

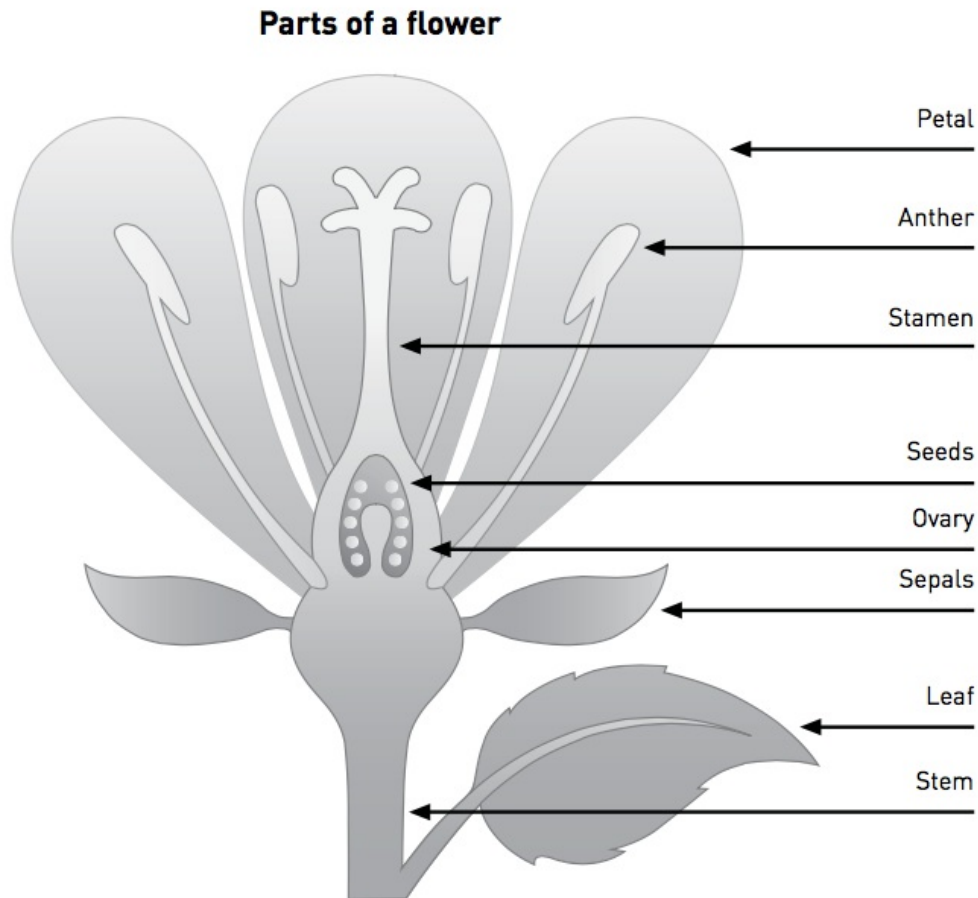
Stems

The stem supports the plant. Inside there are a series of tubes that carry water and nutrients up and down the stem to all parts of the plant.

Flowers

Flowers grow in every habitat on Earth, even at the bottom of the ocean. Some plants have masses of tiny flowers, others have a large single bloom. All flowers have the same job: to attract pollinators and to make seeds.

Brightly coloured flowers attract pollinators such as birds, bees, butterflies and other insects by offering food in the form of pollen and sometimes sugary nectar as well. When a bee feeds on a flower, the flower's pollen is rubbed off onto their bodies and is then transported to other flowers the bee visits. Not all flowers are pollinated by animals some, such as grasses, are wind pollinated.



Flowers and insects depend on each other:

- Flowers need insects for pollination and fertilization
- Insects need flowers for food and shelter

Fruits

Some plants produce fruits to protect their seeds. Fruits can be hard and dry or soft and juicy. The fruit of the avocado and apricot contains a single large seed, while the tomato and kiwi fruit have many small seeds. A pea pod case is a fruit, as are the hard shells surrounding walnuts and peanuts.

Seed dispersal

Plants can't get up and move around so they have evolved various ways of dispersing their seeds to avoid overcrowding in one place.

Some seeds are dispersed by animals, e.g. mice eat blackberries and the seeds pass through their bodies and are planted wherever they leave their droppings. Seeds with sticky casings (burs) stick to an animals' fur and are carried away. Sycamore or ash seeds grow 'wings' and are spread by the wind. Dandelion seeds have feathery parachutes that can float through the air. Pea pods pop open and poppies have seed shakers to scatter their seeds.

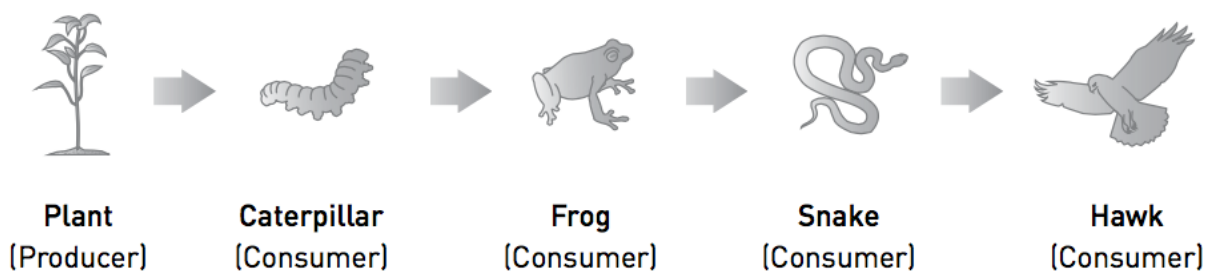
Adaptation

All living things are suited (or adapted) to the habitats in which they live. Plants and animals that are not suited to their environment do not survive. All living things (though there are a few exceptions) have the same basic needs for survival – these are food, water, light and air.

Food chains

All food chains start with a producer, usually a plant that can make its own food using the Sun's energy. Animals are consumers in the food chain because they eat other animals or plants to survive.

Without plants, animals and people could not exist.



Insects and society

In many parts of the world, insects are eaten as food – witchety grubs (larvae of moths that feed on the witchety bush) are eaten raw or roasted by indigenous Aborigines. On the menu in Japan, you'll find fried grasshoppers, cicada and silk moth pupae.

Insects are found everywhere and some can be harmful. In Africa, plagues of locusts can destroy food crops and mosquitoes carry malaria and yellow fever. Bee and wasp stings can be deadly for people who suffer from allergic reaction to their venom.

Some people think insects make good pets – stick insects are one example. Gardeners complain about caterpillars but they like ladybirds because they eat aphids and bumblebees because they help with the pollination of plants.

Flower paintings in history

A history of flower painting can be traced back to the 13th century when flower paintings were suffused with religious symbolism. Gradually, this gave way to the magnificent still-life floral bouquets painted in oils by the Renaissance painters. In the 16th century, the discovery of the new world and its new exotic flower species, led botanical artists to paint flowers with scientific accuracy. In Pre-Raphaelite paintings, flowers became emotional symbols – the rose as a symbol of love and the lily of purity.

The bold brush strokes of the Impressionist painters led the move away from realism and towards a series of the most famous flower paintings in the world, Vincent Van Gogh's Sunflowers.

- ducksters.com/biography/artists/vincent_van_gogh.php – Ducksters has a biography, information and images of Van Gogh's famous paintings. (**Note:** this site does feature advertising.)

Science Learning Goals

Children will:

1.01 Know that scientific enquiry involves asking questions, collecting evidence through observation and measurement



1.02 Be able to pose simple scientific questions



1.03 Be able to identify ways of finding out about scientific issues



1.04 Be able, with help, to conduct simple investigations



1.05 Be able, with help, to gather information from simple texts

1.06 Know about the basic conditions needed for living things to survive

1.07 Know about the differences between living things and things that have never been alive

1.08 Know that living things grow and reproduce

1.09 Know that the features of the school environment affect the types of living things found there

1.10 Be able to sort living things into simple groups

1.11 Be able to recognise living things in the school environment

1.12 Understand that different locations support different living things

1.14 Know the names and characteristics of a range of animals

1.20 Know the names of the parts of plants

1.21 Know that seeds grow into plants

1.22 Know that plants need light to grow

1.23 Know that plants need water to grow

Science Task 1

Learning Goals

1.07 Know about the differences between living things and things that have never been alive



Research activity

Look again at the information, photographs, videos and sketches the children compiled for the knowledge harvest activity. Discuss any misconceptions that the children might have.

Through your discussion, enable the children to list the characteristics of things that are living. For example:

- They need food and water
- They reproduce
- They move and grow
- They breathe

Things that were never alive don't need or do these things. For example, you could ask the children, do stones grow? Stones don't grow because they are not alive.

When talking about things that used to be alive, draw the children's attention to the fact that sticks were once parts of trees and, as such, were part of a living thing.



Recording activity

Play a class game that you are going to call 'Alive, Dead or Never Alive'.

Think of something that falls into one of these three categories: Alive, Dead or Never Alive. Don't tell the children what you are thinking of – it's their job to find out. For example, you might think about a fallen leaf from a tree. Say to them, I'm thinking about something that is dead. You can ask me ten questions (or any number) to which I can only answer yes or no. Then you have to guess what it is I am thinking about.

When the children have grasped the rules of the game you can divide them into small groups or pairs to play the game themselves.

Alternatively, give the children picture cards or word cards of a variety of living and non-living things and ask the children to sort them into three different piles: Alive, Dead or Never Alive or place them on the chart from the knowledge harvest.

End the session by posing the question: is a seed alive? Allow time for the children to discuss this in their pairs/groups, perhaps by creating a series of yes/no arguments for why a seed may be considered alive or dead. Encourage them to draw on their learning from the 'Alive, Dead or Never Alive' game. Open out the discussion to the whole class. Record the children's opinions.

Do not reveal the answer yet - as the children will be investigating seeds further in the next task!


Personal Goals

- Communication
- Enquiry
- Thoughtfulness

Science Task 2

Learning Goals

1.01 Know that scientific enquiry involves asking questions, collecting evidence through observation and measurement

 **1.02 Be able to pose simple scientific questions**

 **1.03 Be able to identify ways of finding out about scientific issues**

 **1.04 Be able, with help, to conduct simple investigations**

1.06 Know about the basic conditions needed for living things to survive

1.12 Understand that different locations support different living things

1.21 Know that seeds grow into plants

1.22 Know that plants need light to grow



Research activity

Look back at the pictures of the trees you discovered in the entry point. Ask the children to identify and name the different parts of a tree: root, trunk, branch, leaf, flower, seed, etc. Do they know what the different parts of the tree are for? Recall any prior learning, particularly from the Milepost 1 Science unit, *Green Fingers*. Remind the children that a tree is a very big plant. How do we know? You could compare a tree to a houseplant to find out if they are similar. Ask the children to identify and name the parts of a houseplant - they will notice that the parts are largely the same, except that we call the 'trunk' of the plant the 'stem'.

Now show the children an attractive flowering houseplant growing in a pot. Tell them you are going to put it in a classroom cupboard because you think it will grow better there! When the children look surprised to see you doing this, ask them why they are surprised. One of the children may tell you that plants need light to grow. Is this true and how could we find out? The children might suggest that you put the houseplant in the cupboard after all and wait to see what happens, or that you investigate by planting some seeds.

Investigation to find out if plants need light to grow:

1. Place cotton wool in the base of a flat tray, dampen it and sprinkle some seeds over it.
2. Make a cone from dark paper and place it over the seeds in part of the tray.
3. Keep the cotton wool damp, and keep the tray in a warm light space.



Recording activity

The children can record the following information through drawings, photographs, video recordings or writing:

- What do they think will happen to the seeds under the cone?
- What can they observe happening to the seeds in the light?

Once the seeds in view have grown sufficiently, remove the cone and observe:

- What do they notice?
- Why has this happened?
- What was missing?
- What does this tell them?

Through this investigation, the children should be able to conclude that light is favourable to the growth/germination of seeds. Those that were covered are unlikely to have grown. (Without light, many seeds may remain dormant in the soil – others may grow but because they are unable to photosynthesize (make food) they wither and die.) You could link the absence of light to seasonal changes in plant growth. When do plants grow most - during the day or night; during the winter or summer? Why? Consider the effects of changes in the length of the day at different times of the year.

Use the IPC website to find other schools learning with this unit and set up a Skype account for your class so that the children can exchange information and compare notes during their learning. When setting up the link with the other school, explain to the children that whilst Skype is very useful for communicating with people that we know and trust on the internet, for example, friends and family, we should always be wary of communicating with strangers and we should always keep personal information such as our name, where we live and our school private.

For further resources and lesson plans on how to stay safe online visit:

- thinkuknow.co.uk/teachers – CEOP's Thinkuknow programme provides a range of free educational resources - films, lesson plans, presentations, practitioner guidance, games and posters - to professionals working with children and young people.

When sharing the learning with another school, you might suggest using data loggers to monitor the amount of light that the plants receive in the two contrasting school locations. Encourage the children to draw conclusions from the corresponding plant growth rates.

Consider the other basic needs of plants - note that the seeds in your test were given water and warmth. What happens if we don't water the seeds (see next task) or if we put the seeds in a cold place such as a refrigerator? Record the children's predictions.



Personal Goals

- Communication
- Enquiry
- Thoughtfulness

Science Task 3

Learning Goals

1.01 Know that scientific enquiry involves asking questions, collecting evidence through observation and measurement



1.02 Be able to pose simple scientific questions



1.03 Be able to identify ways of finding out about scientific issues



1.04 Be able, with help, to conduct simple investigations

1.06 Know about the basic conditions needed for living things to survive

1.12 Understand that different locations support different living things

1.21 Know that seeds grow into plants

1.23 Know that plants need water to grow



Research activity

Using the same houseplant from the previous activity, ask the children what they think would happen if you didn't water it today or tomorrow or ever again. Test their theories – not with the houseplant but with some seeds.

Grow some seeds to show that plants need water to grow.

1. Place some cotton wool in a suitable small container (such as a yogurt pot, small plant pot, film cannister, egg poacher cup, half an eggshell and so on) and dampen it. Repeat by adding cotton wool to another pot, but don't add any water.
2. Sprinkle grass seeds in each (keep the damp one damp) and watch what happens.
3. The children should label each container. Draw a happy face on the one you will keep damp and a sad face on the dry one. Ensure the containers are kept upright. If using eggshells then stand them in a little piece of modelling clay.

Alternatively, place the tops of raw vegetables in a saucer of water and watch them sprout new growth. You could water some and not others to compare growth. Try this with carrots, turnips, swedes, parsnips, etc.

Extension activity

Ask the children: do all plants grow from seeds? The children may have seen their parents growing new plants from leaf cuttings or planting bulbs in the garden. Show the children examples of seeds and bulbs. Ask them what they think is contained inside the seed or bulb. Both seeds and bulbs contain just enough food to start the growth of the young plant. As a more long-term investigation the children could try growing bulbs in different conditions, e.g. in clay soil compared to sandy soil, dry soil compared to wet soil, warm weather compared to cold weather, light compared to dark conditions.



Recording activity

The children should be able to predict, observe, describe and draw conclusions from the results of their investigations. They should know that plants need water to grow and that this is a basic need.

They can show their findings in the form of a chart that shows the plant's progress at weekly or daily intervals, using diagrams and text to explain.

In addition a team of children could use tablet devices or cameras to create stop motion or time-lapse animations using software such as I Can Animate:

- kudlian.net/products/icananimatev2/Home.html – Kudlian offers information and tutorials about how to download and use their software and apps.

Depending on their findings, a daily plan might be more suited to some of the experiments and a twice-weekly one better-suited to others.

Invite the children to refer back to the previous task's findings in order to conclude that plants need water, light and a suitable temperature to grow and stay healthy.

Personal Goals

- Communication
- Enquiry
- Respect
- Thoughtfulness

Science Task 4

Learning Goals

1.01 Know that scientific enquiry involves asking questions, collecting evidence through observation and measurement



1.02 Be able to pose simple scientific questions



1.03 Be able to identify ways of finding out about scientific issues



1.04 Be able, with help, to conduct simple investigations

1.06 Know about the basic conditions needed for living things to survive

1.20 Know the names of the parts of plants

1.23 Know that plants need water to grow



Research activity

In the previous task, the children discovered that plants need water in order to grow. Ask the children: what does the plant do with the water? Invite their suggestions. In this task, the children will find out how water travels through a plant's stem.

Place a bunch of cut flowers in a vase. Fill the vase with water and measure the amount of water left in the vase after three or four days.

Ask the children, where has the water gone? From this observation, they will know that the flowers have 'drunk' the water.

Now you should ask the children, how does a flower 'drink' water? Divide the class into small groups and invite them to discuss their ideas. Give them each a cut flower and invite them to examine it using a magnifying glass.

Tell the children that they are going to test their ideas by carrying out a scientific investigation.

You will need:

- Clean jam jar or vase
 - Freshly cut flower – a white carnation (ordaisy) or stick of celery works best
 - Food colouring
 - Water
1. Put some food colouring in a jar of water.
 2. Place the flower in the water and leave it to stand for a day.
 3. Observe the petals change colour as they 'drink' up the coloured water.
 4. Take the flowers out of the coloured water and dry them carefully. Study the flowers again using the magnifying glass – what do you notice?



Recording activity

Encourage the children to keep a record of their investigation by drawing labelled pictures and taking photographs or by making a video. If a group of children created time-lapse animations in Task 3, then a different group could create some in this task.

Ask the children if their original ideas and theories were correct. Through the experiment, they should observe that the flower 'drinks' up the water through little tubes in the stem. They will notice also how far the water travelled and to which parts of the flower it went.

They may also notice that the water level in the jar changes - the level drops. Ask the children what would happen if you didn't put more water in the jar but let it become dry? The flowers would dry up and eventually die.

You could link lack of water to different seasons and weather conditions, e.g. what happens to garden plants if there is a long spell of dry weather?

ICT link: place the children's photos and drawings on a timeline on the board and recap the different stages of the experiment. Ask the whole class to use the drawing tools in an animation package such as 2Animate by 2Simple (2simple.com/2animate) to create simple animated drawings of their experiments. Compare the results with the stop frame animations created in previous tasks with I Can Animate. Which do they like better and why?


Personal Goals

- Enquiry
- Thoughtfulness

Science Task 5

Learning Goals

1.01 Know that scientific enquiry involves asking questions, collecting evidence through observation and measurement

 **1.02 Be able to pose simple scientific questions**

 **1.03 Be able to identify ways of finding out about scientific issues**

 **1.04 Be able, with help, to conduct simple investigations**

1.07 Know about the differences between living things and things that have never been alive

1.20 Know the names of the parts of plants

1.21 Know that seeds grow into plants



Research activity

Start by asking the children about living things.

- How do we get new cats? The mother cat has kittens, that are small but grow into big cats
- How do we get new cows? The mother cow has calves, that are small but grow into big cows
- How do we get new trees? The mature tree produces seeds that grow into big trees

Now repeat this with some non-living objects:

- How do we get new plates? Do your plates have little plates which grow into big plates? etc.

Draw the children to a conclusion: That living things reproduce like for like.

Read the children this book:

- ***The Tiny Seed***, by Eric Carle, Picture Puffin, 1997

Discuss how the seed became a plant that flowered and produced more seeds that travelled to new places and grew into yet more plants.

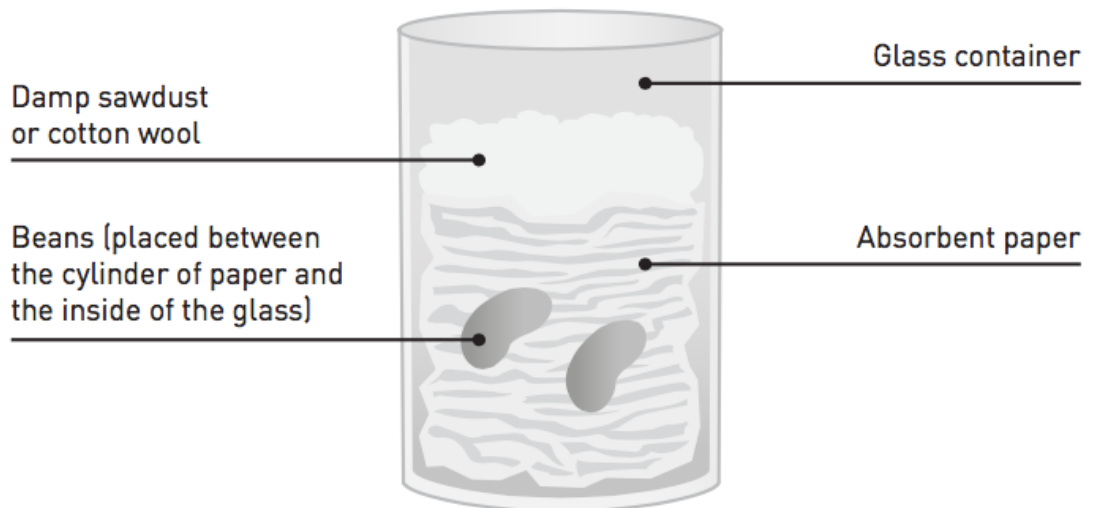
Show the children some seeds that are available in your area, for example:

- Apples and oranges have pips inside them

- Strawberries have seeds around the outside of the soft fruit
- Some flowers have seeds that are carried on the wind with 'parachutes'
- Some larger flowering plants have seed cases full of seeds. They burst open and the seed is flung far away

Grow some beans to observe the process of germination.

1. Place a cylinder of absorbent paper into a transparent container (e.g. a jar – take care if using glass jars). Add sawdust or cotton wool in the centre, and dampen it.
2. Place the beans between the jar and the paper. Put one of them upside-down so that the children can see what affect that has on the process.





Recording activity

The children can keep a diary of the process. For example:

- **Day one:** planted the beans
- **Day five:** a root is starting to come through
- **Day twelve:** the shoot is 4 cm high

The children can make close-up observational drawings on the days when there is something to record. Use magnifiers and encourage the children to notice all that has happened. Draw their attention to small changes and details.

If you wish, children could extend their investigation by placing one jar of beans in a dark cupboard, one in a cold place (such as a refrigerator) and one in a warm, light spot but without water. Based on their previous learning, children can make predictions and then compare their observations over time.

They can then draw a diagram of a flowering plant and label the individual parts. For each part, the children should write a sentence or two describing its function. The children may need to draw the flower at different stages to show the open flower and the seed.




This could be done on the computer using drawing software. Different groups of children could continue to use the two animation packages previously introduced to create different types of animation to showcase their findings about germination. In addition to using the drawing tools in the animation package in 2Simple, the children could now also use the text tool to label different parts of their growing bean.

Personal Goals

- Communication
- Enquiry
- Resilience

Science Task 6

Learning Goals

-  **1.02 Be able to pose simple scientific questions**
-  **1.03 Be able to identify ways of finding out about scientific issues**
-  **1.05 Be able, with help, to gather information from simple texts**
- 1.08 Know that living things grow and reproduce
- 1.09 Know that the features of the school environment affect the types of living things found there
- 1.10 Be able to sort living things into simple groups
- 1.11 Be able to recognise living things in the school environment
- 1.12 Understand that different locations support different living things
- 1.14 Know the names and characteristics of a range of animals



Research activity

All living things reproduce and grow – including us! Think about how you have grown since you were a baby. Take a little time to talk to the class about the human life cycle.

Now read:

- ***The Very Hungry Caterpillar***, by Eric Carle, Puffin, 2002.

You could also watch the following video:

- [youtube.com/watch?v=7AUeM8Mbalk](https://www.youtube.com/watch?v=7AUeM8Mbalk) – YouTube has this time-lapse video showing the complete life cycle of the Monarch butterfly.

*(To watch a YouTube video in **safe mode**, scroll to the bottom of the page and click on the 'safety' tab which brings up the 'Safety mode' information. Under this section, select the 'on' option, then click 'save')*

With the children, construct a life-cycle to show the stages of the life of a butterfly. Explain to the children that insects pass through different body form stages in their lifetime. Do they think this happens to people, or to snakes, or to dogs, or to spiders, etc.?

Can the children find any more creatures that follow a similar life-cycle to that of a butterfly?

Observe the process at first hand – look for pupae in leaf litter under trees and shrubs in the school grounds. Transfer the leaf litter into an aquarium and keep it at a constant temperature. Observe the pupae over the next few days/weeks and watch what happens. You might be lucky enough to see the transformation for yourselves!

The following websites might provide a helpful starting point:

- [butterfly-conservation.org/50/identify-a-butterfly.html](https://www.butterfly-conservation.org/50/identify-a-butterfly.html) – Butterfly Conservation provide useful information and resources to help children identify different species of butterfly.
- [insectlore.co.uk/education](https://www.insectlore.co.uk/education) – Insect Lore provide a range of live educational kits to help support natural science topics. The live butterfly kits allow children to watch first-hand the transformation of a caterpillar, from chrysalis to butterfly!

Note: teach the children to care for and respect all living things they come into contact with – no matter how small. Always return creatures to their natural environment.



Recording activity

The children can draw and annotate the life cycles of some different insects that can be found in or around the school environment. Can they also add approximate time scales?

Encourage the correct use of scientific terms such as egg, larva (or caterpillar), pupa (or chrysalis), cocoon, hibernation, incubation, nectar, antennae, and so on.

Make a picture dictionary that the children can refer to, containing these scientific terms. Wordle is now available as an app on iPads, or you can try Word Salad (wordsaladapp.com) as a free alternative.




Mathematics link: explore the symmetry of insects using mirrors. Then show the children how to use graph paper to draw and colour symmetrical insects. Alternatively, you could use graphics software such as Dazzle (indigolearning.com) or RM Colour Magic (rm.com) that has a 'Symmetry' tool. Or, with younger age groups, they could draw half of an insect in thick paint and then fold over the paper to print the other half of the insect.

Personal Goals

- Communication
- Enquiry

Science Task 7

Learning Goals

-  **1.02 Be able to pose simple scientific questions**
-  **1.03 Be able to identify ways of finding out about scientific issues**
-  **1.05 Be able, with help, to gather information from simple texts**
- 1.08 Know that living things grow and reproduce
- 1.10 Be able to sort living things into simple groups
- 1.14 Know the names and characteristics of a range of animals



Research activity

Refer back to the knowledge harvest. Can the children sort their drawings and photographs of living things into two groups? (Separate the plants from the animals.)

Focus on the animals next. How can we sort them? Invite suggestions from the class. They could sort them by counting their legs or their wings. For example, animals with no legs (worms) or animals with six legs (ants and other insects) or animals with more than six legs (spiders, centipedes, millipedes).

Draw a branching diagram on the board from the children's suggestions. Draw an ant within this diagram then ask the children, is an ant an insect? What is an insect?

You could repeat this activity choosing different animals and using software such as Textease Branch CT to create branching databases.

- [rm.com/shops/whatwedo/Product.aspx?cref=PD3756602](https://www.rm.com/shops/whatwedo/Product.aspx?cref=PD3756602) – RM Education offer a free 30 day trial of Textease, a collection of programs that include database and spreadsheet software.

Challenge the children to find out:

- What body parts an ant has
- What their body parts are for
- Where the legs are attached
- Where its sensory organs are. Are they the same as ours?
- What ants eat and how they find food
- Whether an ant is an insect

- How they are the same or different from humans

Provide resources for the children to conduct their research. If you wish, children can use the internet to search for information about ants. Ask the children how many of them know how to search for information online. Explain that the internet is a huge global online community and that whilst it is extremely useful and indeed vital to our daily lives we always need to be careful to keep our personal information private. Take suggestions about what kind of information we need to keep private (for example, age, address, phone number school etc.). Who can they go to/what should they do if they see something that upsets them on the internet? (Tell an adult that they trust, for example a parent or teacher.)

For further resources and information visit:

- **thinkuknow.co.uk/teachers** – CEOP’s Thinkuknow programme provides a range of free educational resources - films, lesson plans, presentations, practitioner guidance, games and posters - to professionals working with children and young people.

Ask the children how they would use the internet to find information and pictures. Take suggestions encouraging the children to share their ideas, whilst introducing some new vocabulary (such as ‘browser’ and ‘search engine’). Model how to use the school’s internet browser (such as Internet Explorer or Safari) and a search engine (such as Google) to find information about ants. How can we use keywords in a search to find what we are looking for? Should we just type ‘ant’ or could we be more specific? Do they think there is just one type of ant or many? How could we find out? Show the children what happens if we type the following question into Google: ‘How many types of ant are there in the world? (for kids)’. Explain that you have added ‘(for kids)’ to help keep the results relevant for their age group and to stop any inappropriate results from appearing. Look at the different websites that appear and prompt some discussion about which website looks like it might contain useful and reliable information.

Choose a child-friendly website such as:

- **pestworldforkids.org/pest-guide/ants** – Pestworld For Kids offers fun and educational facts for children, teachers and parents.

As a class read some of the information about ants on Pestworld For Kids. In groups children could choose the type of ant that they would like to find out more about. Show the children how to find the ‘Pest I.D Card’ for each of the types of ant listed (go to ‘Pest Guide’, choose ‘Ants’ from the list, scroll down to find out about the different types and download the I.D card). The I.D card offers interesting statistics about each type of ant such as: colour, shape, size and region.

Show the children how to download the ‘Pest I.D Card’ PDF to a named folder on the computer - they could then print the I.D cards and compare their findings.

The following websites may also be useful:

- **en.wikipedia.org/wiki/Ant** – Wikipedia website has photographs and detailed information about ants.

- bbc.co.uk/nature/life/Ant – the BBC Nature website features videos and images of ants from around the world.
- kids.nationalgeographic.com/videos – National Geographic has a number of videos about ants (type 'ants' into the search box).



Recording activity

The children should draw and accurately label an ant, using the correct scientific names. Their labelled pictures could be stuck onto cardboard to make homemade 'Top Trumps' cards. They could then play 'Top Trumps' in teams, comparing the data they have collected, for example: size/colour/whether poisonous or not/country of origin etc. Recall the previous Science task – what do baby ants look like? Did anyone find a picture from their research?

Can they conclude whether an ant is an insect?

Ask the children, how is the ant different or the same as us? Talk about similar and different body parts, sensory organs and skeletons (insects have exoskeletons on the outside of their bodies). Draw a chart or pictures to show how we are different and/or the same as ants.

Art link: this activity needs adult support and the children should contribute to the work, one group at a time.

Make a large model of an ant. This will encourage the children to think carefully about the body parts and where they are in relation to each other. Refer to books if unsure at any stage.

What you do:

1. Use chicken wire to mould a frame for the basic shape. Make each body part separately and then tie them together with lengths of wire or cord (adults should be present throughout this activity).
2. Cover with papier-mâché, allowing each layer to dry before continuing.
3. Paint it, referring back to the children's images from their investigation to choose a suitable colour scheme.

The models should be as realistic as possible.


Personal Goals

- Communication
- Enquiry
- Thoughtfulness

Science Task 8

Learning Goals

1.01 Know that scientific enquiry involves asking questions, collecting evidence through observation and measurement

 **1.02 Be able to pose simple scientific questions**

 **1.03 Be able to identify ways of finding out about scientific issues**

 **1.05 Be able, with help, to gather information from simple texts**

1.06 Know about the basic conditions needed for living things to survive

1.08 Know that living things grow and reproduce

1.12 Understand that different locations support different living things

1.14 Know the names and characteristics of a range of animals



Research activity

If the school owns digital microscopes these would be ideal for use in this lesson. Alternatively a wide range of hand held digital microscopes can be found at:

- tts-group.co.uk/shops/tts/Range/Search?search=digital%20microscopes – the TTS Group are a UK education supplier. Schools outside the UK can use the international eCatalogue to order products.

Tell the children that ants are often compared to us because they live together in large communities. They care for each other and help each other search for food.

Provide small groups with three labeled sheets of paper:

- Soldier ants
- Worker ants
- Queen ants

Explain that each type of ant has its own special jobs to do. Ask the children to use drawings or words to explore their ideas about each group of ant. Prompt them to think about:

- What do they do?
- How are their jobs different?
- How might they depend or need each other?

Invite groups to share their feedback. At this point, there are no right or wrong answers – explore the different ideas. Then allow the children to use a selection of resources, such as books and the internet, to find out more information and compare with their original ideas. (If using the internet, remind the children about the strategies discussed in Task 7 for staying safe online and searching the internet.)

Allow time for the children to feedback their findings. Revisit the three questions and compare their research with their initial ideas. Discuss as a whole class:

- What new things did we learn about ants?
- Are there different types of worker ant? What do they do? (Foragers and nurses.)
- What is a group of ants called?
- Do we think an ant colony is a successful community? If so, why?

Refer to your research from the previous task and ask the children: where are we likely to find some ants to observe? Invite suggestions from the children. Depending on your locality and time of the year, you might be able to find some ants in your school grounds - the children might suggest that you look under stones, in the soil, in the grass, under leaves, in plant roots etc. Tell the children that these very small places where you could look are called 'micro-habitats'.

Prompt the children to think about what a micro-habitat can offer an insect such as an ant. Consider the basic needs of all animals: water, food, shelter. Would these same needs apply to an ant?

Go on an ant expedition, using the children's suggestions to help you locate some in your local area. You could leave some bait (such as a small piece of fruit) and watch what happens. Observe how long it takes the ants to find the food and how they interact with each other. Refer back to the body parts of an ant and consider how they are suited to their habitat.

Back in the classroom, ask the children if they think ants are herbivores, carnivores or omnivores. You may need to provide definitions of each and provide some examples. Again, consider the features of an ant. They have feelers, strong jaws and they can bite - what does this suggest? Ants like to feed on other insects, such as flies and beetles. They are also attracted to sugary foods if they can find them, such as fruit and honey. Therefore ants are herbivores. Consider what animals might like to eat ants. Explore the children's ideas. Help the children to draw a simple food chain that includes an ant, for example:

plant -> caterpillar -> ant -> garden bird -> hawk

Note: all food chains start with a plant because plants can produce their own food. The arrow -> shows who eats whom.

Using this food chain, the children can see how plants and animals depend on each other.

If you wish, you could keep an ant farm in class. These can be easily sourced from online school supply retailers. Remember though, commercially-made 'gel' ant farms are not a natural environment for ants.



Recording activity

Role play the social behaviour in an ant colony. Your class is the colony and the children are the ants! Divide them into groups, as above.

The children should use the findings of their research to help them play in role.

From their research, the children should have discovered that plants and animals live in habitats to which they are suited and that plants and animals depend on each other. Plants are important because they are at the start of every food chain.

The children should also know that habitats provide for the basic needs of the plants and animals that live there. Ants living in a colony depend on each other, as well as on plants and on other insects that they eat.

Language Arts link: make a list of words to describe the different ways in which ants move. For example:

An ant's...

- **Legs** – scuttle, shuffle, creep, crawl
- **Jaws** – bite, tear, munch, crunch
- **Wings** – flap, fly, flutter, beat

Read the Aesop's fable called *The Grasshopper and the Ants*. Ask the children to discuss the moral of the story.

ICT link: explain that something strange has happened. During the course of the lesson you have noticed that one of the ant children is behaving strangely... in fact you're pretty certain that this ant is not a real ant at all, it's a robot ant! Choose a willing child to role play being the robot ant and say that you are going to test out his or her robot powers by sending them on a mission to collect some food for the colony. Explain that robots are not human so they cannot think for themselves. Robots rely on computers that are programmed to give them instructions.

Can they think of any 'robots' in their own home that carry out tasks based on instructions which have been programmed into them by a computer? (For example the washing machine/fridge/dishwasher etc.) These instructions have a special name - algorithms.

Say that now, with the help of the class, you are going to write instructions for the robot ant's journey. Ask the robot ant to shut his or her eyes whilst you reveal to the rest of the class where the food is hidden.

What kinds of instructions will we need to make sure the robot ant reaches the food? Take suggestions and scribe on the board, for example: move forwards five steps, turn left by 90 degrees, move backwards two steps then stop. Deliberately allow mistakes to be made and review the instructions carefully (computer programmes call this 'debugging' the program) until the robot ant reaches the goal successfully. Pairs of children could now work together writing instructions on whiteboards and taking turns to 'program' each other to go to agreed

locations. They should learn that only precise instructions will get them to the right place. If they make a mistake, ask them to check their instructions and 'debug' any errors. A large space such as the hall or playground with cones or markers would work best for this activity.

If your school has a set of Bee-bots, you could disguise these as ants (using a bit of imagination!) and challenge the children to program instructions (algorithms) which take them to different locations.

Once pairs of children have written their programs they could challenge the rest of the class to use logical reasoning to 'guess' where the instructions will take the Bee-bot. Were their predictions correct?

Again, the children may need to 'debug' their programs if the Bee-bots go the wrong way!


Personal Goals

- Communication
- Cooperation
- Enquiry
- Respect
- Thoughtfulness

Science Task 9

Learning Goals

1.01 Know that scientific enquiry involves asking questions, collecting evidence through observation and measurement

 1.02 Be able to pose simple scientific questions

 1.03 Be able to identify ways of finding out about scientific issues

 1.05 Be able, with help, to gather information from simple texts

1.06 Know about the basic conditions needed for living things to survive

1.08 Know that living things grow and reproduce

1.12 Understand that different locations support different living things

1.14 Know the names and characteristics of a range of animals



Research activity

Like ants and humans, honeybees also work together to provide food for their community.

On a sunny day, you might spot some bees in the school grounds. Look among the flowers that are in full bloom. Observe the bees' behaviour but don't get too close. Take videos or photographs with a camera set to zoom.

Back in the classroom, the children should find out as much as they can about bees, using CD-ROMs, the internet and books.

Remind the children about the strategies discussed in Task 7 for staying safe online and searching the internet for information. Type 'Information about bees (for kids)' into Google and look at some of the search results. Open a website such as:

- kids.sandiegozoo.org/animals/insects/bee – San Diego Zoo offers an engaging websites suitable for children.

Discuss how we can tell that this website offers reliable and appropriate information. For example the URL tells us that it is the zoo's official website, and the content offers engaging well-presented resources with videos and sound effects.

The following videos provide a useful reference point:

- [youtube.com/watch?v=IE-8QuBDkkw](https://www.youtube.com/watch?v=IE-8QuBDkkw) – YouTube has this PBS video that takes an inside look at the honeybee hive. (**Note:** this video plays an advert before starting.)

- [youtube.com/watch?v=sSk_ev1eZec](https://www.youtube.com/watch?v=sSk_ev1eZec) – YouTube has this science video showing the complete metamorphosis from egg to larva to pupa and then adult bee with in real-life footage.

*(To watch a YouTube video in **safe mode**, scroll to the bottom of the page and click on the 'safety' tab which brings up the 'Safety mode' information. Under this section, select the 'on' option, then click 'save')*

Start the children off with some questions or suitable headings for the children to refer to. Encourage the children to add some questions of their own:

- Are all bees the same?
- How are bees suited to their habitat?
- How many body parts, legs and antennae, etc., do they have?
- What do they eat?
- Which habitats do bees prefer?
- How do they fit into the food chain?
- What life cycle do they have?
- What do they do?
- What colour do they 'see' best?
- What is the reason for having a queen bee?

Allocate some space in the knowledge harvest for the children to write up any facts they can find. This could be presented as a mind map, with drawings or photographs from the research. The children could make 'Top Trumps' cards like the ones they made for ants in Task 7. This time instead of making the cards by hand, they could use pictures and information from their internet searches and combine these using your school's word-processing software. To do this you will need to show the children how to download images either by saving them to the 'pictures' folder on the computer or by copying and pasting directly into your word-processing software.

Place a question that has yet to be answered in each box, marked 'Q'. The children could write their responses and stick them at the end of arrows. Add to the mind map as your research progresses.

In addition, the children should find out the following:

- How do bees help flowers?
- How do flowers help bees?

They may need help to put together these two facts and to understand the interdependence of flowers and insects.

They can also find out about the following:

- Do other insects help flowers?

- How do other insects need flowers?

They may need help to put together these two facts and to understand the interdependence of flowers and insects.

They can also find out about the following:

- Do other insects help flowers?
- How do other insects need flowers?



Recording activity

Make a shared picture.

1. Draw around a template of a hexagon to create a honeycomb.
2. Paint large pictures of flowers in colours that bees prefer. Cut them out and stick them onto the picture.
3. Draw, colour and paint and cut out bees and add to the picture, placing some on the honeycomb, some collecting nectar, and some spreading pollen. Consider the different sizes of bees for the different tasks around the hive.

The children could add poems or short stories they have written containing facts about the life of the bees in the hive.

From their research, the children should be able to explain how the habitat and the hive provide for the honeybees' basic needs. They should know what honeybees eat and be able to draw a simple food chain that includes a honeybee. (This might include humans. See Geography Task 1.) They should also be able to explain how the animals and plants in a particular habitat depend on each other. For example, bees fertilize and pollinate flowers, while flowers provide food (pollen and nectar) for bees. In addition to this, the children will have discovered that bees living in a hive also depend on each other.

Mathematics link: ask the children to discuss the properties of hexagonal shapes (six sides and six angles) and practise identifying hexagons from among other shapes.

Personal Goals

- Communication
- Enquiry
- Thoughtfulness

Science Extension Task

Learning Goals

- 1.06 Know about the basic conditions needed for living things to survive
- 1.10 Be able to sort living things into simple groups
- 1.11 Be able to recognise living things in the school environment
- 1.12 Understand that different locations support different living things
- 1.14 Know the names and characteristics of a range of animals



Extension activity

Devise a quiz about insects and other mini-beasts, including the following categories:

Appearance

Each child should make a detailed drawing of one insect or mini-beast (preferably one that can be found locally). They should number each picture and make a separate note of the names of the creatures.

Classifying

With the children, choose the categories you will have and list them.

1. By characteristics

- Does it have wings?
- Does it have a shell?
- How many legs has it got?
- What colour is it?
- How does it move?

2. By habitats

- Underneath rocks or stones
- Near the water
- Inside cracks in the wall
- In the soil

- Underneath leaves

For their chosen creature they should complete the information using the chosen form of classification.

Questions

Each child can now devise three questions about their own creature. They should write these up neatly and place them with their picture.

For example:

- How is this mini-beast suited to its habitat?
- Which living things does this mini-beast depend on?
- How does this mini-beast fit into the local food chain?

The Quiz

The children can now look around the room at the pictures and questions and try to identify the creature and answer the questions about it.

There could be a small prize for the best entry and the most successful set of responses.

ICT link: play 'What am I?'. Once the children have decided on their questions they could take turns to film each other asking their prepared questions as follows: I have six legs, I sometimes have wings, I range in colour from red to black, what am I? These films could be added to the school website or class blog and shared with another IPC school or class. The other class could then email or post their answers online.

Personal Goals

- Communication
- Enquiry
- Thoughtfulness

Geography Learning Goals

Children will:

1.04 Know about the weather and climatic conditions in particular localities and how they affect the environment and the lives of people living there

1.05 Know that the world extends beyond their own locality and that the places they study exist within a broader geographical context



1.12 Be able to use secondary sources to obtain simple geographical information



1.14 Be able to communicate their geographical knowledge and understanding in a variety of ways

Geography Task

Learning Goals

1.04 Know about the weather and climatic conditions in particular localities and how they affect the environment and the lives of people living there

1.05 Know that the world extends beyond their own locality and that the places they study exist within a broader geographical context



1.12 Be able to use secondary sources to obtain simple geographical information



1.14 Be able to communicate their geographical knowledge and understanding in a variety of ways



Research activity

Do humans need insects?

Give the class time to reflect on what is a huge question.

We couldn't survive on this planet without the help of insects. For example, bees are so important for plant pollination (particularly for apples, berries, nuts and other fruits) that without them we would be eating porridge and bread every day!

Bees also provide us with honey. Refer back to your research on honeybees for Science Task 8.

Is honey made in the home or host country? Find out about local suppliers of honey and try to source a sample for the children to taste. Look for honey in local shops and supermarkets – where is this honey made? Does it tell you on the jar? How did this honey get to the shops?

Help the children to trace the production of one jar of honey from the bee to the jar on the shelf in the shop.

Many countries in the world produce local honey. Study the climate and other conditions required using information books and the internet.

The following websites will also provide a useful starting point:

- animals.howstuffworks.com/insects/bee6.htm – HowStuffWorks website explains how honey is made.
- bbka.org.uk/kids – the British Beekeepers' Association website has an informative section on habitats and the importance of bees. A useful site for your own background research.
- foe.co.uk/what_we_do/bee_cause_about_35042 – Friends of the Earth is a UK charity that supports several campaigns to raise awareness of the importance of bees. They also produce a teachers' guide, exploring their importance through facts and suggested classroom activities.
- honey.com/honey-at-home/learn-about-honey/how-honey-is-made – the Honey website features a number of articles and fact sheets about the honey bee, including an overview of how honey gets from the hive to the supermarket.



Recording activity

Ask the children, in small groups, to present a written or oral report including annotated drawings or cartoons to show a step-by-step production process, starting with the bee and finishing in our kitchens. In addition you could challenge some groups to build on previous learning and make short videos or an animation to share with their class.

The type of presentation you decide on should be appropriate for the age and ability of your class.

Personal Goals

- Communication
- Enquiry
- Respect

Geography Extension Task

Learning Goals

1.04 Know about the weather and climatic conditions in particular localities and how they affect the environment and the lives of people living there

1.05 Know that the world extends beyond their own locality and that the places they study exist within a broader geographical context



1.12 Be able to use secondary sources to obtain simple geographical information



1.14 Be able to communicate their geographical knowledge and understanding in a variety of ways



Extension activity

Let's go from the journey of a product (honey) to the journey made by a remarkable insect – the Monarch butterfly.

Find out about the Monarch butterfly and its migration south for the winter. Invite the children to research in books and on the internet. Why does this butterfly migrate?

The following websites will provide a useful starting point:

- kidzone.ws/animals/monarch_butterfly.htm – Kidzone has information and photographs of the Monarch butterfly.
- monarchwatch.org/tagmig/index.htm – Monarch Watch features two maps of monarch butterfly migration, one for fall migration and one for spring migration.

Trace the path of its migration in the autumn from North America, flying thousands of miles south to spend the winter in Mexico and the southern regions of the United States. To give the children an understanding of the distances involved enter the different destinations on Google Earth and watch the planet spin and zoom in to the appropriate location.

Ask the children to draw lots of Monarch butterflies on paper, cut them out and stick them on a map of the world to illustrate the path and direction of their migration.

Find out the average winter temperature for North America and compare this to the winter temperature for Mexico or the southern states. Add this information to the display.

Mathematics link: ask the children to find out the average winter temperature for their host and/or home country and compare this with the winter temperature for Mexico. Show the children how to display their results in the form of a bar chart.



Personal Goals

- Communication
- Enquiry

Art Learning Goals

Children will:

1.01 Know about some of the forms used by artists in their work



1.02 Be able to use a variety of materials and processes



1.03 Be able to suggest ways of improving their own work



1.04 Be able to comment on works of art

1.05 Understand that the work of artists can be seen in a wide variety of places and situations

Art Task

Learning Goals

1.01 Know about some of the forms used by artists in their work

 1.02 Be able to use a variety of materials and processes

 1.03 Be able to suggest ways of improving their own work

 1.04 Be able to comment on works of art



Research activity

Show the children examples of work by famous artists and/or sculptors who have represented flowers or insects in their work.

The following pieces will provide a useful starting point:

- ***Poppies Blooming***, 1873; *The Artist's House at Argenteuil* by Claude Monet, 1873
- ***Sunflowers***, 1888; *Irises* by Vincent Van Gogh, 1889
- ***Moebius Strip***, 1963; *Butterflies II* by Maurits Cornelis Escher, 1950

Consider the following questions:

- Are the images true to life?
- How has colour been used and what colours have been mixed together for effects?
- What materials has the artist used – watercolour, oil, paste, ink, clay, metal?
- Why did they choose this material? For what effect?
- Do you like it? Why? Why not?

Try to link this research to the children's own work and that of other artists. Show the children examples of different techniques using colour, pattern, texture, line, shape and form and compare them. Ask the children: what are the similarities and differences between these styles of art? For example, Escher likes to explore pattern, line, shape and form; whereas Van Gogh likes to explore colour and texture. What are the children's own preferences? Invite them to share their ideas and experiences.



Recording activity

The children can now produce their own piece of art in one of the following ways.

Either:

Take the same flowers or insects as the artist of your choice and ask the children to use them in their own designs. They could try any of the materials available – paint, paint mixed with PVA glue and applied with a spatula, collage, Plasticine, pastels, pen and ink, etc.

Or:

Use the same materials as the artist of your choice, and use them to represent different flowers that are available for the children to look at. The children could use flowers that have been grown and/or studied during the science activities to make this task more personal to them.

Have the children comment on their own and others' work, suggesting different materials that might have worked better, why they felt the material chosen was best, etc. The children should link back to the artists they researched and say why they used particular methods and how their work is similar or different to the work of their chosen artist.

ICT link: use a digital paint package such as 2Simple's 2Paint a Picture (2simple.com) to make digital versions of their paintings. How do these compare with the paintings they created by hand? Which do they prefer/which were easier to execute?

Personal Goals

- Adaptability
- Communication
- Enquiry

Art Extension Task

Learning Goals

1.01 Know about some of the forms used by artists in their work

 **1.02 Be able to use a variety of materials and processes**

1.05 Understand that the work of artists can be seen in a wide variety of places and situations



Extension activity

Create a garden display in the classroom.

Look at garden designs – the work of Monet can give the children some ideas, e.g. incorporating water and a bridge, or look for examples of Japanese art showing tranquil garden scenes. Use all of the art work which the children have produced throughout the unit to create your classroom garden, and add other visual features and effects. For instance, a bowl of water will add a moving reflection. Alternatively, use a mirror or foil to create a similar effect.

Ask the children: how is our garden similar to or different from Monet's garden or a Japanese garden? Compare the use of colour, shape and form.

ICT link: Monet was an impressionist. This means that he painted his 'impressions' of a scene rather than trying to be accurate, like a photograph. Explain that you would like the children to create their own digital impressions of a tranquil garden scene. To do this they will use their internet research skills to find pictures of gardens that they like and combine them into a mosaic/collage. Take suggestions of how they could go about making a digital collage. Recap previous learning on how to search for information on the internet using key words. Show the children how to search for images only using Google. Model how to use the left and right mouse click buttons to first open up the image and then copy/paste it into Word or an equivalent program. Depending on the ability of the class, you could then either show the class how to format the images so that they can be combined into a digital collage on the computer or the children could print out their photos and stick them together on card. Show the children how to save their documents into a class folder on the network along with their names. If the school owns iPads you could also look at creating digital collages using an iPad app such as PicCollage (pic-collage.com).



Personal Goals

- Communication
- Cooperation
- Thoughtfulness

Music Learning Goals

Children will:

1.02 Know a number of other pieces of music

1.03 Know how a number of musicians including some from their home country and the host country use musical elements to create different effects and for different purposes

 **1.04 Be able to recognise and explore ways in which sounds can be made, changed and organised**

 **1.06 Be able to play simple rhythms with a steady beat**

1.10 Be able to listen carefully to pieces of music and comment on them

1.13 Understand that musical elements can be used to create different effects

Music Task

Learning Goals

1.02 Know a number of other pieces of music

1.03 Know how a number of musicians including some from their home country and the host country use musical elements to create different effects and for different purposes

 **1.04 Be able to recognise and explore ways in which sounds can be made, changed and organised**

 **1.06 Be able to play simple rhythms with a steady beat**

1.10 Be able to listen carefully to pieces of music and comment on them

1.13 Understand that musical elements can be used to create different effects



Research activity

Play the *Flight of the Bumblebee*, by Nikolai Rimsky-Korsakov. Ask the children to listen carefully – can they tell you what insect this music describes? Someone is bound to guess the right answer!

The following website provides a sample of this music and is a useful starting point:

- classicsforkids.com/music – Classics for Kids website features music samples, biographies of composers and information about the orchestra.

Ask the children to try to identify the different instruments or sections of the orchestra. Which instruments make them think of a bee?

If possible, listen to the *Flight of the Bumblebee* played on different instruments, e.g. piano and trumpet. This piece is often played by musicians as a virtuoso performance because of its fast tempo. How does the tempo describe the bee? Ask the children to discuss the mood of the music and how it makes them feel.

Encourage the children to listen with concentration to identify how the music changes – at the beginning, the middle and the end – in tempo, pitch and duration.



Recording activity

Listen to the music again and invite the children to clap or sing in time to the music. Encourage them to use their voices expressively and creatively to represent the movement or 'flight' of the bumblebee. Ask the children to choose a simple instrument, e.g. maracas, tambourine, drum, and encourage them to follow the beat. In small groups, the children could select a few different instruments (including the 'voice' as an instrument) and then create and combine the sounds to produce a layered piece of music. If iPads are available some children could play along with GarageBand (apple.com/uk/ios/garageband) selecting one of the digital instruments offered in the software. Children can also explore their feelings about the music using movement and dance. Can they imagine they are bees?

As appropriate for your class, you could ask the children to draw pictures, write poems and stories or create costumes that have been inspired by the music.

Language Arts link: tell the children that the *Flight of the Bumblebee* is from a fairytale opera called *The Tale of Tsar Saltan* – it is played in the part of the opera where a prince disguises himself as a bee. Read a children's version of the story to your class.

- *The Tale of Tsar Saltan*, by Alexander Pushkin, Dial, 1996

Personal Goals

- Communication
- Cooperation

Music Extension Task

Learning Goals

1.02 Know a number of other pieces of music

1.03 Know how a number of musicians including some from their home country and the host country use musical elements to create different effects and for different purposes

1.10 Be able to listen carefully to pieces of music and comment on them

1.13 Understand that musical elements can be used to create different effects



Extension activity

Think about how other insects move, e.g. butterflies gracefully fluttering their wings, or ants scuttling close to the ground.

Ask each of the children to select an untuned instrument and to play it in an expressive way that represents the movements of different insects. Remind the children that their own 'voice' is also an instrument that they could choose to use for this task.

Now think about flowers. How do they move? They start as a small closed bud, then open slowly petal by petal until we see a flower in full bloom. Can the children choose and play an instrument expressively and creatively to represent this process?

Ask the children to find a partner, someone who is using a different instrument, so that together they can work on combining the sounds to produce a layered effect.

You could make recordings of the children's performances for the exit point.

Personal Goals

- Communication
- Cooperation
- Thoughtfulness



Society Learning Goals

Children will:

- 1.02 Know some of the rules of groups to which they belong
- 1.06 Understand that they belong to a number of groups (e.g. family, school, nation)

Society Task

Learning Goals

- 1.02 Know some of the rules of groups to which they belong
- 1.06 Understand that they belong to a number of groups (e.g. family, school, nation)



Research activity

Pose the question – where can we find insects? Lead the children to the conclusion that insects are found everywhere on Earth even in the coldest place in Antarctica – and even in our homes.

Now talk about the insects that people keep as pets, e.g. stick insects and ants (some classrooms have an ant farm). What special conditions do these insects require? How can they be safely cared for or housed? What would they eat?

The following websites provide good background information:

- keepinginsects.com/stick-insect/faq – the Keeping Insects website has lots of information on popular insect pets, including stick insects and ants.
- yourpet.tv/stick-insect-care – Your Pet provides informative articles on all aspects of stick insect care.

Children may have pets of their own (even insect pets!). Invite them to share their experiences of caring for a pet. What do they need? How do we care for them? Compare and contrast the needs of other domestic animals (such as cats, fish, hamsters and dogs etc.) with caring for an insect.

Do they think insects would make good pets? Encourage them to explain their reasoning.



Recording activity

Ask the children to imagine that a friend is thinking about keeping an insect as a pet. What advice would they give them? In pairs or small groups, the children should list the advantages and disadvantages of keeping an insect (drawing on ideas from the whole-class discussion). Once they have created their two lists, allow time for the groups to decide on whether they would recommend keeping an insect as a pet – and any further advice they might give to their friend.

Children can present their final conclusions to the rest of the class. Discuss any differences in opinion, encouraging the children to be respectful of other people's views. Encourage groups to try and persuade those who may have differing opinions using reasoned argument.

Is it possible to reach a whole-class consensus – do insects make good pets?

Personal Goals

- Communication
- Respect
- Thoughtfulness

Society Extension Task

Learning Goals

- 1.02 Know some of the rules of groups to which they belong
- 1.06 Understand that they belong to a number of groups (e.g. family, school, nation)



Extension activity

Divide the children into small groups and ask them to recall how ants and honey bees live in large nests or hives containing thousands of other ants and honey bees. Refer back to the Science section.

They should discuss the following:

- How they help each other
- How they do different jobs

Encourage the children to compare the ants' colony or beehive to their town or city. Are there any similarities?

The ants and honey bees work to help each other. Invite the children to think about the people who help them.

Ask the children to draw a picture of themselves on a large sheet of paper. Around them they should draw all the people who help them, e.g. teacher, doctor, bus driver, fireman, farmer, shopkeeper, hairdresser, and so on.

ICT link: ask the children to use web cams or digital cameras to take a picture of themselves (a 'selfie'). Remind them how to download the photos to an agreed location on their computers. Show the children how to open their word processing software and use the 'insert' menu to import the pictures into a word document. Show the children how to create titles for the document using different fonts, colours and effects. The children could then print out the photos and draw all the people who help them around the photo, or older children could research these on the internet and paste the images around the central photo, adding captions.



Personal Goals

- Communication
- Respect
- Thoughtfulness

International Learning Goals

Children will:

1.01 Know that children within the class and school have different home countries

1.02 Know the names and approximate locations of the home countries of children within the class (and/or school)

1.03 Know about some of the similarities and differences between the lives of children in the different home countries and in the host country

 **1.04 Be able to respect one another's individuality and independence**

 **1.05 Be able to work with each other where appropriate**

International Task

Learning Goals

1.01 Know that children within the class and school have different home countries

1.02 Know the names and approximate locations of the home countries of children within the class (and/or school)

1.03 Know about some of the similarities and differences between the lives of children in the different home countries and in the host country



1.04 Be able to respect one another's individuality and independence



1.05 Be able to work with each other where appropriate



Research activity

Following on from the earlier learning in the unit exploring how different habitats support different flowers and insects (i.e. ant farm, school grounds, bee hive), explain to the children that this happens on a bigger scale across the world.

Do we find the same flowers and insects in every country?

Discuss how different countries are able to support different flowers and insects.

Make a list of some of the common flowers and insects of the host country. Are these found in the children's home country? Children may need to ask at home, or use books to find out the answers.

If not, why not? Talk about climate and weather patterns.

Invite the children to describe and name the different seasons in their country and talk about how the weather and/or the length of the day changes at different times of the year. (Refer back to Science Task 2.) For example, do we find more flowers and insects such as butterflies and bees in summer when the weather is warmer and fewer flowers and insects in winter when the weather is colder?



Recording activity

Ask the children to create a garden scene to represent their home country. Their scene should include some of the different flowers and insects that might be found there - and use labels to help an observer to identify these.

Create a wall display out of the children's garden scenes. As fun game, you could create a nature hunt by displaying the names (and/or pictures) of some of the flowers and insects included in the children's work. Children can then try and spot the different flowers/insects by exploring the wall display, and record the country where they were found.

Afterwards, discuss what the children learned about the different flowers and insects. Are there any conclusions that can be drawn. For example:

- Which flowers/insects are only found in hot, dry countries?
- Are there flowers/insects that like to live where it is cold?
- Which flowers/insects can we find all over the world?

If you wish, children could perform additional research to test their theories and find out more about particular flowers and insects.

Language Arts link: help the children to make an A to Z of flowers and insects. For example: A for Ant, B for Bluebell, C for Caterpillar, D for Dahlia, and so on. Invite the children to add drawings and pictures to illustrate each entry.

Personal Goals

- Communication
- Enquiry
- Thoughtfulness

International Extension Task

Learning Goals

- 1.01 Know that children within the class and school have different home countries
- 1.02 Know the names and approximate locations of the home countries of children within the class (and/or school)
- 1.03 Know about some of the similarities and differences between the lives of children in the different home countries and in the host country



- 1.05 Be able to work with each other where appropriate**



Extension activity

Tell the class that some trees or flowers can have special significance as emblems for different countries. For example, in Western European countries mistletoe, holly, ivy and fir trees are symbols of Christmas; and in Japan, every month has its special flowers.

Ask the children to think about the flowers that have a special significance in the host country. Do some flowers have a particular meaning? Invite the children to think about the flowers that are used in festivals or religious celebrations in the host country.

Try to source and bring in to the classroom some of the flowers from the home country that the children have researched.

You could take photographs, draw pictures and press some of the flowers. Encourage the children to annotate the images and create a scrapbook of the flowers that have a special significance in the host country.

ICT link: You can share the children's work with another IPC school around the world, to compare and discuss the significance/meaning of flowers in other countries. Online presentation tools such as Prezi (prezi.com) or Pinterest (pinterest.com) are ideal for uploading and sharing images.

Personal Goals

- Adaptability
- Communication
- Respect

The Exit Point

Celebrate the children's learning at the end of this unit by having an Ugly Bug Ball.

Encourage the children to dress up as either insects or flowers. Or create small models instead and role-play the ball using the models.

The children could write invitations to each other on leaf-shaped pieces of card. Help them to source appropriate music or create some of their own using ideas from the Music tasks.

The following suggestions will provide a useful starting point:

- [youtube.com/watch?v=XXSOJH4KmZw](https://www.youtube.com/watch?v=XXSOJH4KmZw) – YouTube hosts this 'sing-along' version of Disney's 'Ugly Bug Ball', with lyrics in the video description.
- [youtube.com/watch?v=HYWycl8vR5c](https://www.youtube.com/watch?v=HYWycl8vR5c) – YouTube has this Ants in Your Pants song and video for kids by Eric Herman Music.

*(To watch a YouTube video in **safe mode**, scroll to the bottom of the page and click on the **safety** tab which brings up the **'Safety mode'** information. Under this section, select the **'on'** option, then click **'save'**)*

Invent dances with insects partnering flowers, and fun games with insects and flowers on opposing teams.

Encourage the children to create themed refreshments, e.g. chocolate-coated ants (raisins), beetles made from liquorice, carrots cut into flower shapes, green-coloured drinks, etc.

The children could make a photo-blog or a podcast about their Ugly Bug Ball for the school website, telling their parents and other classes what they have learned from this unit.

The IPC community would love to see examples of your learning, in any subject, at any stage in the learning process. If you have any pictures or stories you would like to share please visit our Facebook page at [facebook.com/InternationalPrimaryCurriculum](https://www.facebook.com/InternationalPrimaryCurriculum), tweet [@The_IPC](https://twitter.com/The_IPC) or email stories@greatlearning.com

Resources

For this unit, you will need some, but not necessarily all, of the following:



Equipment

- Poems about gardens, flowers and insects
- Reference material on insects and flowers in the host country, including ants and bees
- Copies of famous works of art of flowers, insects and gardens
- White fresh-cut flowers or sticks of celery
- Beans and seeds (e.g. grass seeds) that grow quickly
- Vegetable tops
- Shoe boxes
- Modelling material, glue and modelling dough
- String and wooden pegs or stakes
- Flat, waterproof trays
- Cotton wool
- Dark paper
- Empty, clean egg shells
- Jars
- Absorbent paper
- Sawdust
- Chicken wire
- Newspaper and paste
- Paint
- Papers, tissue paper, card, thin sticks
- Magnifying glasses
- Digital microscopes
- Bee-bots (optional)

- Paint, PVA glue, spatulas, pastels, etc.
- Pieces of fabric and sponge
- Costumes, music and refreshments for the Ugly Bug Ball
- Video camera or camcorder
- Digital camera
- CD ROM encyclopaedia

Software:

- Photo editing software such as **iPhoto** or **Windows Photo**
- Google Earth (earth.google.com)
- Graphing and database software such as Microsoft's Chart Wizard and Excel
- Graphics software such as Dazzle (indigolearning.com) or RM Colour Magic (rm.com)
- Stop-motion or time-lapse software (optional) such as I Can Animate (kudlian.net/products/icananimatev2/Home.html)
- Database software (optional) such as Textease Branch CT (rm.com/shops/whatwedo/Product.aspx?cref=PD3756602)
- Digital paint package (optional) such as 2Simple's 2Paint a Picture (2simple.com/)
- Digital collage app (optional) such as PicCollage (pic-collage.com)
- Music software (optional) such as GarageBand (apple.com/uk/support/macapps/garageband/)
- Word cloud software such as Wordle (wordle.net/create) or Word Salad (wordsaladapp.com)



Links

<http://www.butterflyschool.org/teacher/raising.html>

Advice on raising butterflies at home or in school.

http://www.bbc.co.uk/schools/scienceclips/ages/5_6/science_5_6.shtml

BBC Schools Science has an interactive game for children aged 5-6 called Growing Plants.

http://www.bbc.co.uk/schools/scienceclips/ages/6_7/science_6_7.shtml

BBC Schools Science has an interactive game for children aged 6-7 called Plants and Animals in the Local Environment.

<http://www.thinkuknow.co.uk/teachers/>

CEOP's Thinkuknow programme provides a range of free educational resources - films, lesson plans, presentations, practitioner guidance, games and posters - to professionals working with children and young people.

<http://www.classicsforkids.com/music>

Classics for Kids website features music samples, biographies of composers and information about the orchestra.

http://www.ducksters.com/biography/artists/vincent_van_gogh.php

Ducksters has a biography, information and images of Van Gogh's famous paintings.

http://www.foe.co.uk/what_we_do/bee_cause_about_35042

Friends of the Earth is a UK charity that supports several campaigns to raise awareness of the importance of bees. They also produce a teachers' guide, exploring their importance through facts and suggested classroom activities.

http://www.kidzone.ws/animals/monarch_butterfly.htm

Kidzone has information and photographs of the Monarch butterfly.

<http://www.insectlore.co.uk/education/>

Live butterfly kits can be ordered through this website.

<http://www.monarchwatch.org/tagmig/index.htm>

Monarch Watch features two maps of monarch butterfly migration, one for fall migration and one for spring migration.

<http://http://kids.nationalgeographic.com/videos/>

National Geographic has a number of videos about ants (type 'ants' into the search box).

<http://www.pedagonet.com/Insectlopedia/lsp/lns.html>

Pedagonet.com has a huge range of insect lesson plans and resources for teachers.

<http://www.pestworldforkids.org/pest-guide/ants/>

Pestworld For Kids offers fun and educational facts for children, teachers and parents.

<http://kids.sandiegozoo.org/animals/insects/bee>

San Diego Zoo offers an engaging websites suitable for children.

<http://www.bbc.co.uk/nature/life/Ant>

The BBC Nature website features videos and images of ants from around the world.

<http://www.bbka.org.uk/kids/>

The British Beekeepers' Association website has an informative section on habitats and the importance of bees. A useful site for your own background research.

<http://www.honey.com/honey-at-home/learn-about-honey/how-honey-is-made/>

The Honey website features a number of articles and fact sheets about the honey bee, including an overview of how honey gets from the hive to the supermarket.

<http://www.keepinginsects.com/stick-insect/faq/>

The Keeping Insects website has lots of information on popular insect pets, including stick insects and ants.

http://www.tooter4kids.com/classroom/insect_poetry.htm

Tooter 4 Kids website has insect poems featuring a cricket, a caterpillar, an ant and a mosquito plus a song and an insect rap.

<http://en.wikipedia.org/wiki/Ant>

Wikipedia website has photographs and detailed information about ants.

<http://www.yourpet.tv/stick-insect-care/>

Your Pet provides informative articles on all aspects of stick insect care.

<http://www.youtube.com/watch?v=HYWycl8vR5c>

YouTube has this Ants in Your Pants song and video for kids by Eric Herman Music.

<http://www.youtube.com/watch?v=IE-8QuBDkkw>

YouTube has this PBS video that takes an inside look at the honeybee hive.

http://www.youtube.com/watch?v=sSk_ev1eZec

YouTube has this science video showing the complete metamorphosis from egg to larva to pupa and then adult bee with in real-life footage.

<http://www.youtube.com/watch?v=7AUeM8Mbalk>

YouTube has this time-lapse video showing the complete life cycle of the Monarch butterfly.

<http://www.youtube.com/watch?v=XXSOJH4KmZw>

YouTube hosts this 'sing-along' version of Disney's 'Ugly Bug Ball', with lyrics in the video description.



Books

The Secret Garden Walker Illustrated Classics, by Frances Hodgson Burnett, illustrated by Inga Moore, Walker Books, 2009

The Tiny Seed, by Eric Carle, Puffin, 1997

The Very Hungry Caterpillar, by Eric Carle, Puffin, 2002

Eddie's Garden, by Sarah Garland, Frances Lincoln, 2006


Bugs and Insects Spotter's Guide, by Anthony Wootton, Usborne, 2006

The Tale of Tsar Saltan, by Alexander Pushkin, Dial, 1996



INTERNATIONAL PRIMARY CURRICULUM

 27-28 Clements Lane, London EC4N 7AE

 +44 020 7531 9696

 info@greatlearning.com

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