

Spring Block 1

Plants (light and dark)

Small steps

Step 1

Explore plants

Step 2

Plant parts

Step 3

What do plants need to grow?

Step 4

Plan – light and dark

Step 5

Investigate – light and dark

Key resources

Step 1 - Explore plants

- real-life examples (or images) of different plants including fruit, vegetables and herbs
- hand lenses



Step 2 - Plant parts

- images (or real-life examples) of a wide range of plants and trees
- hand lenses



Step 3 - What do plants need to grow?

- seeds
- living plants (or images of living plants)
- dead plants (or images of dead plants)



Step 4 - Plan - light and dark

- plant pots
- seeds
- soil
- trowels
- watering cans



Key resources

Step 5 - Investigate - light and dark

- plant pots
- seeds
- soil
- trowels
- watering cans
- dark area
- light area



Explore plants

Notes and guidance

In this small step, children have the opportunity to explore a wide range of plants. They should closely observe a diverse selection of plants, which can include flowering plants, fruit, vegetables and herbs. They should sort and group these plants using different criteria or categories. For example, they could group plants based on their colour, smell or other physical features.

It is important to note that depending on the local area, children may not have access to a wide variety of growing plants. However, teachers can bring plants into the classroom to ensure that children can still sort and group them in different ways. This step also recaps Year 1 content, where children learnt to identify and name familiar flowering plants and trees.

Things to look out for

- Children may have preconceived ideas about what a plant is. They may not classify fruit, vegetables or herbs as plants. Show children images of these plants so they can see how these parts of a plant grow.
- Children may think that trees are not classified as plants.

Key questions

- What is similar about these plants?
- What is different about these plants?
- How did you group the plants?
Can you group them another way?
How many ways can you think of?
- What are fruits?
- What are vegetables?
- How many fruits and vegetables can you name?

National curriculum links

- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- **Working scientifically** – Observing closely, using simple equipment

Explore plants

Key vocabulary

- **plant** – a living thing that usually grows in soil



- **flower** – the part of a plant that blooms



- **fruit** – a part of a plant that contains seeds



- **vegetable** – a part of a plant that can be eaten as food, such as a stem, root or leaf



- **herb** – a plant that can be used to flavour food



Practical ideas

- Children should observe plants closely using hand lenses. They should then sort and group these plants in different ways based on a range of categories. Examples include size, leaf shape, colour, smell or other physical similarities or differences.
- Use secondary sources to explore how parts of some plants can be eaten, including vegetables, herbs and some fruit. Show children a range of familiar fruits, vegetables and herbs to allow them to understand how these parts grow.



Ensure that allergies are being taken into account if handling or smelling plants.

Factual knowledge

- A plant is a living thing.
- There are many different types of plants.
- Many plants have flowers or fruit.
- Parts of some plants can be eaten.

Plant parts

Notes and guidance

In this small step, children name and identify the parts of common plants and trees. In Year 1, children named and identified the simple parts of flowering plants and spotted some simple patterns between plant parts including colours, sizes and shapes. Within this step, children recap the parts of flowering plants and trees and identify similarities and differences between plant parts. In Year 2, children do not need to identify the function of each plant part as this concept is introduced in Year 3

It is important that children identify the parts of a tree within this step so they understand that trees are also plants. Show children a range of deciduous and evergreen trees when naming the parts.

Things to look out for

- Children may need to recap the terms “deciduous” and “evergreen” from Year 1 to understand that some trees lose their leaves during autumn and winter and some keep their leaves.
- Children may have preconceived ideas about fruit based on the fruit they eat regularly.

Key questions

- Where is the stem/roots/leaves/petals?
- Where is the trunk/branches/leaves/blossoms?
- What is similar/different about these plant parts?
- What patterns can you spot with the petals?
- What is similar between plants and trees?
- What are the differences between plants and trees?
- Are there any similarities between these tree parts and parts of other plants?
- What is different about tree parts and other plant parts?

National curriculum links

- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- **Working scientifically** – Observing closely, using simple equipment.

Plant parts

Key vocabulary

- **blossom** – the flowering part of a tree



- **stem** – the long and thin part of a plant which sits above the soil



- **leaf** – the flat, green part of a plant that grows from the stem or branch



- **trunk** – the main stem of a tree



- **branch** – the part of a tree that grows from the trunk



Practical ideas

- Children could use images or real-life examples of plants to identify the main parts of flowering plants and trees.



Once they have identified the parts of a plant, children could sort and group images or real-life examples of plants based on different categories. Give children examples of categories to help them sort and group.

- Which plants have branches and which do not?
- Which plants have petals and which do not?

Challenge children to think of their own categories for grouping and sorting.

Factual knowledge

- Trees have roots, a trunk, branches and leaves.
- Many trees have blossom or fruit.
- Flowering plants have roots, a stem, leaves and petals.

What do plants need to grow?

Notes and guidance

In this small step, children explore the conditions plants need in order to grow. The national curriculum states that children should identify that plants need water, light and to be kept at the correct temperature in order to grow and stay healthy. Within this step, children focus on how plants need water and light to grow. They will look at temperature within the summer plant block.

Children look at the best conditions for growth for seeds. They should be given the opportunity to observe the seeds in detail and make accurate observations using hand lenses. Within this step, children should understand that some plants grow from seeds and that seeds need water and the correct conditions to grow. Children do not need to understand the germination process in this step, as this is covered in Year 3. This step introduces the enquiry question for this block.

Things to look out for

- Children may think that all seeds grow into the same plants. Show children some examples of different seeds and pictures of the plants they grow into.
- Children may think that the seed consumes the soil to begin its life cycle.

Key questions

- Why do plants need water?
- What happens if plants do not receive enough water?
- How does water help plants grow?
- Why do plants need sunlight?
- What happens if plants do not receive enough sunlight?
- How does sunlight help plants grow?

Enquiry question

- Do plants grow healthier in the light or dark?

National curriculum links

- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- **Working scientifically** – Asking simple questions and recognising that they can be answered in different ways.

What do plants need to grow?

Key vocabulary

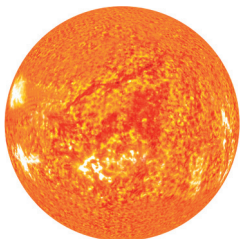
- **seed** – a part of a plant that can grow into a new plant



- **plant** – a living thing that usually grows in soil



- **sunlight** – the light from the Sun



Practical ideas

- Show children a living plant and a dead plant.



Ask them to discuss the difference between the two plants.
Discuss with children why one plant may have died.

Children should identify that this plant may not have been watered regularly or received enough sunlight.

- Take children outside in their local area to see if there are any plants that are growing.

Discuss with children how plants that grow outside get enough light and water to grow.

Factual knowledge

- Plants need water to grow and stay healthy.
- Plants need light to grow and stay healthy.
- If plants do not have water and light, they may become weak and not grow properly.

Plan – light and dark

Notes and guidance

In this small step, children plan a comparative test to explore whether plants grow healthier in light or darkness. During this investigation, they will plant seeds and provide one plant pot with access to sunlight, while the other should be kept in the dark. Children should make regular observations of the plants' growth throughout the term to make comparisons. To maintain consistency, both plants should be kept indoors at the same temperature. At this stage, children do not need to specifically measure or control the temperature, as this is addressed in the summer term.

In this step, children plan their investigation and determine what they will change and keep the same. They should also create a schedule for observations to ensure both plants are regularly monitored for any changes.

Things to look out for

- Children may think that plants do not need any light at all to grow.
- Children may think that all plants need the same amount of light. This is not the case, as some need strong, direct sunlight while others do not.

Key questions

- What do plants need to grow and stay healthy?
- How can we make sure one plant gets sunlight and the other does not?
- How often should we observe the plants?
- What things should we keep the same for both plants?
- What will we change?
- What do you think will happen to the plants?

Will the plant in the light or the one in the dark grow better?

Why?

Enquiry question

- Do plants grow healthier in the light or dark?

National curriculum links

- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- **Working scientifically** – Asking simple questions and recognising that they can be answered in different ways.

Plan – light and dark

Key vocabulary

- **independent variable** (what will change) – the amount of light the plant receives



- **dependent variable** (what will be measured) – the growth of the plants, the height of the plants



- **controlled variables** (what is kept the same) – the number of seeds in a pot, the amount of water the plant receives, the amount of soil in the pots



Equipment needed

- plant pots
- trowels
- seeds
- soil



Practical activity

- Put children in small groups.
Give each group the equipment needed for the experiment.
Children should identify what the equipment is and why it is used within the experiment.

Planning sentence stems

- I predict that ...
I think this will happen because ...
- We are changing the _____ .
- We are measuring the _____ .
- We are keeping the _____ the same.

Investigate – light and dark

Notes and guidance

In this small step, children carry out a comparative test to explore whether plants grow healthier in the light or dark. Children should work in small groups and each group should be given two pots for planting. One pot should be placed in a well-lit area, where it has access to sunlight, while the other pot should be kept in a dark area, with minimal exposure to light.

Children plant their seeds in each pot, ensuring that they are given equal amounts of soil and water. Throughout the experiment, children should regularly observe their plants to ensure that they are noting down any changes between the two plant pots. They should make careful observations and measurements, noting down any changes they observe over time. They will make conclusions in the second “light and dark” block later in the term.

Things to look out for

- Children may think that plant growth will happen over a short period of time, such as overnight. Explain to them that plant growth can take days or weeks before any changes above the surface of the soil are visible.
- Ensure that the seeds are not overwatered as this will affect plant growth.

Key questions

- What do you predict will happen to the plants in the light?
- What do you predict will happen to the plants kept in the dark?
- Why is it important to water both plants?
- How often will you water both plants?
- How much water will you give to both plants?
- What will you change?
- What will you keep the same?

Enquiry question

- Do plants grow healthier in the light or dark?

National curriculum links

- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- **Working scientifically** – Performing simple tests.

Investigate – light and dark

Key vocabulary

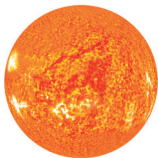
- **seed** – a part of a plant that can grow into a new plant



- **plant** – a living thing that usually grows in soil



- **sunlight** – the light from the Sun



- **compost** – a type of soil



Equipment needed

- plant pots
- trowels
- seeds
- soil



Method

1. Put children in small groups.
2. Give each group two plant pots, soil, seeds and a trowel.
3. Add the same amount of soil into each pot. Children do not need to measure the mass of the soil but can add the same amount of soil using the trowel, for example.
4. Add the seeds to the soil.
5. Cover the seeds with a thin layer of soil.
6. Decide the amount of water each pot will receive and how often the seeds will be watered.
7. Place one pot in a classroom environment next to a window for maximum sunlight.
8. Place the second pot in a dark area such as a box or in a dark cupboard.
9. Regularly observe the pots and record any changes over time.

Spring Block 3

Plants (light and dark)

Small steps

Step 1

Findings – light and dark

Key resources

Step 1 - Findings - light and dark

- two plants: one grown in the dark and one grown in the light
- rulers or tape measures
- cubes to show differences in plant growth



Findings – light and dark

Notes and guidance

In this small step, children look at their findings for the comparative test they started in Block 1. They observe changes between the plant kept in the light and the one kept in the dark. Children should compare the two plants and suggest simple reasons for these differences. They may need to recap what a plant needs in order to stay healthy. Children do not need to look at how temperature affects plant growth, as this is something they will investigate in the summer term.

Within this step, there are opportunities for children to measure and compare the growth of both plants using appropriate measurements. They should decide how they will measure the length of the plants using equipment, such as rulers. Children should provide an answer for the enquiry question within this step.

Things to look out for

- Depending on the outcome of the investigation, the plant which has been kept in the dark may have grown as tall as the plant with access to light. Ensure that children are looking at the overall health of the plant when discussing their findings.

Key questions

- What do plants need to grow and stay healthy?
- What happened to the plant kept in the dark?
- What happened to the plant that was given sunlight?
- How are the plants different now?
- What happened to the plants over time?
- How did you measure the height of the plants?
- Do plants need sunlight to grow and stay healthy?

Enquiry question

- Do plants grow healthier in the light or dark?

National curriculum links

- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- **Working scientifically** – Gathering and recording data to help in answering questions.

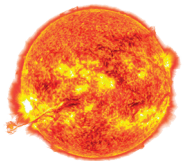
Findings – light and dark

Key vocabulary

- **plant** – a living thing that usually grows in soil
- **seed** – a part of a plant that can grow into a new plant



- **sunlight** – light from the Sun



- **living** – something that needs air, shelter, food and water to survive



- **dead** – something that was once living but is now not alive



Practical ideas

- Ask children to comment on the appearance of their plants kept in the light and in the dark.

Encourage them to identify any differences in plant growth between the two plants.

Children can measure the height of each plant as well as discussing any differences in appearance.

- Children could create a short presentation to explain how the plants kept in the light and dark have grown over time.

They could present their group's findings to the rest of the class.



Factual knowledge

- Plants need water to grow and stay healthy.
- Plants need light to grow and stay healthy.
- If plants do not have water and light, they may become weak and will not grow properly.