

## How is the science curriculum organised?

The science curriculum is organised around Biology, Physics and Chemistry with working scientifically embedded across all of the unit of work. Working scientifically is ever present within the curriculum design ensuring the children have the disciplinary knowledge required to think and work as a scientist.

## How are key strands of learning used?

The key strands within the science curriculum add a further layer of knowledge and understanding to the children's learning. Carefully selected strands provide the children with cumulative knowledge over time around key aspects. This cumulative knowledge will allow the children to understand wider themes to a greater level, being able to reason with thoughts and language. This allows the children to engage in topics of conversation and feel confident with their own knowledge and understanding of these areas. It is through these key strands of learning that the children will be able to recognise and link to other subjects.

Science						
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
<b>KS1 Cycle A</b>	Living Things and their Habitats		Materials (y1)	Material (y2)	Plants (y1)	Plants (y2)
<b>KS1 Cycle B</b>	Animals, including Humans (y1)	Animals, including Humans (y2)	Animals, including Humans (y1)	Animals, including Humans (y2)	Seasonal Change	
<b>LKS2 Cycle A</b>	Living Things and their Habitats	States of Matter	Animals, including Humans (y3)	Animals, including Humans (y4)	Electricity	
<b>LKS2 Cycle B</b>	Rocks	Light	Forces and Magnets	Sound	Plants	

KS2.CA.T3	Area of study: Plants  Unit aims / outcome: <ul style="list-style-type: none"> <li>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves, flowers.</li> <li>Explore the requirements of plants for life and growth (air, light, water, nutrients from the soil, and room to grow and how they vary from plant to plant.</li> <li>Investigate the way in which water is transported within plants.</li> <li>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>	
Geographical concepts to organise knowledge: <b>Biology-</b> the study of living organisms <b>Working Scientifically-</b> disciplinary knowledge required to think and work as a scientist.		
Key strands of learning:		
Hierarchical Strands: (see progression) e.g. plants (Build year on year)	Cumulative Strands: e.g. environment (key features throughout NC)	
Learning in Reception:  I know what happens in Autumn and Winter in my environment and wider environment. I know what happens in the Summer in my environment and the wider environment. I know how to care of our environment. I understand why it is important to look after where we live. I know ways in which we can help other environments (not just where we live).	Tier 2  <u>New</u> Pollination Nutrients Fertiliser Stigma Anther Function transportation  <u>Review -</u> Roots Stem Leaves Trunk flowers	Tier 3  <u>New</u> Seed dispersal Seed formation  <u>Review</u>
NC objective:	Vocabulary and crucial knowledge:	
	<u>Context of study:</u>  This unit builds on the knowledge of plants that the children learnt in (KS1.CA.T3) The children should know the parts of a plant and the parts of a tree. Furthermore, they should understand what plants need to survive and the difference between seeds and bulbs. Children will also have some understanding of living things and their habitats (KS1.CA.T1) and will know that plants like humans and animals are living things and need certain things to survive. Children will learn more about the parts of a plant and the	

functions they do. Children will learn about the process of pollination and the part it plays in the life cycle of a plant.

Crucial Knowledge:

**Structure of a plant**

To know that a flowering plant has four main parts: roots, stem/trunk, leaves and flowers.

I know that the roots of a living plant take in the nutrients and water from the soil.

I know that the stem or the trunk give the plant structure.

I know that the leaves gather the sunlight and turn it in to oxygen (photosynthesis)

I know that the flower (blossom) allows bees to collect the pollen and seeds to grow to make new plants. (reproduction)

**Plants**

To know that plants need air, light, water to survival (recap from KS1)

To know that plants also need nutrients from the soil and room to grow.

To understand that some plants grow in pots and others in wider spaces in the ground.

To know that nutrients are substances found in food to help plants grow and stay healthy.

To investigate how water is transported in plants and understand that the roots and stem facilitate this.

To know that the roots absorb the water from the soil, the stem transports the water to the leaves, the unused water leaves the plant through the leaves, the used water is used to help the plants grow.

**Reproduction**

To know that the flower causes the plant to produce more seeds and then more flowers

To know reproduction means to give birth to offspring, new life.

To know that the inside the flower is an ovary which produces the new seeds.

To know the pollen at the end of the anther and stigma is where the reproduction starts.

To know that a plant life cycle is continuous.

To know that pollination is when the animals or wind carry the pollen from one place to another and this is called seed dispersal.

To know that these seeds/pollen reaches new plants, where they fertilise in the ovary to make new seeds.

To know the new seeds then germinate and grow which is called seed formation.

To know the plant then grows into an adult plant, grows need pollen and seeds and the process starts again.

Working Scientifically:

Fair testing:

To explore how water is transported around the plant.

How will I be a scientist?

- Plan: add food colouring the water and see what happens to the plant
- Observe: over time what happens to the flower of the plant and see what impact the food colouring has if any.
- Record: what happened over a period of time and write a conclusion based around the observations. The children should then be able to explain how water and nutrients travel around a plant.

Fair testing:

To explore how water, light, air and the right space for the plant to grow has an impact on how quickly the plant grows.

How will I be a scientist?

- Plan: a fair test to understand what plants need to grow.
- Set up: Children have four different plants, each one will be in a different sized pot. Children will give the seeds the same amount of water, time and air but will also put them in different places with different temperatures. (In KS1 children looked at water and light which is why we are experimenting with space to grow and temperature this time).
- Observe: which of the plants grows the best of the space of 6 weeks.
- Measure: how tall the plants have grown after each week.
- Record: their heights and how healthy each plant looks.