

**Our Lady of Perpetual Succour  
Catholic Primary School**

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**Science Policy**



*We learn to love everyone as Jesus loves us*

## **Intent**

At Our Lady's our Science curriculum is intended to challenge all children to gain a strong understanding of the world around them through the disciplines of biology, chemistry and physics. All pupils should be taught essential aspects of the vocabulary, knowledge, methods, processes and uses of science. Children are encouraged to develop a sense of excitement and curiosity about natural phenomena, by using practical investigative skills and by applying scientific concepts to answer their own and others' questions.

The five principles that make science good in Our Lady's are:

- that it is practical.
- that it uses enquiry.
- there are high quality resources.
- it is challenging.
- it is exciting for the children.

## **Implementation**

### **How is Science Planned For?**

The science curriculum is planned into Our Lady's Curriculum, linking with other topic areas and areas of learning. It is based on National Curriculum objectives so topics are progressive and sequential over the course of Key Stages or phases.

From each topic we plan lessons based on the ASE's PLAN matrices to ensure that suitable challenge and pitch are in place, enabling pupils to achieve as highly as possible.

Big Questions are also planned for each year group and topic, which are used as starters for Science Enquiry and ensure all different types of scientific enquiry are covered. The Big Questions allow for Working Scientifically objectives and skills to be learned through the different types of enquiry, progressing over the course of each Key Stage Phase.

Teachers plan individual lessons based around the medium term plans and using guidance from ASE PLAN documents to ensure that their classes' needs are met, and that sufficient challenge is present.

### **How is Science taught?**

Science is taught for an average of 1.5 hours per week in timetabled sessions by the class teacher.

Where possible science should be taught using practical science enquiry. Practical enquiry allows children to answer their own and others' questions about the world using practical skills (working scientifically).

Each class has a set of "Big questions" for each topic they must answer using a variety of science enquiry types, allowing them to develop their working scientifically skills.

In EYFS, children start Science in school by Understanding the World. This is taught through play and activities linked to their topic, using the ASE PLAN documents as a template, that develop children's curiosity and encourages them to ask questions about things in the world around them. These are organised into the same strands as KS1 and link to both the EYFS curriculum and are a precursor for the KS1 curriculum.

## **How we monitor, evaluate and assess teaching and learning in Science:**

Subject leaders are continuously monitoring their subject to ensure that it meets the needs of our pupils. Senior Leaders also monitor each curriculum subject. This is done through:

- Learning walks
- Book scrutiny
- Lesson observations
- Pupil surveys and discussions
- Staff surveys and discussions.

Science is assessed through teacher assessments. We assess children's work in science by making informal judgements as we observe them during lessons and as we feedback on the work in their books. The class teacher is responsible for assessing all areas of science and logging the progress of each child using O'Track to assess against each of the objectives taught. We use ASE's PLAN documents as exemplification to show age-related expectations, and teachers compare work to this when assessing.

### **Impact**

Our focus on exceptional science education has a positive impact on our children, allowing them to develop a deep understanding of scientific concepts and acquire essential scientific knowledge, skills, and understanding. Our engagement with the local environment ensures that children learn through varied and first-hand experiences of the world around them, make connections between scientific concepts and the world directly around them.

The impact of our science curriculum is evident in the enthusiasm, engagement, and motivation demonstrated by our children. They actively participate in lessons, displaying curiosity, resilience, and a desire to explore and experiment. As a result, our children's confidence in their scientific abilities grows, leading to improved self-esteem and a belief in their potential as scientists.

We foster a culture of scientific literacy, enabling our children to articulate scientific ideas, ask relevant questions, and reason scientifically, empowering them to be critical thinkers and confident communicators. Moreover, our children develop a strong awareness of the ethical implications of science, understanding the role of science in making informed choices that align with our Catholic values.

As a result of our high expectations for our children's attainment and progress in science, and our assessment system which robustly measures and evaluates pupils' progress, our children are expected to achieve excellent outcomes in science, and most of each year group achieve the expected age-related standard by the end of the year.

**Signed:**

**Chair of Governors**

**Date:** September 2024

**Review:** September 2026

## Appendix 1 – Science Topic Overview

	<u>Reception</u>	<u>YEAR 1</u>	<u>YEAR 2</u>	<u>YEAR 3</u>	<u>YEAR 4</u>	<u>YEAR 5</u>	<u>YEAR 6</u>
<u>Autumn 1</u>	Ourselves	Plants and Seasonal Changes	Materials	Animals including humans – Diet, skeletal system.	Electricity	Earth and Space	Electricity
<u>Autumn 2</u>	Little Red Riding Hood/ The Nativity	Materials	Plants	Forces & Magnets	Animals including Humans - the digestive system	Light	Animals Including Humans – The circulatory system.
<u>Spring 1</u>	Rainbow Fish	Materials	Living things and their habitats	Rocks and Soils	States of matter	Forces	Evolution and Adaptation
<u>Spring 2</u>	Whatever Next	Animals including Humans,	Living things d their habitats	Rocks and Soils	States of matter	Forces	Animals and their habitats – Classification
<u>Summer 1</u>	The Naughty Bus	Animals including Humans,	Animals including Humans	Light and Shadows	Sound	Animals including humans – Growing and Ageing	Changing States
<u>Summer 2</u>	Travels with Barnaby	Plants Seasonal Changes	Materials	Plants	Living things and their habitats	Living things and their habitats	Changing States

## Appendix 2 - Big Question Map

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	<p>How can we sort the leaves that we collected on our walk? – Identifying and Classifying</p> <p>Do trees with bigger leaves lose their leaves first in autumn? – Pattern Seeking</p>	<p>Which materials are the most flexible? – Comparative testing</p> <p>What happens to materials over time if we bury them in the ground? – Observing over time</p>	<p>Which materials are the most absorbent? – Comparative testing</p> <p>Which materials can be recycled? - Research</p>	<p>What are the names for all the parts of our bodies? – identifying and classifying</p> <p>How are the animals in Australia different to the ones that we find in Britain? - Research</p>	<p>How can we organise all the zoo animals? identifying and classifying</p>	<p>Which tree has the biggest leaves? – comparative testing</p> <p>How does my sunflower change each week? – Observing Over time</p> <p>Which type of compost grows the tallest sunflower? – comparative test</p>
Year 2	<p>Which materials are shiny and which are dull? – identifying and classifying</p> <p>Which material would be best for a waterproof coat? Comparative testing</p>	<p>Do cress seeds grow quicker inside or outside? – comparative testing</p>	<p>How would you group these plants and animals based on what habitat you would find them in? – identifying and classifying</p> <p>Which habitat do worms prefer – where can we find the most worms? – Pattern Seeking</p>	<p>How does the habitat of the Arctic compare with the habitat of the rainforest? – Research</p> <p>What conditions do woodlice prefer to live in? - Pattern Seeking</p>	<p>Which offspring belongs to which animal? – Identifying and Classifying</p> <p>What food do you need in a healthy diet and why? – Research</p> <p>How much food and drink do I have over a week? – Observing over time</p>	<p>Which shapes make the strongest paper bridge? – comparative testing</p> <p>How long do bubble bath bubbles last for? – Observing over time</p> <p>Are metal materials always rigid? – pattern seeking</p>
Year 3	<p>How does the angle that your elbow/knee is bent affect the circumference of your upper arm/thigh? – fair testing</p> <p>How do the skeletons of different animals compare? – identifying and classifying</p>	<p>Which materials are magnetic? – identifying and classifying</p> <p>Does the size and shape of a magnet affect how strong it is? – pattern seeking</p> <p>How does the mass of an object affect how much force is needed to make it move? – fair testing</p>	<p>Is there a pattern in where we find volcanoes on planet Earth? – pattern seeking</p>	<p>Who was Mary Anning and what did she discover? - research</p> <p>Which soil absorbs the most water? - comparative testing</p> <p>Can you use the identification key to find out the name of each of the rocks in your collection? - identifying and classifying</p>	<p>How does the distance between the shadow puppet and the screen affect the size of the shadow? – fair testing</p> <p>When is our classroom darkest? – observing over time</p> <p>How would you organise these light sources into natural and artificial sources? - identifying and classifying</p>	<p>Which conditions help seeds germinate faster? – comparative testing</p> <p>How do flowers in a vase change over time? – observing over time</p> <p>What are all the different ways that seeds disperse? - research</p>
Year 4	<p>Which metal is the best conductor of electricity? – comparative testing</p> <p>How long does a battery light a torch for? – observing over time</p>	<p>What are the names for all the organs involved in the digestive system? – identifying and classifying</p> <p>How does an egg shell change when it is left in different drinks? – comparative testing</p>	<p>How does the mass of a block of ice affect how long it takes to melt? – fair testing</p> <p>Does seawater evaporate quicker than fresh water? – comparative testing</p> <p>Can you group these materials and objects into solids, liquids,</p>	<p>Is there a pattern in how long it takes different sized ice lollies to melt? - pattern seeking</p> <p>How does the level of water in a glass change when left on the windowsill? - observing over time</p>	<p>How does the volume of a drum change as you move further away from it? – fair testing</p> <p>Which material is best to use for muffling sound in ear defenders? – comparative testing</p>	<p>Can we use the classification keys to identify animals we have studied? – identifying and classifying</p> <p>How do people affect habitats both positively and negatively and what effect does that have? - research</p>

		How can we organise teeth into groups? - identifying and classifying	and gases? – identifying and classifying	How does the surface area of a container of water affect how long it takes to evaporate? - fair testing	Is there a link between the size of a string and the pitch? What about the size of a drum? Pattern Seeking	How do seasons change the animals that live in certain habitats? - Research
Year 5	<p>Can you identify all the phases in the cycle of the Moon? – identifying and classifying</p> <p>Is there a pattern between the size of a planet and the time it takes to travel around the Sun? – pattern seeking</p> <p>How is astronomer and planetary scientist Sara Seager changing our ideas about the universe? - research</p>	<p>How does the distance of an object from the light source affect its shadow size? Fair testing</p> <p>Which material is most reflective? – comparative testing</p> <p>How does my shadow change over the day? – observing over time</p>	<p>How does the surface area of a parachute affect the time it takes to fall to the ground? – fair testing</p> <p>Which shoe is the most slippery? – comparative testing</p>	<p>Can you label and name all the forces acting on the objects in each of these situations? – identifying and classifying</p> <p>Do all objects fall through water in the same way? pattern seeking</p>	<p>Who grows the fastest, girls or boys? – comparative testing</p> <p>Is there a relationship between a mammal’s size and its gestation period? – pattern seeking</p> <p>Why do people get grey/white hair as they get older? – research</p> <p>Are the oldest children in our school the tallest? – pattern seeking</p> <p>How does age affect a human’s reaction time? Fair Testing</p>	<p>Compare this collection of animals based on similarities and differences in their lifecycle. – identifying and classifying</p>
Year 6	<p>How does the voltage of the batteries in a circuit affect the brightness of the lamp? – fair testing</p> <p>Does the temperature of a light bulb go up the longer it is on? – observing over time/pattern seeking</p> <p>Which make of battery lasts the longest? comparative testing</p>	<p>How does the length of time we exercise affect our heart rate? – Fair testing</p> <p>What is the most common eye colour in our class? – comparative testing</p> <p>Which organs of the body make up the circulation system, and where are they found? Identifying and classifying</p>	<p>Is there a pattern between the size and shape of a bird’s beak and the food it will eat? – pattern seeking</p> <p>What happened when Charles Darwin visited the Galapagos islands? - research</p>	<p>How would you make a classification key for vertebrates/invertebrates or microorganisms? – identifying classifying</p> <p>What happens to a piece of bread if you leave it on the windowsill for two weeks? – observing over time</p> <p>How did Carl Linneaus’ ideas help us to group plants? - research</p>	<p>How does a nail in salt water change over time? – observing over time</p> <p>How does the temperature of water affect how long it takes for a sugar cube to dissolve? – Fair testing</p>	<p>Are all granulated materials soluble? - Comparative testing.</p> <p>How does a container of salt water change over time? - observing over time</p>