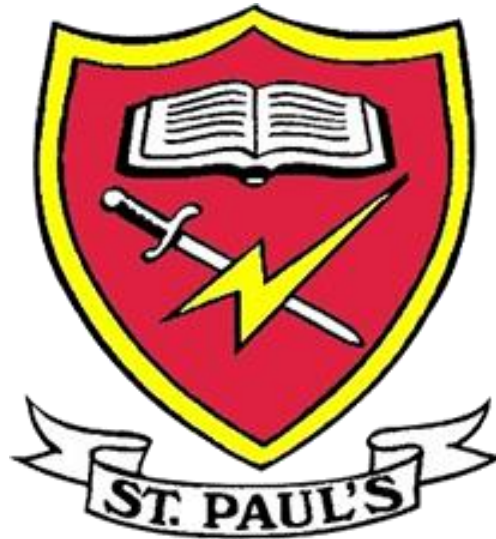
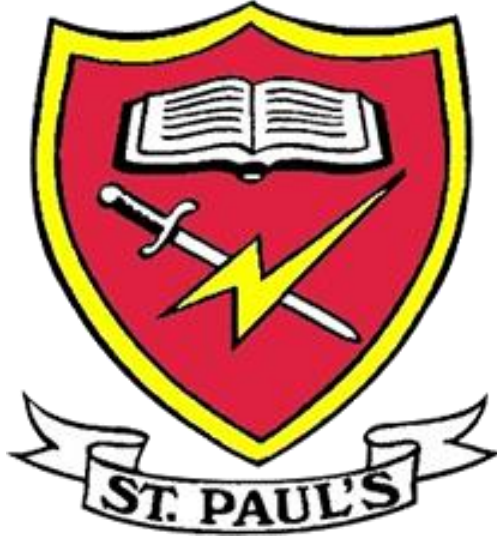


Science Intent Implementation and Impact at St Paul's



The national curriculum for science aims to ensure that all pupils:

- Develop **scientific knowledge** and **conceptual understanding** through the specific disciplines of biology, chemistry and physics.
- Develop understanding of the **nature, processes and methods of science** through **different types of science enquiries** that help them to answer scientific questions about the world around them.
- Are equipped with the scientific knowledge required to understand the **uses and implications of science, today** and for the future.



At St Paul's, we aim for our pupils to enjoy Science, show inquisitiveness and enquire about the world around them. It is our intention to enthuse children in Science and provide them with the passion, skills and knowledge to last beyond their time at St Paul's.

Intent

From reception to Year 6, we encourage children to ask questions and be curious about their surroundings, both within the contexts of science and as part of the wider curriculum. We praise **Inquisitiveness and Enquiry** regularly as our school features of DESIRE

Implementation

Enquiry and Inquisitiveness is encouraged, not just in science, but in all areas of the curriculum and praised regularly both in class and as part of St Paul's people and qualities of DESIRE.

Determination

Enquiry

Stamina

Inquisitiveness

Resilience

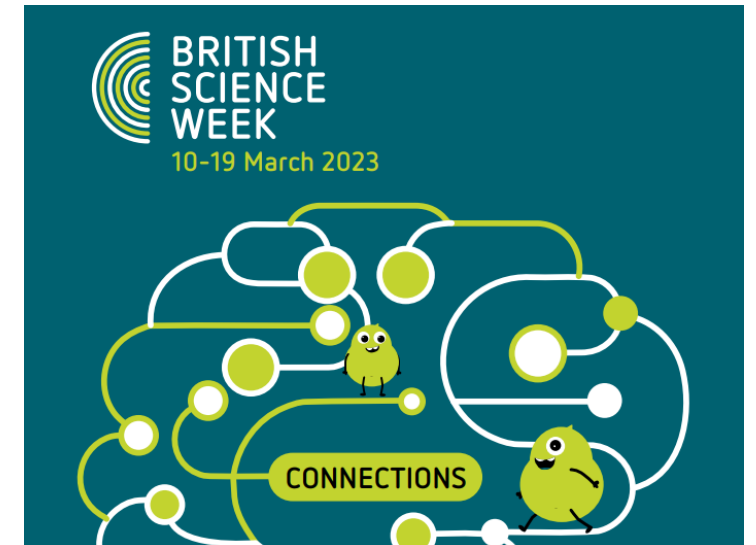
Enjoyment

Intent

We foster a respect and love for science by highlighting the importance of **science in society**; understanding how **scientific discoveries and significant individuals changed our lives and how science is vital today and for the world's future prosperity**. Where appropriate, links are made to **Catholic Social Teaching** and the importance of caring for God's creation.

Implementation

Links are made to scientific discoveries and **significant individuals** who changed our lives and highlight how science is vital today and for the world's future prosperity.



Intent

Throughout our programme of study, the children will acquire and develop the **key knowledge** that has been identified within each unit and across each year group, as well as the application of **scientific skills**. We assess **prior learning** and **misconceptions** as a foundation for our teaching to support children to **build on prior knowledge** and develop a secure understanding of the knowledge and concepts taught in each topic.

The **Working Scientifically skills** are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments and explaining concepts confidently.

Implementation

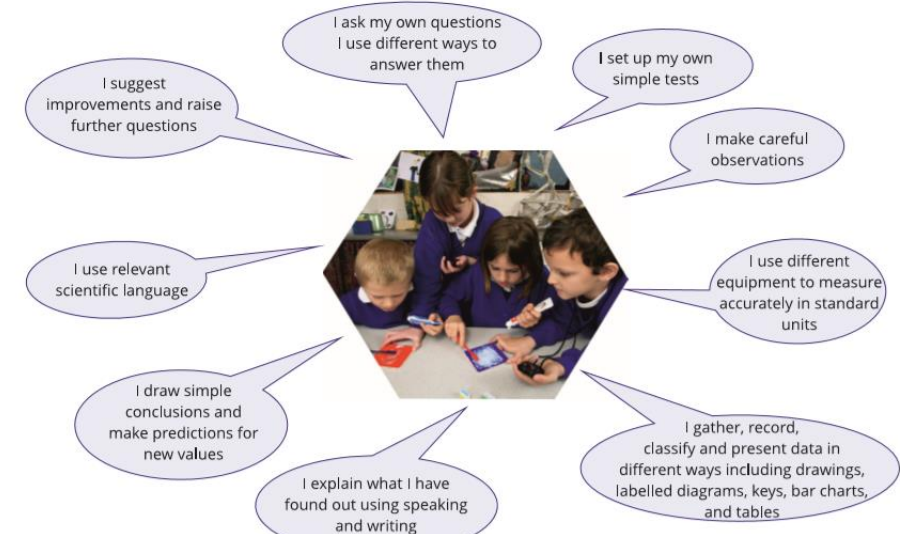
- **Adequate time** is dedicated to regular teaching of Science which is appropriate to each key stage.
- Lessons are engaging and follow the **school's curriculum map** to build on children's prior learning. Lessons break down the necessary knowledge children need to develop into manageable steps.
- Teachers are secure in their **subject knowledge** including common misconceptions linked to each topic. They demonstrate understanding confidently, modelling use of technical and scientific terminology and strongly encourage all pupils to use specific topic related vocabulary.

St Pauls Catholic School Science Topics Overview						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception Topics and Skills Understanding the World	Healthy eating Teeth What do we see in Autumn? COPSE – 1 day once a week	Light and dark What do we see in Winter? Shows care and concern for living things. Make observations of animals. COPSE – 1 day once a week	Frozen or melted Ice – How can we melt ice fast? Shows care and concern for living things. Makes observations of animals.	Growing seeds CST Best surface for rain Living things & quabod habitats Discuss similarities and differences quabod Farm visit	Mini beasts CST Ginning a butterfly What do we see in Spring? What is a quabod ? Explaining quabod that crawl quabod . That can fly, without legs, with legs Living things & their habitats. Discuss similarities quabod . Habitats, woodland, rainforests, Polar habitat, Climate change	Does it float or sink? Design and make boats to move Floating and sinking What do we see in Summer?
See Scientific Skills progression document						
Year 1 Cycle (2021-22 2023-24 2025-26)		Life cycles(Yr2) Animals including humans CST Notice that animals, including humans, have offspring which grow into adults. <ul style="list-style-type: none"> Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Buddibug Farm visit in Summer term	Plants (Year 2) CST <ul style="list-style-type: none"> Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. 	Seasonal changes Yr1 <ul style="list-style-type: none"> Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies. 	Body Parts/Exercise/Keeping healthy (animals including humans) CST Describe the importance for humans of exercise, eating the right amounts of different types of foods, and hygiene.	
Year 2 Cycle	Animals, including humans-senses (Yr1) <ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Buddibug Farm visit in Summer term	Everyday materials Yr1 <ul style="list-style-type: none"> Distinguish between an object and the material from which it's made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties. 		Living things and their habitats Yr2 CST <ul style="list-style-type: none"> Explore and compare the differences between things that are living, dead, and things that have never been alive Identify that most living things live in habitats in which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including micro-habitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. 		Green plants, Variation and classification (Plants Yr1) <ul style="list-style-type: none"> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees. Investigation skills (Be a scientist – see above) To include wide range of science. Use of everyday materials (Yr 2) <ul style="list-style-type: none"> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
See Scientific Skills progression document						
Year 3 Cycle (2021-22 2023-24 2025-26)	Light <ul style="list-style-type: none"> Recognise that they need light in order to see things and that dark is the absence of light Notice that light is reflected from surfaces Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by an opaque object 	Rocks <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock Recognise that soils are made from rocks and organic matter 	Animals including Humans CST Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. <ul style="list-style-type: none"> Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Link to rainforests (Yr4) <ul style="list-style-type: none"> Recognise that environments can change 	Plants CST <ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explain the way that flowers also in the...	Forces and Magnets <ul style="list-style-type: none"> Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of... 	Forces and Magnets <ul style="list-style-type: none"> Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of...

Implementation

- Teachers demonstrate how to use **scientific equipment**, and the various **Working Scientifically skills** in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings **by accessing outdoor learning and organising school trips**.
- Working Scientifically skills** are embedded into lessons to ensure these skills are being developed throughout the children's school career. New vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.
- Questioning** is used to develop children's thinking skills and support long term retention of key knowledge.

EYFS relevant statements taken from the Early Learning Goals in the EYFS statutory framework	Working Scientifically			
	Communication and Language	Personal, Social and Emotional Development	Understanding the World	
	Pupils should be taught to: <ul style="list-style-type: none"> Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts ELG Make comments about what they have heard and ask questions to clarify their understanding.	<ul style="list-style-type: none"> Know and talk about the different factors that support their overall health and wellbeing: - regular physical activity - healthy eating - toothbrushing - sensible amounts of 'screen time' - having a good sleep routine - being a safe pedestrian ELG Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.	<ul style="list-style-type: none"> Explore the natural world around them. Describe what they see, hear and feel while they are outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. ELG Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	
Year 1 / 2	Asking Questions	Measuring and Recording	Concluding	Evaluating
	Pupils should be taught to: <ul style="list-style-type: none"> Ask simple questions and recognise that they can be answered in different ways. 	Pupils should be taught to: <ul style="list-style-type: none"> Observe closely, using simple equipment. Perform simple tests. Gather and record data to help in answering question. 	Pupils should be taught to: <ul style="list-style-type: none"> Identify and classify. Use their observations and ideas to suggest answers to questions. 	
Year 3 / 4	Asking Questions	Measuring and Recording	Concluding	Evaluating
	Pupils should be taught to: <ul style="list-style-type: none"> Ask relevant questions and use different types of scientific enquiries to answer them set up simple practical enquiries, comparative and fair tests. 	Pupils should be taught to: <ul style="list-style-type: none"> Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of 	Pupils should be taught to: <ul style="list-style-type: none"> Identify differences, similarities or changes related to simple scientific ideas and processes. Report on findings from enquiries, including oral and written 	Pupils should be taught to: <ul style="list-style-type: none"> Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.



Implementation

- At the start of each topic, children complete a short assessment and write a list of “what I know” and “what I want to find out” to give teachers an initial understanding of the **children’s prior knowledge** and any **misconceptions** which need to be addressed. As well as this, teachers regularly assess children’s understanding in lessons; using **discussion to probe and remedy misconceptions**. At the end of each topic children complete an **assessment**, which teachers use alongside teacher assessment, to record children’s understanding within each topic and against the working **scientifically skills**.

Year 4

Electricity Test 1 (diagnostic)

Name: _____ Class: _____ Date: _____

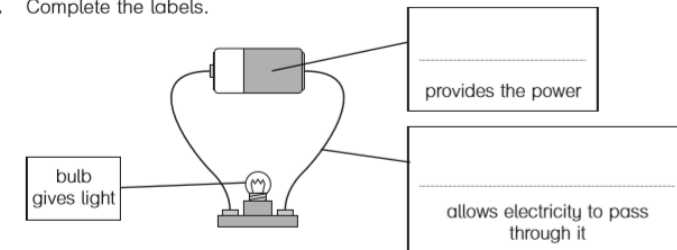
1. Name an object in your home that uses electricity.

KU

☐

1 mark

2. Complete the labels.



KU

☐

2 marks

3. a) Put a cross through the circuit that will not light.



KU

	A1	A2	Spring 1	Spring 2	Summer 1	Summer 2	
SEN/AL/PP/G	States of Matter	Animals including humans	Sound	Electricity	Electricity		Working Scientifically
SEN	WTS	WTS					
	EXC	Sec					
	Sec	Sec	Sec				
	Sec	Sec	Sec				
	Sec	Sec	Sec				
	Sec	Sec	Sec				
	Sec	Sec	Sec				
	Sec	Sec	Sec				
	Sec	Sec	Sec				
	Sec	Sec	Sec				
SEN	WTS	WTS	WTS				
	Sec	Sec	Sec				
	Sec	Sec					
	Sec	Sec					
	Sec	Sec					
	Sec	Sec	Sec				
	Sec	Sec	Sec				

Intent

We aim to make science learning active, engaging and **accessible for all children, taking into account barriers to children's learning and offering opportunities for memorable practical activities and investigations**. These experiences, both in and outside of the classroom, deepen understanding of key concepts and develop children's scientific skills.

Implementation

- Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that **all children** are capable of **achieving high standards in science**.
- Science is **accessible for all children**. Teachers take into account the barriers some children may have and adapt lessons appropriately.
- Children are offered a wide range of **extra-curricular activities, visits, trips and visitors** to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.

Intent

Oracy is an important part of St Paul's and we encourage children to find their voice in science by developing children's speaking skills and build up an **extended specialist vocabulary**. Children should confidently describe key concepts and knowledge taught in their own words, but also be familiar with, and use, technical terminology accurately and precisely.

Implementation

Scientific vocabulary is displayed in the classroom. Opportunities for **oracy** are planned for within lessons and regularly encouraged.

Impact of Science

Science is a high profile subject throughout the school and children understand the importance of science in society. Children at St Paul's are inquisitive and enthusiastic learners who want to find out about the world around them. Through engaging lessons taught by confident teachers, children leave St Paul's with a love of science, alongside the science knowledge and skills needed to succeed in their further education.

