



## *God's Love in Action*

Our children are at the heart of everything we do through **Christian values and relationships**. **Living and learning together** we celebrate the uniqueness and diversity of everyone in our family. We nurture a sense of **self belief, mutual respect and belonging** through Social Emotional Learning and academic excellence. We are dedicated to building the foundations for **happy and successful life-long learning**.

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# Science

## Intent

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## 1. Curriculum Vision

Science at St John's and St Peter's CE Academy is taught with the future of our children in mind. Here, we recognise that with society growing and the world we live in forever changing, the children of St John's and St Peter's need to acquire scientific knowledge, skills and attitudes to prepare themselves for the modern world in which we live. Not all children will want to pursue a career with a scientific background, however we want all children to be equipped with critical thinking skills which allow them to navigate our complex modern world.

Here at St John's, we aim to provide all of our children with a rich and engaging Science curriculum which enables all children to participate in an academic way. Ensuring children have a deep understanding and the opportunities to explore the world around is key to our curriculum. Our curriculum is tailored in a way in which supports the children as the seasons change and they progress throughout the academic year.

We strive for our children to be curious thinkers, so we encourage research-based learning, experiments, observations, key questions and data analysis.

## 2. Curriculum Aims

The aims of our Science Curriculum are:

- To engage children as learners at many levels through linking ideas with practical experience.
- To help children to learn to question and discuss scientific issues that may affect their own lives.
- To help children develop, model and evaluate explanations through scientific methods of collecting evidence using critical and creative thought.
- To show children how major scientific ideas contribute to technological change and how these impact on improving the quality of our everyday lives.
- To help children recognise the cultural significance of science and trace its development.
- To increase the child's knowledge and understanding of the world.
- To develop attitudes of curiosity, originality, co-operation, perseverance, open mindedness, self-criticism, responsibility and independence in thinking.
- To enable children to effectively and confidently communicate their scientific predictions and discoveries as they are given the opportunity to observe, describe, illustrate, hypothesise, evaluate and interpret, using appropriate scientific vocabulary.
- To develop children's understanding of the effects of their actions on the environment.

## 3. National Curriculum

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.

## **Early Years Framework**

### **Understanding the World**

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

### **Personal, Social and Emotional Development**

Children's personal, social and emotional development (PSED) is crucial for children to lead healthy and happy lives, and is fundamental to their cognitive development. Underpinning their personal development are the important attachments that shape their social world.. Through adult modelling and guidance, they will learn how to look after their bodies, including healthy eating, and manage personal needs independently. Through supported interaction with other children, they learn how to make good friendships, co-operate, and resolve conflicts peaceably. These attributes will provide a secure platform from which children can achieve at school and in later life

## **4. Why study Science in this way?**

### **a) Why has this knowledge been selected?**

At All Saints Multi Academy Trust, it is our intention to provide children with a high-quality education and a passion for Science. Our curriculum will enable children to become enquiry-based learners, collaborating through researching, investigating and evaluating experiences. It will encourage respect for living organisms and the physical environment.

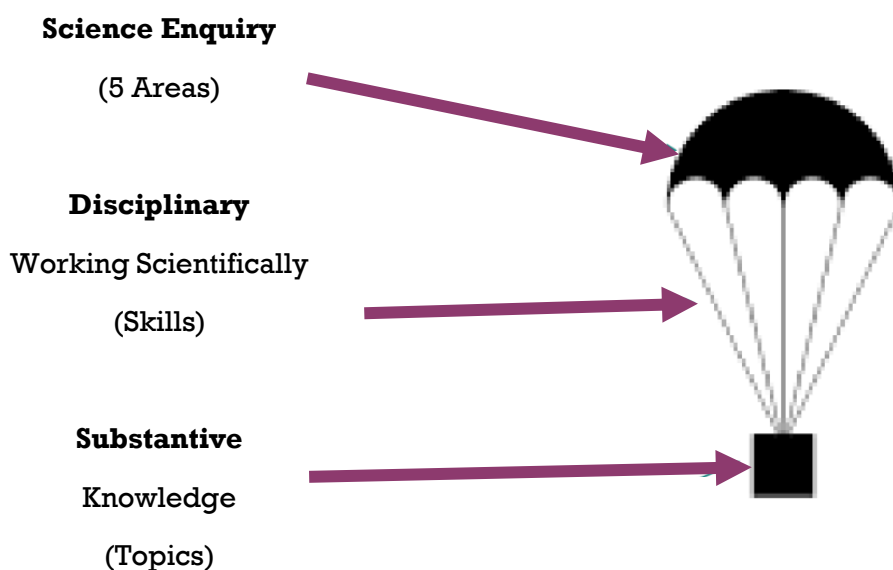
The Science curriculum at St John's has been designed to cover all programmes of study from the National Curriculum. Within the National Curriculum, Science Enquiry is a something we strive to push all of our children to achieve within lessons. These 5 keys areas; Comparative/fair testing – changing one variable to see its effect on another, whilst keeping all others the same, Research – using secondary sources of information to answer scientific questions, Observation over time – observing changes that occur over a period of time ranging from minutes to months, Pattern – seeking – identifying patterns and looking for relationships in enquiries where variable are difficult to control, Identifying, grouping and classifying – making observations to name sort and organise items.

Topics such as Animals Including Humans is taught discreetly under a variety of different unit titles in every year group. This helps the children to develop a fundamental understanding of themselves and their bodies including the systems in which our bodies use to function. Throughout Key Stage 1, children will develop their understanding of a variety of amphibians, reptiles, birds and mammals.

In Key Stage 1, pupils develop their knowledge of plants from the basic skills of identifying and naming a variety of common wild and garden plants, to observing and describing seeds and the planting process. Throughout this key stage, children get multiple opportunities for hands on experience. From planting during different seasons and observing the changes to observing changes when planted under different lighting environment. Then in Lower Key Stage 2, pupils then further their knowledge by identifying and describing the functions of different parts of plants, exploring plant growth,

investigating how water is transported through plants, pollution and seed dispersal and finally the life cycle of flowering plants. Children also get the opportunity to plan, plant and observe the growth of seeds within the summer term. By allowing children to have the practical experience, their knowledge should be embedded in great detail.

Although 'Working Scientifically' is described separately in the National Curriculum Programme of study, we recognise that those Scientific Enquiry skills must be taught through each unit. We aim to equip pupils with the ability to: ask questions; make predictions; plan, set up and perform a test; observe and measure; record information; and conclude and report. A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science..



### b) Why is it taught in this order?

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. The curriculum at St John's and St Peter's has been designed in a way in which benefits the children. Each term is broken down into 12 weeks with some terms having consolidation blocks will allows flexibility. Some blocks may only last a few weeks while others may last the whole half term depending on the small steps needed for that area of learning. Throughout the year, every year group will have a dedicated sustainability learning block. This links in with our whole school initiative of caring for the environment. Each unit is careful matched with the National Curriculum. Across all of the years, there is a heavy focus on biology, with majority of the year groups all looking at topics to do with humans or animals in the autumn term.

Science MTP 2023 -2024																								
St John's Catholic Primary School	Autumn						Spring						Summer											
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10	11	12
Year 1	The Human Body			Seasonal Changes	Materials			Seasonal Changes	Planting A	Animals			Caring for the planet	Seasonal Changes	Planting B	Consolidation	Plants			Planting C	Growing and cooking		Seasonal Changes	Consolidation
Year 2	Animals' need for survival		Humans	Materials			plastic	Plants (light and dark)	Living things and their habitats			Plants (light and dark)	Consolidation	Plants (bulbs and seeds)	Growing Up		Bulbs and seeds	Growing Up	Wildlife	Consolidation				
Year 3	Skeletons	Movement	Nutrition and diet	Food waste	Rocks	Consolidation	Fossils	Soils	Light			Consolidation	Plants A			Forces	Magnets	Plants B	Biodiversity					
Year 4	Group and classify living things	Data collection	States of matter			Consolidation	Sound		Data collection B	Electricity		Energy	Data Collection C	Habitats	Deforestation	The digestive system			Food chains					
Year 5	Forces		Space		Global Warming	Consolidation	Properties of materials	Animals including humans		Life cycles		Reproduction A	Reversible and irreversible changes		Plastic Pollution	Reproduction B	Consolidation							
Year 6	Living things and their habitats			Electricity			Renewable energy	Light		Light pollution	The circulatory system	Diet, drugs, and lifestyle	Variation	Adaptations		Fossils	Consolidation	Year 7 themed projects						

### c) How are Science lessons taught at St John's?

Science lessons are taught weekly for up to ninety minutes by the class teacher. It is taught every week in every year group with the units varying in length depending on the content and small steps. Each lesson begins by focusing on a re-capping prior learning to support the children in retaining their knowledge and understanding. This is completed through a 'Do Now' activity. These tasks can be a simple retrieval activity based on prior learning or using visual stimulus from Explorify. After children have completed a 'Do Now' activity, children are given four minutes to complete a 'Flashback 4'. This is where children are given four questions, based on any previous scientific knowledge. At a mid-point of the lesson to check understanding children will be asked a hinge question.

All units are resourced to a high standard as we believe children should be able to have a practical yet informative experiences within their lessons. This is often done through investigation lessons. All staff also strive to give our children the best educational visits/workshops by using a compact guide from our Science Lead. We strongly believe that hands-on experience allows children to move their knowledge into the long-term memory.

Science Week is an initiative which initially comes from the British Science Association which is something we have been taking part in since 2021. BSA sets the theme for the week, and as a school we adapt it to suit the needs our our children. During Science Week, Science is taught for three whole afternoons. Our Science lead, gives all classes suggestions for each afternoon but the class teacher will have the overall say in regards to what happens within each afternoon. Children also have the opportunity to take part in completing a voluntary Science project at home, which is judged in school, with many prizes to be won. The finale of science week usually means the children can come to school dressed as anything Science related and each class has the opportunity to showcase their learning from the week in Devotion. This is a real celebration of all things Science!