

St John the Baptist

Curriculum Vision

Subject: Science



Vision

Our aim is that children leave our school with a passion for science, alongside the curiosity and inquisitiveness that science promotes. Children rarely see themselves as scientists, and therefore we aim to equip them with the skills and self-belief that they can actually become a scientist themselves.

Context

As a school we want to raise the aspirations of our children and for them to be aware of the world of work. We want children to know of the career opportunities in science, and be able to relate science skills to everyday jobs. Therefore, we aim to enthuse them by making science real and exciting, through using the local secondary school's lab facilities, inviting scientists into school, and visiting the Life Centre.

Therefore, in EYFS...

During EYFS, children explore the natural world and find out about the plants and animals in their local environment, which involves planting seeds and caring for growing plants. They also observe how plants change and explore growth and decay and will understand the key features of the life cycle of a plant and an animal. Children begin to understand the need to respect and care for the natural environment and all living things. They learn about the features of woodland animals and explore how wild animals differ from pets. They learn about nocturnal animals and their features and are introduced to the phenomenon of shadows. Children will begin to learn about the seasons, seasonal change and the weather. Children use all their senses in hands-on exploration of natural materials and collections of materials with similar and/or different properties. They will talk about the differences between materials and changes they notice, and develop their understanding of materials and their properties.

They explore and talk about different forces they can feel and begin to learn about the phenomena of floating and sinking, and develop their scientific knowledge of freezing and melting.

By the end of EYFS children will:

have explored how things work and talk about and describe what they see, using a wide vocabulary. Using these skills, they will begin to describe, predict and investigate.

In KS1...

Children will learn about materials and their properties when studying the project, Everyday Materials. In the Human Senses project, they learn about parts of the human body and those associated with the senses. In the project Seasonal Changes, they learn broadly about seasonal changes linked to weather, living things and day length and will revisit some of this learning in the project, Plant Parts. They will also link back to their knowledge about body parts and senses and identifying commonalities, throughout the project Animal Parts. With the project, Human Survival, children will learn about the survival needs of humans, before expanding to study animals within their habitats in the project Habitats. Building on previous learning, children learn about the uses of materials in the project, Uses of Materials, and begin to understand changes of materials through simple physical manipulation, such as bending and twisting. The Plant Survival project also explores survival, with children observing what plants need to grow and stay healthy followed by thinking about what animals need for survival.

By the end of KS1 children will:

have experienced and observed phenomena, having looked more closely at the natural and humanly-constructed world around them, show curiosity, asking questions about what they have noticed, developed understanding of scientific ideas through the use of different types of scientific enquiry to answer own questions, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative tests and finding things out using secondary sources of information, and beginning to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.

In LKS2...

Having learned about human body parts, the senses and survival in Key Stage 1, children now focus on specific body systems and nutrition in Key Stage 2. They learn about the skeletal and muscular system, which links to other animals and involves identifying similarities and differences and they will also learn about healthy diets. Children learn about the

digestive system and make comparisons to other animals. Properties of materials are revisited, with children identifying magnetic materials and learning about the non-contact force of magnetism. They also begin to learn about contact forces, investigating how things move over surfaces. Science learning about rocks and soils is delivered through the geography project Rocks, Relics and Rumbles. Children begin to link structure to function, identifying the plant parts associated with reproduction and water transport. They are introduced to the subject of light, with children learning about shadows and reflections, revisiting and building upon language from Key Stage 1. They are introduced to the concept of sound, with children identifying how sounds are made and travel. They learn and use new vocabulary, such as pitch and volume, and identify properties of materials associated with these.

In the project, States of Matter, children learn about solids, liquids and gases and their characteristics. They understand how temperature drives change of state and link this learning to the project Misty Mountain, Winding River, in which children learn about the water cycle. In the project Grouping and Classifying, children explore classification keys. Children study electricity and build on their knowledge of the properties of materials, identifying electrical conductors and insulators.

By the end of LKS2 children will:

have broadened their scientific view of the world around them through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living and non-living things and familiar environments and by beginning to develop ideas about functions, relationships and interactions. They will ask their own questions about what they observe and will be able to make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They will draw simple conclusions and uses some scientific language, and write about what they have found out. They will also read and spell scientific vocabulary correctly and with confidence, using their growing word and spelling knowledge

In UKS2...

Children broaden their knowledge of forces, including gravity and air and water resistance, in the project Forces and Mechanisms. They revisit previous learning from design and technology projects, to explore various mechanisms and their uses. Their knowledge of gravity supports the project Earth and Space, so they can understand the forces that shape planets and our solar system. They also develop their understanding of day and night, first explored in the Year 1 project Seasonal Changes. Having learned that animals and plants produce offspring, and studied plant and animal life cycles, children now focus on the human life cycle and sexual reproduction in the project, Human Reproduction and Ageing. In the project Properties and Changes of Materials, children revisit much of their prior learning about materials' properties and learn new properties, including thermal conductivity and solubility. They also extend their learning to irreversible changes, including chemical changes. The final body system children learn about is the circulatory system and its roles in transporting water, nutrients and gases in the project, Circulatory System. Children also build on their knowledge about electrical circuits from Year 4, now learning and recording standard symbols for circuit components and investigating the function of components and the effects of voltage on a circuit. Children recognise that light travels in straight lines from a source or reflector to the eye and explain the shape of shadows. They learn about inheritance and understand why offspring are not identical to their parents. They also learn about natural selection and how this can lead to the evolution of a species.

By the end of UKS2 children will:

have developed a deeper understanding of a wide range of scientific ideas through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. They will have encountered more abstract ideas and are beginning to recognise how these help them to understand and predict how the world operates. Children will begin to recognise that scientific ideas change over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative fair tests and finding things out using a wide range of secondary sources of information. They will also be able to draw conclusions based on their data and observations, using evidence to justify their ideas and their scientific knowledge and understanding to explain their findings.

Developing spirituality and British Values

Throughout science lessons, children are able to develop their spirituality by looking for meaning and purpose in natural and physical phenomena, through asking questions to fulfil their own natural curiosity. Children will develop their ongoing sense of awe and wonder, that science promotes, and will recognise the importance of caring for nature and living things. British Values are promoted in science in a range of ways, that include taking turns and instructions from others, understanding safety rules when working scientifically, recognising that scientific discoveries have come from other cultures, working as a team, offering support and advice to others and discussing results and findings. Opportunities are also provided for children to use their creativity in their learning, making choices when working scientifically.