

SACRED HEART CATHOLIC PRIMARY SCHOOL

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Jesus said, "I chose you, and appointed you to go and bear much fruit." (John 15:16)



Science Curriculum

Intent

At Sacred Heart, Science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. We aim to nurture our pupils' natural curiosity, encouraging them to ask questions about the world around them. We encourage them to explore the impact of science in the modern world and in turn understand the importance it has on their own lives. Key scientific knowledge is explicitly taught (directly taught) and common misconceptions are addressed ensuring a secure acquisition of knowledge.

Pupils are expected to understand and confidently use key scientific vocabulary, building up an extended specialist vocabulary. At Sacred Heart, pupils work scientifically through exciting and engaging practical investigations. Scientific enquiry is key to deepening our pupils' scientific knowledge and skills (conceptual understanding) and helping them to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. At Sacred Heart, pupils have many opportunities to observe over time, notice patterns, identify, classify and group, undertake fair and comparative testing as well as researching using secondary sources.

Aims:

- to develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- to 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.
- to be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Implementation

At Sacred Heart, a knowledge progression document has been created to ensure that the school gives full coverage of, 'The National Curriculum programmes of study for Science 2014' This document ensures that the acquisition of knowledge is sequential and progressive, building on prior learning. It also contains key learning, vocabulary, possible misconceptions and ways to work scientifically.

The progression document forms the basis for teachers' planning. Using the progression document, teachers develop a knowledge organiser prior to each unit of work. The knowledge organiser includes key learning and vocabulary that the pupils will be expected to know by the end of the unit. The knowledge organisers are shared with the pupils so they understand what they are expected to know and learn. Pupils use the knowledge organisers to know and remember more.

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Where possible, Science teaching is linked to Cornerstones topic units but to ensure coverage it may be taught as discrete units and lessons. Science teaching at Sacred Heart, involves adapting and extending the curriculum to match all pupils' needs.

Prior key learning and key vocabulary are revisited at the start of a lesson and the learning and vocabulary from previous years are revisited at the start of a new unit. This ensures gaps in learning can be addressed as well as ensuring we have the foundation from which we can build learning and skill development. The pupils also embed and build a specialist scientific vocabulary.

Knowledge is directly taught and misconceptions are planned for and addressed. Pupils then work scientifically, giving them the opportunity to apply and test their knowledge, aiding and deepening their conceptual understanding.

Our progression document for working scientifically ensures there is a progressive acquisition of skills. As the pupils' knowledge and understanding increases, and they become more proficient in asking questions, selecting, using scientific equipment, recording and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.

Teachers plan creative, practical, engaging working scientifically opportunities for pupils ensuring coverage of all investigation types in each year group.

From early on, pupils are introduced to the five investigation types:

- 1) Observing over time
- 2) Noticing patterns
- 3) Identifying, classifying and grouping
- 4) Fair and comparative testing
- 5) Researching using secondary sources

When working scientifically, pupils will know the investigation type they are using and will eventually be able to select the most appropriate investigation methodology for the question they need to answer. Teachers model 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 environment accessing outdoor learning, the school's woodland area and workshops with experts such as Nell Bank. Events, such as STEM Week and welly day, allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. These events allow families to be involved.

Impact

Formative assessment is ongoing. Verbal feedback and 'live' feedback addresses misconceptions and enables progression within each lesson. Pupils are given time to respond to feedback comments in their books. Knowledge organisers are used as a basis for low stakes testing, allowing pupils to revisit and retrieve key knowledge which leads to them knowing and remembering more.

Retention testing takes place at least 2 weeks after a unit of work has been completed allowing teachers to truly assess what has been learnt.

Working scientifically is teacher assessed. Pupils need many opportunities in different contexts to ensure they have a secure understanding of each skill. Progress and attainment are recorded on O track.

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