Science Curriculum

Highfield Church of England Primary School

Science Curriculum

When I consider your heavens, the work of your fingers, the moon and the stars, which you have set in place, what are… human beings that you care for them?

(Psalm 8: 3-4)

Intent

At Highfield CE Primary School Science our curriculum is meticulously crafted to ignite a passion for inquiry and understanding in our pupils. By embracing a hands-on approach, we immerse them in practical experiences that not only demystify scientific concepts but also instil in them a deep appreciation for the wonders of the world.

Purpose of Study

In school, we learn about science, which helps us understand how the world works. There are three main parts of science: biology, chemistry, and physics. Science is super important because it has made big changes in our lives and helps make our future better. Everyone should learn the important stuff about science, like how it works and how we use it. As we learn more, we should get excited and curious about nature. Science helps us explain things, figure out what might happen next, and understand why things happen. So, let's get ready to explore and learn cool science stuff!

Aims

- Children will be encouraged to work scientifically, applying their developing scientific knowledge and skills to unfamiliar contexts and to consider science as a means of understanding their world, its beauty, complexity and interdependency.
- Children will be helped to gain an insight into the history of science and to realise that today's achievements are a culmination of previous scientific developments.
- To help children make decisions concerning environmental issues.
- To extend children's curiosity and wonder about the world in which they are growing.
- To prepare children to lead a healthy and responsible adult life.
- To initiate a lifelong interest in the natural world.

Core Components

Each science unit will include the three core components:

1. Enquiry: Children will engage in scientific inquiry by asking questions, making observations, and forming hypotheses. They will learn to design experiments, gather data, and draw conclusions based on evidence. Through inquiry-based learning, they will develop critical thinking skills and a deeper understanding of scientific concepts.

2. Research: Children will conduct research to gather information and expand their knowledge of scientific topics. This may involve reading books, articles, and websites, as well as watching videos and documentaries. They will learn to evaluate sources, synthesize information, and apply their findings to real-world situations.

3. Investigation: Children will carry out investigations to explore scientific phenomena and test their hypotheses. This may involve conducting experiments, making measurements, and recording observations. They will learn to use scientific equipment and techniques, analyse data, and communicate their findings effectively.

Curriculum

Early Years Foundation Stage - the children follow the Early Years Curriculum 'Understanding the World' section of the framework. Children will develop skills in asking questions about why things happen and how things work. They will also look closely at similarities, patterns and change. Progress is monitored during a mixture of directed and child -initiated learning opportunities. At the end of the year, children will be recorded as either emerging, expected or exceeding EYFS outcomes in relation to this area of learning.

Key Stage 1 & 2 - Our Science Curriculum work follows the National Curriculum Programme of Study. Children will use and develop their scientific understanding through planning, carrying out, and evaluating their own scientific investigations.

They will develop:

- asking questions, predicting, hypothesising
- observing, measuring, manipulating variables
- interpreting results, evaluating scientific evidence

Following the National Curriculum Programme of Study, children will be given the opportunity to develop a broad and accurate knowledge and understanding commensurate with their age and ability.

Planning

Where possible, science should be planned and taught in cross curricular topics to give a context to the learning. There should be an emphasis on prediction, applying, interpreting and drawing conclusions. Opportunities should be made in thinking skills sessions, English and Long term planning shows units to be covered, term and time allocation. Teachers should be following the National Curriculum Programme of Study and plan the work to achieve the learning.

Copies should be made of the units for medium term planning (overviews), annotated with further information (from ladders) to ensure National Curriculum coverage and vocabulary. The Vocabulary Curriculum Driver serves as a pivotal framework for enhancing pupils' language proficiency and conceptual understanding across the subject. At its core, this approach prioritises the identification and integration of essential subject-specific vocabulary, ensuring that pupils develop a robust academic vocabulary essential for comprehension and communication within each concept.

Short term plans should indicate differentiated groupings (where appropriate), extension and support activities. Appropriate strategies should be adopted to ensure that the learning needs of all children are met particularly through practical activities. Short-term plans provide a Big Question for the unit and then smaller enquiry questions for each lesson. These questions ensure our pupils foster a deeper engagement with learning and instils a lifelong love for acquiring knowledge as it cultivates critical thinking and problem-solving skills, as pupils learn to gather evidence, analyse information, and draw well-informed conclusions.

The children should be encouraged to use a variety of means for communicating and recording their work including presentations to the rest of the class. They should develop a range of technical vocabulary and be able to demonstrate the application of a range of mathematical and graphic skills. The computer should be used to model, simulate, generate, store, present and retrieve information.

Teaching Science

Wherever possible learning should be encouraged through investigation with an emphasis on first-hand experience to develop and extend children's skills, knowledge and understanding. There should be a balance of practical teacher demonstration, well-managed experimental work by children and opportunities for explorative play. External adults and experts should be encouraged to come to school to stimulate the children's interest in the subject and to provide a window into the world of science work.

Assessment, Recording and Reporting

At the beginning of each unit, children complete a pre-assessment task. This provides the teachers with a starting point of what they need to teach, refresh or only lightly touch upon.

Teachers consistently use formative assessments to gauge how well pupils are learning and retaining information. Each lesson across the curriculum starts with a review of the previous lesson's content called a 'Prove it'; these activities, further show the knowledge pupils have gained. This method of low-stakes testing helps teachers decide when to revisit and reinforce knowledge to ensure it is thoroughly embedded.

At the end of each unit, children complete an assessment task. This task combines pupil self-assessment with teacher assessment to indicate how well pupils have progressed throughout the unit. Teachers use this to record who has achieved below and who has achieved above the expected standard. Teachers then use the assessment to help close any gaps.