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, our Science curriculum is carefully crafted to ignite a passion for inquiry and understanding in our pupils. By encouraging 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

At our school, we believe science helps children to understand and make sense of the world around them. We aim to inspire curiosity, wonder and a lifelong interest in science through engaging and practical learning experiences. Our science curriculum is inclusive of all learners, ensuring every child can develop scientific knowledge, enquiry skills and confidence. By encouraging children to question, investigate and think critically, we prepare them to become informed, responsible citizens in an ever-changing world.

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.

Curriculum

Our science curriculum is built around the development of both substantive knowledge (the scientific facts, concepts and content children learn) and disciplinary knowledge (how scientists work, investigate and think). We aim to inspire curiosity and enjoyment in science, helping children to see themselves as young scientists while developing a secure understanding of the world around them. Learning is carefully planned to revisit and build upon previous knowledge, ensuring that key concepts are regularly recapped and connected to new learning. Through the use of assessments, we identify what children already know and what they need to learn next, allowing us to adapt teaching to meet their needs and interests. We are fortunate to have strong links with the University of Southampton, with many of our parents working in scientific fields, who generously share their expertise through visits, workshops and hands-on experiences. We also benefit from the support of HSFF, whose enrichment funding further enhance our science provision. By creating memorable experiences and revisiting important concepts over time, we believe children develop a deeper, more meaningful understanding of science that will stay with them long into the future.

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. There are frequent hands on experiences including raising butterflies, questioning weather patterns and taking part in gardening.

Key Stage 1 and 2 – Our Science Curriculum follows the National Curriculum Programme of Study on a two year cycle. Children will use and develop their scientific understanding through asking questions, linking topics and planning, carrying out, and evaluating their own scientific investigations. Our Cycles have been crafted with the expertise of the Aspire Trust Science subject leaders, which included Secondary readiness advice.

Pupils will be seen:

- asking questions, predicting, hypothesising
- observing, measuring, collect data
- interpreting results, evaluating scientific evidence
- Revisiting and linking other topics
- Building new explicit vocabulary

Planning

Teachers use a central whole school long term plan which guides them to focus on key National Curriculum knowledge to convey. This ensures breath and coverage. The document offers possible pupil misconceptions, prior and future learning around the topic, explicit vocabulary to teach, key knowledge and key skills to assess with, practical experiment ideas, cultural capital and enrichment ideas and a spiritual reflection question to use.

Short and medium term plans should indicate differentiated groupings (where appropriate), extension and scaffolding activities and a lessons accessible by all learners. Appropriate strategies should be adopted to ensure that the learning needs of all children are met particularly through practical activities. Short-term plans often 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, use of computers and technology and use of exercise books.

Delivering 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 most units, 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 often 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 and plan in revisiting opportunities. This data is analysed and used to inform current and future teachers of the pupils on an individual and cohort basis. This data also informs the Science leader's action plans and monitoring schedule.