

# Curriculum Content – Science

## Science Curriculum Intent

At Gainford CE Primary and Preschool , we aim to promote scientists who think and work scientifically. We are committed to providing every child with a high-quality science education, alongside a range of experiences which aid pupils in gaining a coherent knowledge and understanding of science in the world around them. We inspire and support our children’s high aspirations, regardless of their backgrounds, by arranging visiting ‘real-life’ scientists for certain of our topics.

We deliver a science curriculum which reflects the National Curriculum following key programmes of study, and is purposefully designed and sequenced to equip children with the knowledge and skills needed in preparation for their future learning and employment. Science at Gainford is designed and adapted to meet the needs of all pupils, including those with SEND. Our science curriculum is relevant and bespoke to the children. Furthermore, we strive to link topics to our text-based curriculum, allowing children to gain an insight into valuable background knowledge, vocabulary and relevant imagery when studying a particular topic.

Science is carefully mapped, allowing for progression on a child’s journey from EYFS to year 6. Beginning in EYFS, we foster children’s interests through a play-based curriculum, thus deepening their understanding of *Cause and Effect* and awakening their wonder of *The Natural World*. Continuing on their journey through school, skills, knowledge and scientific vocabulary are taught sequentially, allowing learners to progress and consolidate learning year-on-year. Through building up a body of key foundational knowledge and concepts, we encourage pupils to recognise the power of investigation and explanation in order to develop a sense of excitement and curiosity about the world around them by working scientifically.

We celebrate the area we live in by building and maintaining links with our local church , charities and schools from both primary and secondary phases, in the cluster. We promote science by organising science visits in our local area and by working with our local feeder secondary schools. We recognise the importance of language development: vocabulary and abstract terms are taught across the curriculum through practical activities and discussion. Children are immersed in subject- specific vocabulary and accurate use is encouraged in all subject areas.

## Purpose of Study

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.

Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be

encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

### **Aims 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.

### **Scientific knowledge and conceptual understanding**

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. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.

## **Attainment Targets**

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

### **Key Stage 1**

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin 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. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. 'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

## **Lower Key Stage 2**

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions.

They should ask their own questions about what they observe and 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 should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study.

Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

## **Upper Key Stage 2**

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically.

At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes

over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information.

Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. 'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read, spell and pronounce scientific vocabulary correctly.