



Primary Science Policy

Purpose

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. (*National Curriculum, 2014*)

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.

OBJECTIVES

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. Some aspects of study are built upon throughout the key stages whilst others are introduced in specific year groups.

In accordance with the Children's Act 2004, schools now have a duty to provide the outcomes outlined in 'Every Child Matters'.

During Science lessons, children are kept safe from danger by ensuring that all equipment is checked regularly and stored carefully. The staff are mindful of children who have allergies to certain foods when they are involved in food tasting sessions. They are taught the correct ways to handle equipment and to work collaboratively. In KS2 children are taught to become independent in looking at personal safety. They should also learn simple ways in which they can take responsibility for their own safety.

Staff will also ensure that the Science lessons are accessible and adapted to suit the needs of all pupils in the class.

EARLY YEARS FOUNDATION STAGE

In the Early Years Foundation Stage, Science is included as an aspect of 'Knowledge and Understanding of the World'. The children in Nursery and Reception classes are provided with a broad range of opportunities and experiences through which they may work towards the Early Learning Goals:

- Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.
- Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

Evidence of this is recorded into the children's Foundation Stage Profile for different/specific areas and points awarded for their understanding of these areas.

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 Man-made world around them. 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 resources

They should be encouraged to;

- be curious and ask questions about what they notice.
- 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.
- 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.

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.

- 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.
- draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.
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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.
- Encountering more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates.
- begin to recognise that scientific ideas change and develop over time.
- 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.
- 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.

PLANNING, ASSESSMENT AND RECORD KEEPING

Children are encouraged to demonstrate their learning in a variety of ways including talking, drawing, writing, making things and taking photographs. Assessment is based on all these types of outcome and plans are based on initial assessments of what pupils already know and can do. This includes establishing and valuing what experiences they have had outside school. Science is taught discretely, but plans make links to other subjects and real world contexts are used to make the learning relevant. Each child has their own folder/book as a record of the work covered throughout the year which is monitored by the teacher and used to make a summary judgement to measure their attainment within each unit of work. Records of this will be kept on target tracker and checked by SLT and science coordinators.

HEALTH AND SAFETY

Science is taught in line with our general school Health and Safety Policy.

Science in our schools is very safe. However, when children are engaged in a variety of practical activities, including open-ended investigations, there is always the possibility that something could go wrong, therefore, vigilance is needed.

Individual teachers will need to undertake their own specific risk assessment where necessary.

Our Schools, in line with national advice, have adopted the publication 'Be safe!' as the recommended model risk assessments for primary science and design and technology. Each year group leader has a copy of the new edition and teachers can refer to this when they feel it is required.

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