

# KIRKBY STEPHEN PRIMARY SCHOOL



## SCIENCE POLICY

2022-2025

Approved by KSPS Governing Body	
Name:	Mrs Elizabeth Paisley
Position:	Chair of Governors
Signed:	
Date:	10 <sup>th</sup> March 2022
Proposed review date:	March 2025

### **Aims of science policy:**

To develop pupils' enjoyment and interest in Science whilst in Kirkby Stephen Primary School.

To develop pupils' understanding of key scientific concepts and scientific skills.

To ensure that children understand the relevance of what it is that they are learning, making links to the world.

The National Curriculum provides a framework for Science but the school is aware of the need for flexibility and creativity in teaching and learning styles in response to the needs of individual children.

### **Intent**

At Kirkby Stephen Primary, we encourage children to be inquisitive throughout their time at the school and beyond. The Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group. Key skills are also mapped for each year group and are progressive throughout the school. These too ensure systematic progression to identified skills end points which are in accordance with the Working Scientifically skills expectations of the national curriculum. The curriculum is designed to ensure that children are able to acquire key scientific knowledge through practical experiences; using equipment, conducting experiments, building arguments and explaining concepts confidently. Children are encouraged to ask questions and be curious about their surroundings and a love of science is nurtured through a whole school ethos and a varied science curriculum.

### **Aim of national curriculum:**

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

### **The nature, processes and methods of science**

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.

### **Spoken language**

Scientific vocabulary is promoted strongly in Kirkby Stephen Primary School and the national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum –cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

### **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 Science and the National Curriculum

## **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 KSPS science booklet, but must always be taught through and clearly related to the teaching of substantive Science content in the programme of study.

## **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 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 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 know, read and pronounce scientific vocabulary correctly.

## **Key Stage 1 and Key Stage 2**

At Kirkby Stephen Primary we plan our topic coverage as a whole school. Each year group covers National Curriculum objectives specific to their classes during their Science teaching. Science is taught as a discrete lesson and as part of cross-curricular themes when appropriate. Science has links with other areas of the curriculum including Geography, English, Numeracy, Art and Design Technology. Teachers in Key Stage 1 and 2 use the National Curriculum Guidelines to inform Medium Term planning alongside the PZAZ science scheme. Teachers also use a wide range of resources, including the school environment to enhance and enrich the children's learning.

Children work at their own level of understanding in Science. We aim to ensure that children are given the opportunity to achieve through their experience of Science tasks and activities, and always provide the opportunity for our children to work towards higher level tasks. Assessment in Science is based upon scientific knowledge and understanding, rather than achievement in English or Mathematics. In the Foundation Stage we assess children's knowledge and understanding according to the Foundation Stage Early Learning Goals. In KS1 and KS2 we use a range of assessment materials to ensure that children are making appropriate progress, including assessment tasks at the start and end of each topic.

### **Assessment is:**

- Formative and summative
- Used to inform future planning
- Promotes continuity and progression
- Based on observation, participation and written outcomes.

### **Recording is:**

- Verbal
- Pictorial
- Diagrammatic
- Graphical
- Written
- Symbolic
- ICT
- Photographic

### **Classroom Organisation**

Children are grouped as appropriate for the task in order to encourage flexibility. This could be in ability groups, mixed ability groups, mixed ability pairs, ability pairs, individuals and whole class groups.

Science in Kirkby Stephen Primary School is largely hands on and children are given the opportunity to;

- observe, discover and experiment
- Develop Scientific language
- Question and report
- Sort and classify
- Look for similarities and differences.

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