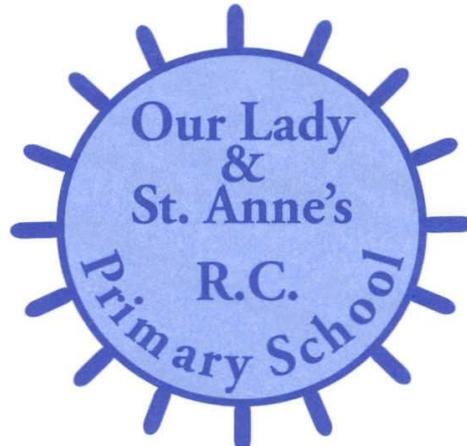


# Science Policy

2017-18



## Our Light Shines Always

We want the best teaching, the best opportunities and the best support and encouragement for every child.

We are a friendly, happy, Catholic school, where everyone is valued for their individuality and special gifts.

Named personnel with designated responsibility for: Science

Academic year	Designated Lead	Chair of Governors	Review Dates
2017-18	Sally Justice	Christine Baker	January 2018

## **Safeguarding Statement:**

At Our Lady & St. Anne's RC Primary School we respect and value all children and are committed to providing a caring, friendly and safe environment for all our pupils so they can learn, in a relaxed and secure atmosphere. We believe every pupil should be able to participate in all school activities in an enjoyable and safe environment and be protected from harm. This is the responsibility of every adult employed by, or invited to deliver services at Our Lady & St Anne's RC Primary School. We recognise our responsibility to safeguard all who access school and promote the welfare of all our pupils by protecting them from physical, sexual and emotional abuse, neglect and bullying.

## **Scientific Understanding**

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.

## **Curriculum aims**

This area of learning contributes to the achievement of the curriculum aims for all young people to:

- 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
- become equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

## **Why is this area of learning important?**

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.

### **1. Essential knowledge**

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. 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.

### **2. Key skills**

'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.

### **3. Breadth of learning**

#### **Year 1:**

Who am I?

Changes – Plants

Changes – Seasonal

Materials

Animals

#### **Year 2:**

Material Monster

Healthy Me – Humans and animals Plants - Young Gardeners Habitats - Mini beasts

Seashore

**Year 3:**

Green Plants: Growth and Life Cycles

Simple Forces and Magnets Animals: Skeletons and Nutrition Light, Shadow and Reflection  
Rocks and Fossils

**Year 4:**

Teeth and Eating Sound

Solids and Liquids (including the Water Cycle)

Living Things Electricity (Circuits and Conductors)

**Year 5:**

Life Cycles of Plants and Animals Gravity, Resistance and Mechanical Forces

Earth, Sun and Moon Classifying Materials

The Changing Human Body

**Year 6:**

Classification of Living Things including micro-organisms Evolution and Adaptation

The Eye - Light and Shadow The Circulatory System/Health and Lifestyles

Electricity - circuit investigation

**4. Curriculum Progression 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.

## **5. Cross-curricular studies**

Children will have opportunities to develop their scientific skills through a range of subjects including Maths, English, Computing and through the Creative Curriculum.

Computing especially will enhance the development of enquiry skills through the use of data handling techniques in the collection, recording, analysis and presentation of data and information.

Children will have the opportunity to use the ICT suite to develop their scientific skills in a cross curricular manner.

## **6. Assessment and recording of progress**

The children will be assessed at the end of each Rising star topic. At the end of each topic the teacher will make a summative judgement about the attainment of each child recording whether they have yet to meet, have met or have exceeded the topic objectives.

## **7. Links with St Cuthbert's High School**

We have excellent links with local high schools and enjoy an excellent relationship with them. Due to this, we regularly visit from leading practitioners at the High School who offer exciting practical sessions linked to the current unit of work.