



# Coton-in-the-Elms Primary School

## Science

Version	Last Review	Reviewed by	Next review	Comments
2	April 2023	M. Panton	May 2026	Updated to reflect current practice, including use of White Rose; sticky learning and exit tickets.  Removed section about ALPS being used to assess.

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# INTENT

## 1. Introduction

Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.

With this in mind, Coton-in-the-Elms C of E Primary School's vision is to provide an exciting Science curriculum with a breadth of opportunities which widen all children's horizons. Our effective teaching will ensure that pupils make good rates of progress in Science but also when developing personal, social and emotional intelligence, and transferable skills which will give children the best start for their future as a citizen of our ever changing world.

## 2. Ethos & Aims

At Coton-in-the-Elms CE Primary School we aim to deliver a high quality of Science education which engages and inspires pupils to develop a love and enjoyment of Science. We aim to give children opportunities where they can increase their self-confidence, creativity and sense of achievement. The opportunities we provide as a school will build resilience and perseverance, allow children to show compassion to others and encourage children to reach for excellence. We aim to not just give children the basic curriculum but provide them with enriching, real life experiences which promote a sense of awe and wonder and allow them to express talents and skills which may inspire them for later life.

At Coton-in-the-Elms, Science is not only about becoming a Scientist but developing life skills that will allow children to reach their full potential in society.

The aims of science are to enable children to:

- Ask and answer scientific questions;
- Plan and carry out scientific investigations, using equipment, including computers, correctly;
- Know and understand the life processes of living things;
- Know and understand the physical processes of materials, electricity, light, sound and natural forces;
- Know about the nature of the solar system, including the earth;
- Evaluate evidence and present their conclusions clearly and accurately.

## IMPLEMENTATION

### 3. How is it taught?

#### Timetabling

The children will have Science lessons, within their class, taught in weekly lessons or as a unit block.

#### Teaching techniques

We use a variety of teaching and learning styles in Science lessons. Our principal aim is to develop children's knowledge, skills, and understanding. Sometimes, we do this through whole-class teaching, while at other times, we engage the children in an enquiry-based research activity. Each lesson begins with a revisit of prior learning. This may be based on the last lesson, or link back to learning from previous years. This is to ensure that the key knowledge is embedded and remains in the long-term memory, enabling schema to be further developed.

We encourage the children to ask, as well as answer, scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures and photographs. Where appropriate, they use ICT in science lessons to help enhance their learning. They take part in role-play and discussions, and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the pupils in real scientific activities, e.g. investigating a local environmental problem, or carrying out a practical experiment and analysing the results.

Working Scientifically must always be taught through, and clearly related to, the programme of study. Pupils at Coton-in-the-Elms CE Primary learn to use a variety of approaches to answer relevant scientific questions by collecting, analysing and presenting their findings. At least once a term, children will use the Science Investigation Planner to carry out an investigation. Teachers will use the planner to scaffold the investigation, encouraging the children to develop these investigative skills with growing independence as they journey through the school. The planner will be displayed on the Science learning wall to support children's use of investigative language and approach.

We aim to develop the following skills:

observing, raising questions, predicting, hypothesising, planning, controlling factors (fair testing), measuring, collecting and interpreting data, constructing tables and graphs, explaining, communicating and evaluating findings, researching information. We aim to foster the following qualities: excitement, curiosity, perseverance, open-mindedness, self-discipline, sensitivity to others, independence, adaptability, co-operation, and care for living things.

We recognise that in all classes, children have a wide range of scientific abilities, and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways:

- setting challenges that are open-ended and can have a variety of responses;
- setting challenges of increasing difficulty, where children are able to take responsibility of choosing to complete the challenge which is most suited to their ability;
- grouping children by ability, and setting different challenges for each group;

- providing a range of challenges with different resources.
- using classroom assistants to support the work of individual children or groups of children.

#### Vocabulary links

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.

Children will learn a variety of Scientific vocabulary as they progress through the subject. Much of this new subject-specific vocabulary is classed as Tier 3 vocabulary and will be taught explicitly as part of the unit of work, giving the meaning in a context.

#### Working Walls

Teachers will use a working wall in developing their sequence of lessons. Photos, examples of work and class resources can be kept and displayed when effective to do so.

## **4. Planning & Progression**

White Rose Education supports our planning of the Science Curriculum which is broken into small steps.

### **In the Early Years**

We teach science in the Early Years as an integral part of the topic work covered during the year. In Early Years Foundation Stage, we relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals (ELGs) which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to developing a child's knowledge and understanding of the world, e.g. through investigating what floats and what sinks when placed in water.

### **Key Stage One:**

In Key Stage 1, the children build on the opportunities, skills, knowledge and experiences they have already encountered in EYFS Foundation Stage. At present, In KS1, the children are taught in year group classes and have one Science lesson each week, when the main aspects and objectives from the National Curriculum will be followed.

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

## Key Stage Two:

In Key Stage 2, the children will continue to and build on the opportunities, skills, knowledge and experiences they have already encountered in Key Stage 1. They will be developing a greater understanding of not only what they learn in Science but also how they learn specific Science skills. By the end of KS2, pupils should have explored a range of Science skills and themes as well as been given opportunities to consider their own questions and misconceptions. Science will be taught in a discrete lesson each week or teachers may decide to block the work together.

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

## 5. Support for SEND Pupils & Inclusion

At Coton-in-the-Elms Primary School, we teach science to all children, whatever their ability and individual needs. Science forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our science teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details, see individual whole-school policies for e.g. Special Educational Needs.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style and differentiation – so that we can take some additional or different action to enable all children to learn more effectively. We enable all pupils to have access to the full range of activities involved in learning science.

### **IMPACT**

## 6. Assessment & Recording

Teachers will assess children's work in Science by planning 'Sticky Learning' questions which are shared with the children at the start of a unit of work. The teacher will then use these questions as a scaffold for their teaching and refer to them throughout the unit. At the end of a unit of work the children will complete an exit ticket based upon the 'Sticky Learning' questions. In Key Stage One the teacher may choose to record the children's responses for them, either individually or as a whole class. The teacher will then use these responses, along with their formative assessments to judge the attainment of the children. Formative assessment may be judged on completion of a piece of work, the teacher assesses it, and use this assessment to plan for future learning. Written or verbal feedback is given to the child to help guide his/her progress. Children are encouraged to make peer and self-assessment judgements about how they can improve their work. Teacher's marking identifies how well the pupil has done and can support misconceptions or deepen their understanding through open ended questions.

At the end of each term, an overall judgement will be made for children's understanding of the science concepts taught. This will be entered on to Fisher Family Trust (FFT).

## 8. Monitoring

The coordination and planning of the science curriculum are the responsibility of the subject leader, who also:

- supports colleagues in their teaching, by keeping informed about current developments in science and providing a strategic lead and direction for this subject;
- gives the head teacher monitoring reports in which strengths and weaknesses in science are evaluated and indicates areas for further improvement;
- uses specially allocated regular management time to review evidence of the children's work, and to observe science lessons across the school.

The quality of teaching and learning in Science is monitored and evaluated by senior leaders and the science leader as part of the school's agreed cycle of lesson observations.

The Science subject lead will carry out regular monitoring of the subject coverage that will take place each year. ensuring full curriculum coverage; book monitoring; lesson visits; monitoring of working walls and talking to pupils. Monitoring findings will be shared with staff and used to design future CPD sessions.

The Science Lead will meet with the governor with responsibility for Science to make them aware of developments in the subjects and levels of attainment across the school.