



# Neville's Cross Primary School & Nursery

## Science Policy

Date of policy: January 2023

Review date: January 2025

*Neville's Cross is an inclusive family where all are nurtured to become creative, confident and resilient learners supported to reach their unique potential. Our children develop skills to become active and respectful members of our school, community and society and during their time at Neville's Cross, make memories to cherish.*

## Science Policy

### **Intent**

At Neville's Cross, we recognise the importance of science in all aspects of our lives. It is our intention in science to increase children's knowledge and understanding of our world and to develop children's ideas and ways of working that enable them to explore and make sense of the world around them. We will develop in our children the understanding that science is a process of enquiry beginning with a spark in their curiosity or from questions such as 'how?' and 'why?'. Children will be taught to think like a scientist.

### Curriculum Drivers

Our science curriculum is designed with our key curriculum drivers in mind:

**Creativity** – we aim to foster our children's natural curiosity and allow them to develop an understanding that science involves both discovery and creation.

**Well-being** – we aim to support our children in achieving their full potential, to develop their scientific abilities to the full.

**Our Communities** – we aim to develop links with scientists within our school and local community as well as developing an understanding of how science impacts upon communities both locally, nationally and world-wide.

### Aims:

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 work scientifically, Children learn to ask scientific questions and begin to appreciate the way in which science will affect the future on a personal, national and global level.

Teaching science enables children to:

- ask and answer scientific questions;
- learn through enquiry based learning opportunities;
- 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.

At Neville's Cross Primary we want our children to display the characteristics of a scientist. We teach science so that our pupils:

- Think independently and raise questions about working scientifically and the knowledge and skills that it brings.
- Acquire, use and embed appropriate vocabulary related to the units taught. Use the appropriate vocabulary and build upon it throughout their career as a scientist at Neville's Cross
- Challenge common misconceptions as they come across them
- Are confident and competent in the full range of practical skills, taking the initiative in, for example, planning and carrying out scientific investigations.
- Demonstrate excellent scientific knowledge and understanding in written and verbal explanations, solving challenging problems and reporting scientific findings.
- Show high levels of originality, imagination or innovation in the application of skills. Undertake practical work in a variety of contexts, including fieldwork.
- Are passionate about science and its application in past, present and future technologies.

### Overview of the Science curriculum

Within school, all children are entitled to a broad and balanced curriculum delivered in interesting and innovative ways. Within Science, children will gain a range of skills, concepts and attitudes. A more detailed insight into our Science curriculum is presented within this policy which demonstrates clear progression across the school.

The features that come before the National Curriculum in EYFS for Science are found in the 'Understanding The world' section of the Development matters framework.

The programmes of study for science are set out year-by-year for Key Stages 1 and 2 and include the following sections:

### 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.

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 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.

### Spoken language and vocabulary

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. Vocabulary for each unit is clearly outlined on the medium term planning and teachers ensure that children are exposed to the appropriate vocabulary throughout the unit to aid acquisition. Children are encouraged to articulate their thinking and reasoning and teachers ensure that pupils build secure foundations using discussion to challenge any 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.

### Early Years Foundation Stage

Science in Reception is an integral part of the EYFS ethos, often covered during project themed work throughout the whole year. The Early Years Foundation Stage Development Matters framework underpins the curriculum planning for children aged birth to five. Science makes a significant contribution to developing a child's knowledge and understanding particularly in the world section. Science is taught in both Nursery and Reception through both adult and initiated activities and concepts, with vocabulary being modelled and inputted by adults to ensure that children are exposed to key language as they learn. The scientific concepts that we expect children to cover in the EYFS are clearly featured on the medium term and short term planning, and are recorded on Tapestry alongside the hashtag #science.

### Content Overview

Science is delivered using a 2year rolling programme to accommodate mixed age classes. The attached progression document maps out which units are covered in each cycle to ensure clear and consistent progression.

### Organisation

| Nursery Science   |   |   |   |  |   |
|---|---|---|---|--|---|
| Autumn 1<br>About Me!   | Autumn 2<br>Festivals and<br>Autumn   | Spring 1<br>Winter and<br>Let's Explore   | Spring 2<br>People Who<br>Help Us   | Summer 1<br>I Imagine! &<br>Spring Has<br>Sprung   | Summer2<br>Teddy Bear's<br>Picnic &<br>Journeys   |
| <b>Humans</b> - Begin to make sense of their own life-story and family's history. | <b>Living things and their habitats</b> - Explore collections of materials with similar and/or different properties (natural materials) | <b>Electricity</b> - Explore how things work.<br><b>Light</b> - Talk about the differences in materials and changes they notice.<br><b>Seasonal changes</b> | <b>Forces</b> - Explore and talk about different forces they can feel.<br><b>Sound</b> - Explore how things work.<br><b>Forces</b> – push, pull, twist – puppets, pop up books, threading beads, digging, | <b>Plants</b> - Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. | <b>Animals</b> - understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the |

|  |  |  |   |   |  |
|--|--|--|---|---|--|
|  | <p><b>Materials</b> - Talk about the differences between materials and changes they notice.</p> <p><b>Seasonal changes</b></p>   |  | percussion instruments.   | <p><b>Seasonal changes</b><br/>Planting beans</p>   | natural environment and all living things.   |
| <b>Reception Science</b>   |  |  |   |   |  |
| <p><b>Autumn 1</b><br/>Magnificent Me (Traditional Tales)</p>  | <p><b>Autumn 2</b><br/>Turrets and Tiaras (Traditional Tales)</p>  | <p><b>Spring 1</b><br/>On The Move!</p>  | <p><b>Spring 2</b><br/>What Happened To The Dinosaurs?</p>  | <p><b>Summer 1</b><br/>Circle of Life</p>   | <p><b>Summer 2</b><br/>Under the Sea</p>   |
| <p><b>Humans</b> - Talk about members of their immediate family and community.</p> <p><b>Humans</b> - Name and describe people who are familiar to them</p> <p><b>Forces</b> - Describe what they see, hear and feel whilst outside.</p> <p><b>Materials</b> - Describe what they see, hear and feel whilst outside.</p> <p><b>Light</b> - Describe what they see, hear and feel whilst outside.</p> <p><b>Sound</b> - Describe what they see, hear and feel whilst outside.</p> | <p><b>Animals</b> - Recognise some environments that are different to the one in which they live.</p> <p><b>Seasonal changes</b> - Recognise some environments that are different to the one in which they live.</p> | <p><b>Living things and their habitats</b> - Draw information from a simple map.</p> <p><b>Living things</b> - Explore the natural world around them.</p> <p><b>Living things</b> - Recognise some environments that are different to the one in which they live.</p> <p><b>Earth and space</b> - Describe what they see, hear and feel whilst outside.</p> <p><b>Earth and space</b> - Explore the natural world around them.</p> | <p><b>Seasonal changes</b> - Recognise some environments that are different to the one in which they live.</p> <p><b>Bean experiments</b></p> | <p><b>Forces</b> - Explore the natural world around them.</p> <p><b>Animals</b> - Understand the key features of the life cycle of a plant and an animal</p> <p><b>Planting sunflower seeds</b></p> | <p><b>Seasonal changes</b> - Recognise some environments that are different to the one in which they live.</p> <p><b>Plants</b> - Plant seeds and care for growing plants.</p> |

| CYCLE A     | Year 1 & 2  | Year 3 & 4   | Year 5 & 6  |
|-------------|---|--|---|
| AUTUMN TERM | <p><b>Materials</b><br/>Everyday materials (Y1)<br/>Uses of everyday materials (Y2) –<br/><b>Seasonal Changes</b></p> | <p><b>Animals including humans</b><br/>nutrition, skeleton and muscles (Y3)<br/>teeth and digestion and food chains (Y4)</p>         | <p><b>Properties and changes of materials</b><br/>(Y5)</p>  |
| SPRING TERM | <p><b>Seasonal Changes</b></p>  | <p><b>Rocks</b><br/>Comparing, grouping, naming, fossils, recognising how soil forms (Y3)<br/><b>Forces and magnets</b><br/>(Y3)</p> | <p><b>Living things and their habitats</b><br/>life cycles &amp; reproduction (Y5)<br/><b>Animals including Humans</b><br/>changes as humans develop (Y5)</p> |
| SUMMER TERM | <p><b>Living things and their habitats</b><br/>(Y2 unit)<br/><b>Seasonal Changes</b></p>                              | <p><b>States of matter</b><br/>(Y4)</p>  | <p><b>Living things and their habitats</b><br/>classification, micro-organisms (Y6)<br/><b>Evolution and inheritance</b><br/>(Y6)</p>                         |

| Cycle B     | Year 1 & 2   | Year 3 & 4   | Year 5 & 6  |
|-------------|--|--|---|
| AUTUMN TERM | <p><b>Animals including Humans</b><br/>Identify, name, draw and label the body parts and know the 5 senses (Y1)<br/>Find out about and describe the basic needs for survival (living things) and importance of exercise, diet and hygiene (Y2)</p> | <p><b>Light</b><br/>(Y3)<br/><b>Sound</b><br/>(Y4)<br/><b>Electricity</b><br/>(Y4)</p> | <p><b>Animals including humans</b><br/>circulatory system, diet, drugs, exercise, lifestyle, nutrients and water being transported around the body (Y6)</p> |
| SPRING TERM | <p><b>Plants</b><br/>Identify and name common garden and wild plants including trees<br/>Structure of flowering plants (Y1)<br/>Conditions for growth – seeds and bulbs (Y2)</p>   | <p><b>Plants</b><br/>(Y3)</p>  | <p><b>Electricity</b><br/>(Y6)<br/><b>Light</b><br/>(Y6)</p>  |

|                    |   |  |  |
|--------------------|---|--|--|
| <b>SUMMER TERM</b> | <p><i>Animals including humans</i></p> <p>Identify and name a variety of common animals – fish, amphibians, reptiles, birds and mammals (and insects)</p> <p>Carnivores, herbivores and omnivores</p> <p>Describing animals and comparisons (classification) (Y1)</p> <p>Offspring (Y2)</p> | <p><i>Living things and their habitats</i></p> <p>(Y4)</p> | <p><i>Earth and Space</i></p> <p>(Y5)</p> <p><i>Forces</i></p> <p>(Y5)</p> |
|--------------------|---|--|--|

### Equal Opportunities

All pupils, regardless of ability, ethnicity, gender, sexual orientation, disability, age or social circumstances have equal opportunities to take part in a variety of Science activities whilst at school. This will involve teachers stating within the MTP and STP any difficulties that a child may face, as well as how they will prevent these. All learning opportunities will be matched to suit the needs of the child and take into account their Individual Education Plan, where necessary.

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 tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (we do not expect all children to complete all tasks);
- providing resources of different complexity, matched to the ability of the child;
- using classroom assistants to support the work of individual children or groups of children;
- grouping children in mixed ability groups encouraging children to work together and peer mentor.

### SEND

At our 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. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

### Monitoring of the Curriculum

It is the responsibility of the science subject leader and SLT to monitor the standards of children's work and the quality of science teaching. The science subject leader is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. The Science lead will monitor planning and carry out a regular scrutiny of work produced by our children to ensure both coverage and progression are taking place across the school. Pupil voice will be carried out with children from EYFS to Y6 and work will be looked at in books and on Tapestry/Seesaw where appropriate. Feedback will be given to staff where appropriate.

### Assessment

Termly topic assessment grids are completed for each year group by teachers following on from what has been taught – these can be accessed by subject lead on Sharepoint. These are based on teacher knowledge following the term's teaching. At the end of a unit, simple assessment tasks inform teacher judgements.