

**HIGH LANE PRIMARY SCHOOL**

Science Policy

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| **Date policy was agreed with Governors** | Summer 2022 |
| **Review Date** | Summer 2025 *(or before if necessary)* |
| **Person(s) Responsible** | T Roper |

At High Lane Primary School, we value every child as an individual and believe it is important for all children to reach their full potential in a happy, supportive and exciting environment. We seek to develop independent learners who are equipped with the necessary skills, knowledge and understanding to thrive within an ever-changing world. We seek excellence and enjoyment in everything we do.

1. **Intent**

*‘Science is the language of curiosity.’ Prof* ***Brian Cox***

At High Lane, we want children to see their Science curriculum as ***‘a dive into discovery’*** where they are on ‘***a quest to find out more’*** about the how the world around them works. We want to open their eyes and sense of wonder to ***a world where lots of possibilities can exist***. We aspire to build our children’s scientific knowledge and understanding to allow them to ***truly engage with the world around them*** and enable them to work together to ***solve current and future world problems*** and big questions. It is through the acquisition of this knowledge and understanding that children can ***develop appreciation about the things around them*** that are ‘good for them’ and know how best to conduct themselves when ***considering issues*** that affect their own or others’ lives.

**Aims**

Our Science curriculum aims to provide **all** children with the opportunity to:

· Develop a firm knowledge and understanding of the Science topics and themes studied through practical experiences and build the scientific vocabulary with which to express this knowledge.

· Develop understanding of the nature, processes and methods of Science through teaching the 5 different enquiry skills and how they can be used to answer scientific questions.

· Develop understanding of the collaborative nature of Science.

· Become confident, scientifically literate learners in order to prepare for life in an increasingly scientific and technological world.

· Understand how Science affects our lives today and how it might affect out futures.

· Foster appreciation, concern about, and active care for, our world and seek answers to their own questions about the world and wider universe.

· Be inspired by stories of scientists (past and present) from different cultural and ethnic backgrounds, and how they have contributed to our understanding of the world.

1. **Implementation: Curriculum planning**

In order to develop the knowledge and understanding the children require, we have thought carefully about the way in which our programme of study in Science is taught:

**Concepts** have been carefully mapped out on long-term plans across key stages, thinking about where certain aspects may be best taught across the year and the potential for meaningful cross-curricular links which could be made with a year group’s themes or topics. Where there are mixed aged classes, long-term planning grids specify the coverage of both year groups and the subject leader has mapped out their journey across Key Stage 1 and 2 to ensure coverage.

**Progression** grids support teachers in having the subject knowledge to clearly sequence learning incorporating smaller steps and opportunities to challenge common misconceptions to enable children to attain the National Curriculum objectives, including working scientifically. These smaller steps are mapped out on termly chunking grids along with key enquiry questions and ‘WOW moments’.

**Sticky Leaning:** The recapping or revisiting of key scientific concepts, knowledge and skills is built into learning time to support children’s retention, consolidation and mastery of their curriculum.

**Collaborative Enquiry at the Heart:** We believe children learn best in Science when they engage collaboratively in practical experiences which entice their curiosity or challenge their beliefs, therefore, teaching strategies incorporate engaging hooks, enquiry based activities, making visual and dramatic representations of concepts and practical Science challenges, problems or tasks both inside and outside the classroom.

**Being Scientists:** Through understanding how a wide range of scientists of different genders, ethnicities and backgrounds gain and use their knowledge and skills to make the world a better place and, as young scientists, being aware of the concepts and skills they are developing, we hope for our children to be inspired and for many to aspire to become scientists in the future.

# 4. Roles and responsibilities

# 4.1 The Governing Board

The Governing Board will approve the Science policy, and hold the Headteacher to account for its implementation.

4.2 The Headteacher

The Headteacher is responsible for ensuring that Science is taught consistently across the school.

**4.3 The Science Leader**

In ensuring the quality of provision across the school, the subject leader, Toni Roper, is responsible for the following:

* Ensuring class teachers understand statutory requirements for their year group and general progression of the Science curriculum
* Providing appropriate professional development, coaching and feedback for staff
* Leading whole-school monitoring and evaluation of teaching and learning in Science
* Analysing data in order to plan whole-school improvement projects
* Engaging with relevant statutory information and research in Science, disseminating key messages to staff
* Ensuring the school’s senior leadership team and governors are informed about the quality of teaching and learning
* Take responsibility for the purchase and organisation of central resources for Science
* Ensuring the school’s Science policy and progression documents are regularly reviewed

4.4 Staff

Staff are responsible for:

* Delivering the Science National Curriculum in line with our school policy and progression grids
* Modelling and fostering positive, curious attitudes towards Science
* Responding to the needs of individual pupils
* Assessing children and reporting data using the school’s data grids
  1. Pupils

Pupils are expected to:

* engage fully in **all** Science lessons using the positive learning behaviours established across the school
* be inclusive and respectful towards each other during collaborative scientific activities
* aspire to be curious members of the school with an understanding that they could make a difference to the world in which we live

**Equal opportunities**

All Science lessons are made inclusive for **all** pupils. When planning lessons, teachers take into consideration any ITLPs or EHCPs for children in their class and ensure that their needs are considered and additional resources are sourced if required. Additionally, teachers take into consideration the range of learning styles in their classroom and adopt appropriate teaching strategies to suit.

Positive attitudes towards Science are encouraged, so that all children, regardless of race, gender, ability or special needs, including those for whom English is a second language, develop an enjoyment of, confidence in and lifelong aspirations towards Science. The aim is to ensure that everyone makes progress and gains positively from lessons and to plan inclusive lessons.

**High Lane Primary**

**What Science looks like in our school**

**Our philosophy**

At High Lane, our Science lessons:

* are an engaging***‘a dive into discovery’*** where children are on ‘***a quest to find out more’*** about the how the world around them works
* develop a firm knowledge and understanding of the Science topics and themes studied through practical, enquiry-based experiences and build the scientific vocabulary with which to express this knowledge.
* entice curiosity whilst developing children’s understanding of the nature, processes and methods of Science through teaching the 5 different enquiry skills and how they can be used to answer scientific questions.
* develop understanding of the collaborative nature of Science.
* develop confident, scientifically literate learners in order to prepare for life in an increasingly scientific and technological world.
* support our children in understanding how Science affects our lives today and how it might affect out futures.
* foster appreciation, concern about, and active care for, our world and seek answers to their own questions about the world and wider universe.
* strive for children to become scientists through being inspired by stories of scientists (past and present) from different cultural and ethnic backgrounds, and how they have contributed to our understanding of the world.

**What we do**

In order to provide effective teaching and learning opportunities in Science:

**EYFS**

Early Years explore scientific themes and content through the EYFS Framework. Progression maps highlight opportunities to link EYFS areas of learning to the Science concepts and working scientifically skills covered in Key Stage 1 and 2.

|  |  |
| --- | --- |
| **Working Scientifically:**   * Physical Development: Fine Motor Skills * Literacy: Comprehension * Mathematics: Numerical Patterns * Personal, Social and Emotional Development: Self-Regulation, Managing Self and Building Relationships | **Concepts**   * Understanding of the World: The Natural World * Personal, Social and Emotional Development: Managing Self * Expressive Arts and Design: Creating with Materials |

**Key Stage 1**

**Working Scientifically**

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:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | recognising that questions can be answered in different ways, including through: | | | | |
| asking simple questions | identifying and classifying | observing, using simple equipment | performing simple tests | using their observations and ideas | gathering and recording data |

**Concepts**

Through their Year 1 curriculum, children develop their understanding about the following concepts:

|  |  |  |  |
| --- | --- | --- | --- |
| Animals including Humans | Seasonal Change | Everyday Materials | Plants |

Through their Year 2 curriculum, children develop their understanding about the following concepts:

|  |  |  |  |
| --- | --- | --- | --- |
| Animals including Humans | Living Things and their Habitats | Everyday Materials | Plants |

**Lower Key Stage 2**

**Working scientifically**

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:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | using different types of scientific enquiries and evidence to answer questions or support and report on findings | | | | | |
| asking relevant questions | identifying differences, similarities or changes | making systematic and careful observations, using a range of equipment | setting up simple practical enquiries, comparative and fair tests, taking accurate measurements | gathering, recording, classifying and presenting data in a variety of ways | using results to draw simple conclusions, make predictions, suggest improvements and raise further questions | recording findings using simple scientific language, drawings, labelled diagrams/charts |

**Concepts**

Through their Year 3 curriculum, children develop their understanding about the following concepts:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Animals including Humans | Forces and Magnets | Rocks and Soils | Plants | Light |

Through their Year 4 curriculum, children develop their understanding about the following concepts:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Animals including Humans | Living Things and their Habitats | States of Matter | Electricity | Sound |

**Upper Key Stage 2**

**Working scientifically**

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 | | | | |
| 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 and 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 a degree of trust in results | identifying scientific evidence that has been used to support or refute ideas or arguments |

**Concepts**

Through their Year 5 curriculum, children develop their understanding about the following concepts:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Animals including Humans | Properties and Changes of Materials | Living Things and their Habitats | Earth and Space | Forces |

Through their Year 6 curriculum, children develop their understanding about the following concepts:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Animals including Humans | Evolution and Inheritance | Variation and Classification | Electricity | Light |

**The 5 Types of Scientific Enquiry**

The National Curriculum specifies that children should experience and be able to plan for different types of scientific enquiry. Our progression grids support teachers in thinking about ways to engage children in each scientific concept in the following types of enquiry:

1. Identifying Grouping and Classifying
2. Comparative/Fair Testing
3. Pattern Seeking
4. Observing over Time
5. Researching using Secondary Sources

It is not expected that teachers use all types of enquiry in every Science unit, but that children experience and have the opportunity to plan for these in Key Stage 2 across their academic year. In the EYFS and Key Stage 1, the primary focus of enquiry is ‘Identifying, Grouping and Classifying’, however, teachers are still encouraged to introduce children to other types of scientific enquiry.

**What typical Science teaching looks like**

We recognise that every class and child is unique, so Science teaching may vary slightly based on the needs of our children. Our high-quality Science teaching might include:

* **Sticky Leaning:** recapping or revisiting of key scientific concepts, knowledge and skills
* **Collaborative Enquiry at the Heart:** collaborative, practical experiences which entice curiosity or challenge beliefs
* **Being Scientists:** learning about scientists and how they use their knowledge and skills to make the world a better place and, as young scientists, being made aware of the concepts and skills they are developing
* whole class, group or independent work
* high quality talk using correct scientific vocabulary
* high quality questioning: teacher or pupil questioning should provoke thought, discussion and pupil questions
* a trip or visitor to support pupils’ knowledge, skills, understanding and/or curiosity
* enquiry based activities, including investigations
* engaging hooks to entice curiosity
* making visual and dramatic representations of concepts, particularly when trying to explore ideas which cannot be seen
* practical Science challenges, problems, investigations or tasks both inside and outside the classroom.
* story-telling as a stimulating introduction, source of information or context for scientific learning
* use of pictures and concept cartoons to engage questioning or critical thinking
* virtual simulations, videos and short clips
* factual resources for research –books, internet

In the EYFS, a scientific learning journey may include many of the teaching strategies above through the play-based environment whilst immersed in their weekly themes.

**Impact: How we know our pupils are achieving**

From EYFS through to Key Stage 2, we measure the impact of our Science curriculum offer through planning opportunities for assessment for and of learning. We aim to capture the knowledge and skills learned through Science lessons/units through carefully planned activities which enable us to observe children’s understanding, misconceptions and choices as they ‘unfold’ and their final ‘products’. It is recognised that final products may not always be in the children’s books as recordings, but demonstrated through model making, drama, videos and practical tasks. Work in books will show a range of recording which demonstrates the children’s understanding of how scientists may record. We feel it is important to plan opportunities to allow children to communicate their understanding at the beginning and end of a unit through the use of activities such as KWL grids and concept maps.

Teachers in Key Stage 1 and 2 complete data grids once a term thinking about the specific areas of Science covered and ‘working scientifically’ using the body of evidence that have developed across the term. This data is collated and shared as part of transition to support with end of key stage assessments. Teachers in the EYFS record observations and collect data as part of their assessment towards the EYFS Framework. The information collected by teachers is used to support and adapt future planning, identify areas which may need ‘recapping’ or ‘revisiting’ more regularly and provide clear and direct feedback. The subject leader uses subject data, books and other evidence collected by the teacher as well as pupil and teacher voice to understand how well pupils are achieving across each academic year.

**How intervention is used at High Lane**

We recognise that sometimes children might require additional support or greater challenge to progress further in their learning. To support all pupils in their learning, we provide intervention in a number of ways:

* Integrated support within class with the class teacher or TA/LSA
* 1:1 or small group learning outside of the classroom with the class teacher or TA/LSA
* Support with core skills in English and Maths to help pupils articulate their understanding in Science
* External support – if child is particularly struggling, this will be raised with parents in the first stage, but may be referred to the SENDCO and/or external agencies if necessary