Hale CE Primary School
Science Policy 2021-2022

Science stimulates and excites curiosity about phenomena and events in the world. It can also satisfy curiosity with knowledge, engaging learners at many levels. Scientific method is about developing and evaluating explanations through experimental evidence and modelling. Through science, learners understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine and improving the quality of life. Learners recognise the cultural significance of science and trace its world-wide development. They learn to question and discuss science-based issues that may affect their own lives, the direction of society and the future of the world.

Intent

Aims for our Science curriculum

- To stimulate and excite curiosity about changes and events in the world.
- To satisfy this curiosity with knowledge and understanding through investigation and first-hand experience, within the child's physical environment.
- To develop knowledge and understanding of important scientific ideas, processes and skills and to relate these to everyday experiences.
- To learn about ways of thinking and of finding out about and communicating ideas.
- To predict, observe, test and measure with increasing accuracy and ability to manipulate key variables, using critical and creative thought.
- To interpret results in such a way to look for patterns and explain conclusions in terms of scientific knowledge and understanding.
- To develop a respect for the environment and living things and for health and safety.
- To gain an insight into the wonder and pattern inherent in surroundings.
- To help recognise the cultural significance of science and trace its development.
- To develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- To 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.
- To be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Statutory requirements and our curriculum implementation for Science

Statutory requirements for the teaching and learning of Science are laid out in the National Curriculum English Document (2014) and in the Statutory Framework for the Early Years Foundation Stage (2012).

In the Foundation Stage (Reception), children are given opportunities to:

- To talk about some of the things they have observed, such as plants, animals, natural and found objects.
- To talk about why things happen and how things work.
- To develop an understanding of growth, decay and changes over time.
- To show care and concern for living things and the environment.

•To know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another.

At Key Stage One (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

The following units will be covered;

- plants
- animals, including humans
- everyday materials
- seasonal changes
- living things and their habitats

At Key Stage Two (Years 3-6), pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

Y3 & 4

- 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.

Y5 & 6

- 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 a 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

The following units will be covered:

- plants
- animals, including humans
- rocks
- light
- forces and magnets
- living things and their habitats
- states of matter
- sound
- electricity
- properties and changes of materials
- earth and space
- evolution and inheritance

Implementation

The teaching method employed will vary according to the age, ability and experience of the learners and the concept being taught. Science is a core subject of the National Curriculum and some science activity will be undertaken every week at all Key Stages. Where possible, children will 'work scientifically' by devising and carrying out their own investigations. Scientific enquiry should include observing over time, pattern seeking, identifying and classifying, comparative and fair testing and research using secondary sources. At other times the teacher may find it more appropriate to demonstrate a concept to the children.

All lessons have clear learning objectives which are shared and reviewed effectively. Activities should be implemented which inspire the children to experiment and investigate the world around them and to help them raise their own questions. Activities develop the skills of enquiry, observation, locating sources of information, selecting appropriate equipment and using it safely, measuring and checking results, making comparisons and communicating results and findings. Lessons make effective links with other curriculum areas and subjects, are challenging, motivating and extend learning.

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Planning

Long term planning
Our Curriculum Map outlines an overview of the skills covered in each term during the year. Our science subject leader discusses this with teaching colleagues in each year group to ensure secure subject knowledge, progression and cross curricular links.

Medium term planning
Teachers use year group specific knowledge plans to develop a medium term plan for each unit of work.

Resources
It is the responsibility of the Science subject leader to carry out an audit of resources and to place a resource request prior to each unit of work being taught. It is the responsibility of class teachers to highlight the need for additional or alternative resources when they complete an end of unit summary.

There is a wide range of specialist science resources that are stored centrally where teaching staff can access and keep safe.

Development of vocabulary in Science
For each unit of work, staff will have a range of vocabulary. Some vocabulary will have been previously taught to ensure that it has been retained and can be built upon. Other vocabulary will link to the current unit.

Additional Educational needs
Pupils with additional educational needs will receive support when appropriate to conduct exercises and activities suited to their level. Such children may include:

- Those children with specific learning difficulties
- Those children with behavioural difficulties
- Those children with exceptional competence

Inclusion
The staff at Hale CE Primary School are committed to the realisation of each child's maximum potential in Science, irrespective of age, ability, class, race, belief or culture.

Impact

All class teachers will use their assessment of the children in their class to plan appropriate work in Science in order to show impact. Class teachers will make an assessment of each child's progress. Assessment is and ongoing process, which may include the following strategies:

- The nature and quality of the children's responses to a discussion or experiment
- Using written work, including the method of recording results, which demonstrates understanding

- Informal observation in the classroom
- Looking at the children's work/marking
- Reporting to parents at parent's evenings and through an annual written report

Assessment

Marking and feedback
In the main, work will be assessed in-line with the school's Assessment Policy.

Summative Assessment Use
In the main, work will be assessed in-line with the school's Assessment Policy.

Formative Assessment Use
The teacher records the progress made by children against the learning objectives for their lessons. At the end of a unit of work, we make a judgement against the progression statements. Using this information, the teacher records whether each child is working below, at or beyond age related expectation and then uses this information to plan future work for each child.

It is our aim at Hale CE Primary to equip our children to question and be prepared to test their ideas in a structured way and to analyse their results to ensure they develop secure understanding. We aim to make them aware of the beauty in the universe and encourage them to be good custodians of their environment as science has changed our lives and is vital to the world's future prosperity.