Halsall St Cuthbert's Primary School

Science Policy 2025

Curriculum Intent

Vision for Science

To excite and engage children with the world around them, through developing their scientific understanding whilst embracing their awe, wonder and natural curiosity. All pupils will develop their scientific enquiry skills and employ a variety of communication methods throughout the curriculum. Our Science curriculum aims to inform children of the work of eminent scientists and open their eyes to the vastness of the field of "science", regardless of gender or cultural differences. It also aims to develop a sense of responsibility for the environment and climate change.

Aims of the Curriculum

The National Curriculum aims to ensure that all pupils:

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

Curriculum Organisation

EYFS

Pupils in Reception work within the Early Years Foundation Stage and follow the Early Learning Goals for Understanding the World. We consult the Early Years Provision Maps, "Play, Observe, Ask," produced by the PSTT. They provide a starting point for the teacher but are then adapted to the needs and interests of the children. They provide key vocabulary that can be developed for each unit. Children develop an early interest in science and the world around them through play, observing and engaging with real phenomena (such as animal life cycles, plants growing, floating and sinking, etc), stories and role-play.

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

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

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
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.

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 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 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

Curriculum Implementation

KS1 and KS2 curriculum satisfies the requirements within the National Curriculum.

KS1 study Science for 1 ½ hours a week. KS2 study it for 2 hours a week.

Planning

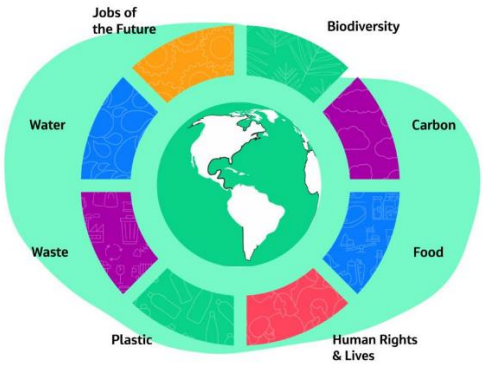
We use the PLAN primary science resources that support us to plan and assess effectively the science National Curriculum for England.

Education for Sustainable Development

Every year, all pupils will study sustainable development. We follow the Jacobs Program, "The Butterfly Effect". This "is a program designed to create lasting behaviour change and habit formation by providing pupils with the knowledge and understanding they need to put sustainability at the heart of every decision they make as the consumers of the future.

By investing in future generations at an early age, we accelerate transformation. We inspire them to do things better by sharing the most up-to-date science around climate change, helping them understand the impacts of actions they make, both positive and negative."

Using these topic headings, teachers may also find local projects or citizen science projects to become involved with.



(https://www.jacobs.com/steam/butterfly-effect)

Teaching and Learning

Lessons focus on developing understanding and knowledge (substantive knowledge), but will also develop skills and enquiry of science (disciplinary knowledge) providing a whole well-rounded approach to this subject. Teaching follows a sequence of lessons in which children's learning is developed, dispelling misconceptions and cementing key knowledge. The teaching of science includes opportunities to develop our children in through the following methods:

• Revisit/recap – these starting activities have been tailored to revisit areas of science that have not been taught for several years.

• Investigations & experiments – pupils have opportunities to investigate scientific questions, ideas and phenomena, recording results and develop experiments through the testing of a hypothesis. Some of these the pupils will have generated for themselves.

• Discussions and debates – these are used to promote children's thoughts/curiosity about significant events (past and present). These allow pupils to raise questions that they may want to find out about and prove concepts.
• Significant/leading scientists – Every unit, the pupils learn about the work of a scientist associated with that topic.
• Role play, drama or modelling – To give visual representation of scientific concepts and help explain more difficult concepts.
. Activities that develop thinking skills, such as Odd One Out, What if…? True/false, concept cartoons, PMI.
• External visits – pupils have opportunities to experience science outside the classroom.
• Scientific enquiry opportunities linked to year specific units focusing on the areas of enquiry: 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. All of which, are documented in books (KS1 and 2) and displays (EYFS).

Displays
Science displays take the form of working walls for each unit. They will develop with the learning of the children but will also display the key vocabulary for the topic and the key scientific skills that are being developed with that unit. The scientist being learned about may also feature on the display.

Cross-Curricular Opportunities
As the children's learning in science develops, as does their learning in other areas of the curriculum, notably English, Maths and Computing. We recognise the importance of these subjects in Science. Speaking and listening skills are used and developed during discussions and debates. Reading and writing are involved in every lesson in the form of gaining knowledge, interpreting texts, research, writing predictions and conclusions, and so on. Maths skills link strongly with Science in the dealing with data and pattern seeking. ICT is used within Science to enhance learning for research, data handling and presentation.

Formative Assessment
Formative assessment ensures new learning builds on children's existing knowledge and understanding. Teachers make decisions about what children need next (support, extension or progression). Measures are put in place for all children to access year group expectations.

Summative Assessment
At the end of a unit of work, teachers will assess the working scientifically skills. Pupils will also complete a short knowledge-based test to check understanding of the objectives. These will be recorded on a tracker sheet.

Special Educational Needs
All pupils are given equal access to the Science curriculum. Where children have difficulties that would hinder access or progress, support is given or arrangements made to overcome this.

Inclusion
All pupils have access to the Science curriculum and opportunities are provided for all pupils to achieve regardless of learning needs, gender, disability, social or cultural background.
We aim to represent all people in Science, irrespective of gender, sexuality, culture or religion.

Enhancement
We see Science as a wondrous topic in Halsall. And we try to foster that awe and wonder in our pupils. Throughout the school year, we aim to provide the children with as many first-hand experiences as possible. Every year, each class has the opportunity to see life cycles in action. We have a variety of animals in school, such as butterflies, stick insects, silk worms, chicks, worms and ants.
We are also lucky enough to have a wonderful school allotment which is kept well-stocked with fruit and vegetables. The children spend time in the allotment to be part of the yearly cycles.
Our children in Reception experience "forest school" during the Spring term and this is also offered as an after-school club for lower Key Stage 2.

We have strong links with the farming community and where appropriate, they work with us in school. For example, a local farmer has brought along some of her baby animals for the children to interact with. Another farmer was working on a project involving the marl pits on his land and invited our older children to be part of the project.
Building science capital is important for us, so as well as studying the work of at least one scientist as part of our units of work, we also ask for volunteers to come to school. Every January, parents and family members are invited to school to talk to our Year 6 children about their jobs in STEM areas. This year (2023) we have had visits from: a renewable energy engineer, an aquatic ecologist, a pharmaceutical developer, a chemist and a data analyst from a big internet company!
Children in Year 6 can apply to be science ambassadors. They perform various roles: taking out the playground science games, holding assemblies for special events such as Switch off Fortnight, supporting clubs and others.
During the early Autumn term and Summer term, the children have access to various science equipment and games at playtimes. "Science bags" containing equipment such as binoculars, magnifiers, parachutes, etc. are taken out and the ambassadors lead the activities.
Every year, various after-school clubs are held to enhance science: marine biology, CREST science awards, forest school.

Health and Safety
Health and Safety is an integral part of science. Staff are aware of risks and take measures and precautions to minimise those risks. Pupils are made aware of safety rules and expectations before each lesson as appropriate. They may be working with chemicals, equipment or outside.
If pupils are on an educational visit, the appropriate risk assessments are carried out in accordance with school and Lancashire policy.

Curriculum Impact

End of Key Stage 2 Teacher Assessment
Statutory end of key stage teacher assessment is gathered through the professional judgements made by the class teacher Year 6 and are determined against the pupil 'I can' statements.

Monitoring Progress
Pupil's initial understanding of a topic is captured prior to a unit through discussions, maps, grids and questioning. Teachers are also aware of the prior learning covered within the curriculum through the PLAN documents.
Within and across units of science pupil's understanding is captured through a variety of AFL techniques, all of which highlight the progress pupils make in developing their scientific understanding. Additionally, at the end of the unit, pupil's understanding is assessed through the use of unit assessment tests. This information is tracked throughout the year to monitor progress of individuals and groups. Teachers can also address any misconceptions still arising which may be flagged up this way.
The acquisition and development of scientific skills is monitored through the weekly lessons. This is recorded by the teacher and used to inform an overall science assessment at the end of each unit and year.

Reporting
Teachers report to parents at Parents' Evenings scheduled during the Autumn and Spring terms and annually, through a written report in the Summer term. Science is also reported at the end of key stages in line with the end of key stage expectations.

Role of Governors/Parents
Regular reports are made to the governors on the progress of Science provision and to our Curriculum Committee by the co-ordinator (Naomi Murphy) and Head teacher.
Our governors determine, support, monitor and review the school's policies.
We believe that parents have a fundamental role to play in helping pupils to learn. We do all that we can to inform parents about what and how their pupils are learning by:
• Holding a 'meet the teacher' evening at the start of the school year to inform parents how all aspects of Science and other subjects are taught throughout the school year.
• Holding parents' evenings to discuss children's progress.

• Sending an annual report to parents in which we explain the progress made by each child and indicating how the child can develop their learning.
• Induction programme – The Reception teacher explains how parents can support pupils in the early learning goals

The role of the subject leader
• Conduct school audits
• Observe/ monitor teaching
• Analyse data and Pupil Progress along with the Head teacher
• Monitor planning
• Undertake book sampling
• Carry out walkthroughs and assess learning environments
• Create an action plan (School Development Plan)
• Plan and deliver new initiatives
• CPD – keep up to date with developments in science
• Inform and provide opportunities for staff development
• Audit and ensure resources are accessible and relevant
• Develop STEM opportunities in school

The Science Subject Leader in school is Mrs Claire Galley. The school governor for science is Mrs Naomi Murphy.

Termly monitoring and evaluation of the Science Curriculum (as per the action plan) will be carried out by the Subject leader and feedback given to staff.

To be read in conjunction with :

- Assessment and Reporting policy
- Marking policy