Carleton St Hilda's CE Primary School

Carleton St Hilda's Primary School Science Policy

MISSION STATEMENT

Our mission statement 'Open hearts, open minds, learning together with God' underpins all the work that we do.

Rationale

At Carleton St Hilda's we believe that every child is a gift from God, and as such brings with them unique talents and characteristics which are to be nurtured and celebrated. Teaching and learning across all areas is set within a Christian context and our core set of Christian Values underpins our whole school curriculum as well as the daily life of the school.

Our science curriculum is designed with the intent that each child at Carleton St Hilda's CofE Primary School will become competent scientific thinkers and investigators who will encounter awe and wonder through first-hand scientific investigative experiences and approaches, which activate learning for all children. With great emphasis on providing children with a high-quality science education that offers the foundations for understanding the world through the specific disciplines of biology, chemistry and physics, our curriculum design for Science across primary school promotes specific competences including knowledge, enquiry and the working scientifically based skills. Creative pathways to learning are planned for, so that children can make links to prior learning and develop depth in key skills within Science that are rich, stimulating, challenging and real life with the aim of enabling children to master learning with skills, knowledge and experiences that will remain with them for the rest of their lives. We should all champion primary science and our intent is to make sure that every child has a positive experience of science throughout their primary school education.

What Science look like in our school:

- A variety of activities which take place inside and outside of the classroom to engage children about the world around them
- Investigations/practical explorations with the children being able to plan, record, carry out and conclude their learning
- Opportunities to work individually, in pairs or groups
- A range of scientific resources to enable the children to carry out engaging experiments
- Subject specific vocabulary which is focused upon within each topic and embedded within each lesson
- Different aspects of Science are focused upon such as Biology, Chemistry or Physics
- Using a range of media where possible to help the children to learn about a modern world

This is the knowledge and understanding gained at each stage:

By the end of EYFS pupils will:

- Know about similarities and differences in relation to objects, materials and living things.
- Make observations of animals and plants and explain why some things occur, and talk about changes.

By the end of Key Stage 1 pupils will:

- Experience and observe phenomena, looking more closely at the natural and humanly constructed world around them
- Be encouraged to be curious and ask questions about what they notice.
- 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
- 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.
- Carry out first-hand practical experiences
- Use appropriate secondary sources, such as books, photographs and videos to support their learning
- Read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge at key stage 1

When Working Scientifically Key Stage 1 pupils will:

- Ask simple questions and recognising that they can be answered in different ways
- Observe closely, using simple equipment
- Perform simple tests
- Identify and classify
- Use their observations and ideas to suggest answers to questions
- Gather and record data to help in answering questions

By the end of Lower Key Stage 2 pupils will:

- Enable pupils to broaden their scientific view of the world around them
- Explore, talk about, test and develop 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
- 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
- Draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.
- Work scientifically
- Read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge

When Working Scientifically Lower Key Stage 2 pupils will:

- Ask relevant questions and use different types of scientific enquiries to answer them
- Set up simple practical enquiries, comparative and fair tests.

- Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, include thermometers and data loggers
- Gather, record, classify and present data in a variety of ways to help in answering questions
- Record findings use simple scientific language, draw, label diagrams, keys, bar charts, and tables
- Report on findings from enquiries; include oral and written explanations, displays or presentations of results and conclusions.
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- Identify differences, similarities or changes related to simple scientific ideas and processes
- Use straightforward scientific evidence to answer questions or to support their findings

By the end of Upper Key Stage 2 pupils will:

- Enable pupils to develop a deeper understanding of a wide range of scientific ideas
- Explore and talk about their ideas; ask their own questions about scientific phenomena; and analyse functions, relationships and interactions more systematically
- Encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates
- Recognise that scientific ideas change and develop over time.
- 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

When Working Scientifically Upper Key Stage 2 pupils will:

- Plan different types of scientific enquiries to answer questions, include recognise and control variables where necessary
- Take measurements, use a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Use test results to make predictions to set up further comparative and fair tests
- Report and present 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
- Identify scientific evidence that has been used to support or refute ideas or arguments

How is Science delivered at Carleton St Hilda's CofE Primary School?

- Knowledge and understanding taught in blocks of work with a new topic each half term, following the Developing Experts units.
- Science taught discretely every week.
- Where possible links made with other subjects to enrich learning through our curriculum
- Regular opportunities for children to develop their investigative skills focusing on different aspects of enquiry
- Incorporate the use of technology where appropriate
- Regular practical lessons
- Teachers use TAs to help support children when needed
- Teaching of scientific vocabulary during the topic, with vocabulary revisited during retrieval tasks in each lesson

- Provide a range of engaging resources to enable the children to carry out fun and exciting experiments to deepen their learning and develop their understanding of the concept that is being taught
- Opportunities for paired, group and class discussion/debate to consolidate learning
- Use of STEM ambassadors, visitors, parents and online resources to raise the children's Science Capital where possible.

This is what Adults do:

- Teachers plan and deliver a series of lessons which build on areas previously taught in other year groups that show progression, following the Developing Experts units of work.
- Teachers will ensure lessons meet the needs of all learners by scaffolding and extending as appropriate
- At all ages, teachers will engage the pupils through the use of engaging resources and use of media to carry out practical sessions
- Subject lead will conduct book looks, pupil voice and lesson observations
- All adults will support, encourage, foster and nurture a love of Science
- Adults with research innovative, engaging practice and new techniques

This is how we support and ensure access for all children:

- Support in learning the vocabulary for EAL and SEN pupils in order for them to join in with discussion
- Work will incorporate support and scaffolding so that all children can meet the Learning Objectives for each lesson
- Teachers to identify which children will need support during different lessons
- Experiment resources to be checked to ensure they are safe and can be used with the children
- Children who have SEN or EAL needs are supported with key vocabulary
- Seating children alongside good role models to support one another
- By providing visual/practical prompts
- Teaching lessons using a range of different techniques e.g. videos, drama, artefacts, texts etc.

This is how we challenge:

- Work extended to give certain children a further challenge
- Questions can be asked to children to further their individual knowledge and work on the extra information they may know
- Children to be allowed to use initiative during team activities and experiments

This is what you might typically see:

- Engaged learners
- Practical/hands on investigations where possible
- Open and closed questioning for retrieval activities
- Children posing their own questions and hypothesis for investigation
- Paired/group work
- Varied activities
- Children discussing, reflecting and sharing their learning

This is how we know how well our pupils are doing:

- Lessons planned based on work done in previous year groups to ensure children are progressing and building on prior knowledge
- Formative assessment through effective questioning during lessons and retrieval tasks

- Observations of children during investigation and exploration
- Photographic/video evidence
- Assessment tracked at the end of each block of work that will be passed on to the next teacher

This is the impact of teaching:

- Confident children who can talk about their science lessons and discoveries they've made
- Children are able to use and explain the meaning of scientific vocabulary
- Children who can confidently explain what they have learnt
- Children who are prepared to take risks
- Children who enjoy science lessons

Health and Safety

When working with science equipment and materials during practical activities teachers should ensure that children understand the hazards and learn how to control them, ensuring the safety of themselves and others.

Monitoring and Review

It is the responsibility of the science subject leader and Senior Leadership Team to monitor the standards of children's work and the quality of teaching in science. 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 monitoring standards in the subject across the school.

This policy will be reviewed annually by staff and governors