Scargill Church of England Primary School

Science Policy

This policy sets out a framework within which teaching and non-teaching staff can work, and gives guidance on planning, teaching and assessment.

What is Science at Scargill?

Science is a way of working that allows children, through practical first-hand experiences and secondary sources, to develop their knowledge and understanding of the world in which they live. These experiences should enable children to observe, question, investigate, make sense of, communicate and evaluate their findings. Our teaching intends to increase the science capital for all of our children and help them to recognise the potential for science in their future lives.

Intent:

At Scargill, we aim to provide a broad, rich, purposeful and well-sequenced science curriculum which enables our children to: know more, experience more, remember more and do more. Finely focused teaching covering all science objectives from the National Curriculum will embed prior and new learning, helping all children achieve in science. We do not use a specific science scheme; our lessons are carefully planned using the guidance of our knowledge organisers and progression documents for curriculum components, enquiry skills and tier 2 and 3 vocabulary. We believe that providing an engaging science curriculum will encourage our children to learn new facts and have opportunities to generate their own questions, research and investigate in addition to developing children's curiosity, interest, knowledge and understanding of their immediate environment as well as the world beyond school. We endeavour to help our children develop their knowledge of scientific ideas by using scientific enquiry in order to answer their own questions. At Scargill, our aim is that through stimulating and challenging experiences, children will secure and extend their scientific knowledge, skills and vocabulary. Providing these opportunities will ensure that our children are confident and curious learners who are developing the skills and knowledge to explore and build their understanding of our technological world.

Implementation:

At Scargill, we recognise that our curriculum planning must allow for children to gain a progressively deeper level of knowledge, understanding, skill competency, and scientific vocabulary as they move throughout the school. Learning is a change to the long-term memory and our approach to teaching science accounts for this. Every child's learning journey in science is carefully structured in order to build up to achieving the composites of the National Curriculum. These are the top level outcomes which are multi-faceted summaries, involving a range of knowledge and skills. Teachers identify the top-level outcomes and refer to our 'Science Cycle A and B Overview' to ensure that the key objectives are taught inline with each of our cycles of learning (Cycle A and Cycle B). This supports quality first teaching of mixed year group cohorts.

The composites of the science National Curriculum are made up of incremental steps known as the components. These sequence the knowledge and skills that build upon previous learning whilst clearly outlining the current knowledge and skills that our children need to know within each science unit of work. Our teachers refer to the knowledge composites to focus lesson objectives and keep lesson content concise and specific to meet the needs of individuals and groups of children. Teachers can also refer to the 'Implementation of Science at Scargill' document and the vocabulary and working scientifically progression documents to see the progression of teaching and learning of science across our school and therefore the prior and post teaching learning objectives for the area of science being planned and taught.

Systematic enquiry opportunities are provided in Reception, based upon all areas of Development Matters, but primarily in 'Understanding the World' (ELG: The Natural World).

At Scargill, Key Stage 1 and 2 science is taught as a discrete subject. In Reception, opportunities for scientific enquiry occur throughout continuous provision and recording of work can be found within their cohort's learning journey. The school uses a variety of teaching and learning styles in science lessons and Reception provision. Our principal aim is to develop the children's knowledge, skills and understanding in Science. In Key Stage 1 and 2, we believe in whole-class teaching methods and where possible combine these with practical investigations and experiments. In Reception, we include practical investigations and experiments through a combination of topic-related and child-centred learning to facilitate our children's enquiry skills.

Working Scientifically

Working scientifically must always be taught through and clearly related to the composite and component parts of our science curriculum. Children at Scargill learn to use a variety of approaches to answer relevant scientific questions by collecting, analysing and presenting their findings. We aim to develop the following skills: observing, raising questions, predicting, hypothesising, planning, controlling factors (fair testing), measuring, collecting and interpreting data, constructing tables and graphs, explaining, communicating and evaluating findings and researching information. We aim to foster the following qualities: excitement, curiosity, perseverance, open-mindedness, self-discipline, sensitivity to others, independence, adaptability, co-operation, and care for living things.

What is taught in Science?

At Scargill, we don't teach science through a specific science scheme. Our school curriculum is based upon the programmes of study outlined in the National Curriculum 2014 for Key Stage 1 and 2 and the EYFS Framework in the Foundation Stage. Children in our Reception cohort work towards achieving the Early Learning Goals in the prime and specific areas of Development Matters. Teachers plan topics and build upon and develop children's own interests and curiosity about the world they live in. In Key Stage 1 and 2, teachers plan lessons that are based around the units outlined

in the National Curriculum. These have been developed into half-termly topics within our Cycle A and B curriculum overview. A science sequence of learning is split into 5-7 lessons depending on the number of National Curriculum objectives in the unit. The lessons are ordered so that the children's knowledge builds and is reinforced each week so that they develop well-connected webs of knowledge (schema). Knowledge organisers and component documents help teachers to plan well-sequenced lessons in manageable chunks and opportunities for working scientifically are identified and planned for throughout.

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. Learning about science should be done through the use of first-hand practical experiences as well as utilising appropriate secondary sources, such as books, photographs and videos.

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.

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. Children 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.

Assessment and Recording

At Scargill, assessment is an integral part of the teaching process. The assessment of children's work is continuous and we are constantly checking our children's learning by questioning, observing, discussing and marking (teacher/peer) to ensure that understanding is being achieved and that progress is being made. Our short retrieval tasks and 'Make it Stick!' slips every lesson show us that our children are remembering more. Misconceptions identified in children's books are followed up with the children as soon as possible. Preferably through instant feedback during the lesson, and each lesson begins with a retrieval practice opportunity focusing on prior learning to ensure the children have frequent chances to develop their schemas around scientific concepts to support learning and a change to the knowledge held in their long-term memories. The marking of science work is guided by the school's Marking Policy. We record the children's learning on a class assessment grid 3 times per academic year so that any learning not secured can be revisited. Marking feedback sheets are also completed every lesson to detail specific lesson assessment.

Monitoring the quality of education

Pupil voice – talk to children in different year groups about their learning and how they feel about the subject to gather opinion. Find out what they have learned from a topic and/or an educational visit. Find out how science links to what they do in everyday life. What would they like to do when they grow up?

Work scrutiny – look at the quality and content of work produced by children across the school.

Learning walks – observe science lessons throughout the school. Observe teaching, learning and attitudes.

Staff CPD – providing appropriate CPD to ensure that teachers are suitably equipped with the understanding, knowledge and skills required to teach our science curriculum at Scargill.

Class assessment grid – quality assure assessment judgements and liaise with staff.