CANTRELL PRIMARY AND NURSERY SCHOOL

SCIENCE POLICY

2024

National Curriculum

The national curriculum states: “A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world’s future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.”

Curriculum Intent

At Cantrell Primary School we are scientists! We want our children to love science. We want them to have no limits to what their ambitions are and grow up wanting to be astronauts, forensic scientists, toxicologists or microbiologists. We want them to embody our core values; to be ready, resilient, resourceful, reflective and respectful. The intent is for our Science teaching to equip our children with not only the minimum statutory requirements of the science National Curriculum, but to prepare them for the opportunities, responsibilities and experiences of later life. Our Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. We believe Science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the ‘Working Scientifically’ skills are built-on and developed throughout children’s time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.

Our aim is to ensure that all children:

- Develop an active interest in Science and enjoy Science based activities
- Gain a secure foundation in scientific knowledge, understanding and skills.
- Develop the confidence and ability to apply their scientific knowledge and skills to everyday life and to all areas of the curriculum.
- Develop confidence, initiative and perseverance when tackling problems and exploring new situations
- Gain experience of working co-operatively towards a common goal giving consideration to others.
- Gain knowledge and understanding of the world and understand the effects of their actions on the environment.

Planning

We carry out the curriculum planning in Science in three phases (long-term, medium-term and short-term).

The Science National Curriculum specifies which topics should be taught in each year group and our long-term plan called the science subject overview identifies when the different subjects and topics will be taught across the academic year by term.
Our medium-term plan is extremely detailed and identifies learning objectives, key factual learning, practical tasks, key vocabulary and cross-curricular links. This document is maintained by the subject leader, teachers of science, and overseen by the curriculum lead and senior leadership team. It is published on the school website.
Teachers use the medium-term plans identified above to develop their own short-term plans and teaching resources to deliver taught lessons.

Curriculum Implementation

Teaching

Early Years and Foundation Stage

In the Early Years and Foundation Stage the majority of Science teaching and learning comes through the early learning goal, 'Knowledge and Understanding the World.' Children must be supported in developing the knowledge, skills and understanding that help them to make sense of the world. Their learning must be supported through offering opportunities for them to use a range of tools safely; encounter creatures, people, plants and objects in their natural environments and in real-life situations; undertake practical 'experiments'; and work with a range of materials.

Key Stage 1

In Key Stage 1, science teaching is taught as a discrete subject. The main focus of Science teaching in Key Stage 1 at Cantrell, is for all children to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. We want children to become curious and ask questions in order to develop their understanding of scientific ideas. Most scientific learning is approached through the use of practical first-hand experiences, with the use of secondary sources where appropriate, such as books, photographs and videos.

Key Stage 2

In Key Stage 2, Science is taught as a discrete subject. The main focus of Science teaching 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 carry out simple fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use scientific language, first, to talk about and, later, to write about what they have found out. As much as possible, teaching should be through hands-on, practical experiences, and should begin to use a wider range of secondary sources, to include diagrams and graphs. As children progress through the Key Stage, 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. Teaching encourages children to be enthusiastic and excited about their new scientific discoveries, leaving Cantrell confident in their scientific knowledge.

Teaching science to children with special needs

We teach science to all children, whatever their ability. Science forms part of the school curriculum policy toprovide a broad and balanced education for all children. Through our science teaching, we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning challenges and responding to each child's different needs. Our work in science considers the targets set in the children's EHCP (education healthcare plan), IPM (individual provision map) or PSP (pupil support plan). Appropriate adaptations are made where necessary.

Contribution of Science to teaching in other curriculum areas:

Literacy

Science contributes significantly to the teaching of Literacy at Cantrell by actively promoting the skills of thinking, reading, writing, speaking and listening. This starts at the earliest levels of children's scientific learning, in the Early Years, contributing to children's language acquisition. Children develop their vocabulary throughout their Science journey, constantly developing their scientific vocabulary through experiences in which scientific terms are introduced and used by the children as they discuss and talk about what they have learnt. The children develop oral skills in science lessons through discussions and through recounting their observations in scientific experiments. This understanding of scientific language allows them to develop their writing skills through creating appropriate written accounts of an activity.
As in all areas of the curriculum at Cantrell there are opportunities for children to develop their reading skills; children are exposed to a wide variety of texts in science, and teachers ensure that appropriate non-fiction topic books are available to children for each new unit of learning. Where appropriate, science learning may be linked to a fiction book, as a stimulus for learning.

Maths

Science contributes to the teaching of mathematics in a number of ways. There are many opportunities for children to apply mathematical knowledge and skills through the science curriculum, for example; the children use weights and measures and learn to use and apply number skills; applying problem solving skills when planning and conducting investigations and experiments; they learn to estimate and predict as well as collecting and recording data; they develop the skills of accurate observation and recording of events; they use numbers in many of their answers and conclusions.

Computing

Where appropriate, teachers are encouraged to make meaningful links to computing when planning and teaching Science. Children use computing to support their work in science by learning how to find, select, and analyse information on the internet. Children use computers to record, present and interpret data and to review, modify and evaluate their work and improve its presentation.

Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of personal, social and health education through the teaching of healthy eating and exercise, as well as the children benefitting from opportunities to enjoy nature. There are opportunities within science lessons for children to take

part in debates and discussions. Science at Cantrell promotes the concept of positive citizenship in our dedication to sustainability.

Spiritual, moral, social and cultural development

Science teaching at Cantrell offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children develop a broad understanding regarding the natural world. Science raises many social and moral questions. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people and the environment, on both a local and global level.

Geography

Science, in its very nature, has close links with Geography. Both seek to discover and explore the world around us, moving us towards a better understanding of our world. The Working Scientifically strand links closely with enquiry-based learning in the Geography curriculum.

Impact

Our Science Curriculum is high quality, well thought out, deliberate and is planned to demonstrate progression.
We have set out our expectations for each year group in the Cantrell Primary School Science Curriculum Document. Through the curriculum planning and delivery of science at Cantrell, we expect the vast majority of children to understand the key factual learning.

It is our aim at the end of EYFS for children to attain The Early Learning Goal in Knowledge and Understanding of the World.
By the end of KS1 we expect pupils to achieve a good understanding of key factual learning and be able to articulate answers to the key question set as part of each unit.
By continuing to make this level of expected progress, by the end of KS2 we expect pupils to be able to show a detailed understanding of key questions, learning objectives and key factual knowledge. We expect children to leave Cantrell with not only the
necessary skills and knowledge, but an ever-growing inquisitiveness and enthusiasm to continue their Science career throughout their learning journey and beyond.
We measure the impact of our curriculum through ongoing monitoring and reviewing of our Science Documentation which is the responsibility of the subject leader, as outlined below.

Assessment

Throughout the school teachers will assess children's work formatively in Science, through observations, questioning and through our feedback policy. Teacher's planning encapsulates the key principles of assessment for learning; active pupil involvement and responsive teaching. These assessments inform the teachers planning for future lessons, to ensure progression of all children. At the end of each Science unit the children are given the opportunity to answer the question which they encountered at the start of the unit. This final assessment piece might take the form of a poster, a knowledge organizer, a labelled diagram or a piece of written prose.

Progress is reported to parents through parents' evenings and the annual report for each child.

Monitoring and review

Monitoring of the standards of children's work and of the quality of teaching in Science is the responsibility of the Senior Leadership team and Science subject leader. The work of the Science subject leader also involves supporting colleagues in the teaching of Science, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school. Subject leadership time is allocated to the Science subject leader so that s/he can review samples of children's work and undertake lesson observations of Science teaching across the school.

A named member of the school's governing body is briefed to oversee the teaching of Science. This governor meets with the subject leader to review progress termly and receives a written commentary which reports on:

-recent development work

-performance analysis

-pupil outcomes in relation to development priorities, their impact on teaching and learning, and future developments.

Governors are also invited to monitor the effectiveness of the school through a variety of other activities including learning walks and classroom observations as per the Monitoring and Evaluation framework in the School Improvement Plan.