

The Canons CE Primary School



Science Policy

Reviewed October 2024

Purpose of study

Science is a core subject in the National Curriculum. This policy will form the basis upon which we map out the statutory orders for science across the primary phase. It will outline the purpose, nature and management of how science is taught and learnt in our school and will inform new teachers of expectations.

All staff are fully aware of their role in its implementation. Staff have access to the Policy via the school's server via the shared area.

Curriculum Statement

Intent:

Science is a means of discovering and understanding the world around us. It consists of a body of knowledge which attempts to explain phenomena and experiences. It also involves a number of skills and processes by which this knowledge is achieved and applied. Science forms an integral part of our everyday life. It is therefore important for all children to be scientifically literate.

At The Canons, we aim to give every child the opportunity to live life in all its fullness, by providing rich learning experiences, educational visits, extra-curricular activities and enrichment opportunities. Each year we have a STEM Week which gives the children an opportunity to showcase their talents and encourages a week of scientific enquiry and investigations within the classrooms. We have previously had a STEM club for year 2, year 3, year 4 and year 5 pupils for one term with an outside agency, who is a parent. Last year, we ran a science club for year 1 pupils. We value the role that outdoor learning can have in a child's development and aim to incorporate these into our science curriculum, for example the EYFS using the outdoor classroom during their Animals topic.

Every year group has a cross curricular topic with a science focus, for example: 'Spring and New Life' in reception and 'Protecting our World' in year 4. Some science topics are taught as discrete units, for example 'Evolution and Inheritance' in year 6 and 'Electricity' in year 4. The planning, teaching and assessment of the science curriculum is informed by Rosenshine's principles of instruction. An enquiry-based approach is used in science, which focuses on the acquisition of scientific knowledge and conceptual understanding (substantive knowledge) before 'proving' or inquiring through investigations (see Ofsted research February 2019).

We believe that children should develop a wide scientific vocabulary and a rich understanding of meaning of words they encounter. Alongside the teaching of scientific knowledge and conceptual understanding (substantive knowledge) and the methods that establish the substantive facts (disciplinary knowledge), we also teach pupils a

range of vocabulary associated with each science unit. Opportunities are given across all year groups for reading in science. This starts in the early years by reading labels and captions, exposure to story books, non-fiction text, rhymes and poems and progresses to reading age-appropriate non-fiction texts in the later years. We use knowledge organisers to develop learning to help the children retain science subject knowledge and vocabulary.

Implementation:

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following:

- Science is taught in planned and arranged in topic blocks, using the National Curriculum to provide a structure and skills development for science being taught. Where possible, links to learning across a range of subjects are used to enable the achievement of our mastery approach.
- In the EYFS, continuous provision is in place to support children in meeting the Early Learning Goals; this is covered through the year, based on themes, children's interests and the time of the year.
- Existing knowledge is checked at the beginning of each topic, asking children what they already know. This ensures that teaching is informed by the children's starting points and allows teachers to adapt planning if current understanding does not align with the learning progression document.
- Through our planning, we involve problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves. Throughout each year children use the 5 different types of scientific enquiry to explore their science learning. Children are encouraged to ask their own questions and are given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom.
- The delivery of science aims to be engaging, often involving high-quality resources to aid understanding of conceptual knowledge.
- Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils make sufficient progress and are prepared for their next stage of learning. Tasks are selected and designed to provide appropriate challenge to all learners, in line with the school's commitment to inclusion.
- To support the retention of knowledge, children are provided with a knowledge organiser at the beginning of every unit which is engaged with regularly during the course of a topic.
- We build upon the knowledge and skill development of the previous years by using our science matrices to support planning. As the children's knowledge and understanding increases, they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.

- Working Scientifically skills are embedded into lessons to ensure that skills are systematically developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics. They use these skills to conduct scientific enquiries.
- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding.
- Children are offered extra-curricular activities and visitors to complement and broaden the curriculum; these are purposeful and link with the knowledge being taught in class.
- We have established a partnership with 'Nuneaton and Bedworth Enthuse Partnership' who help to inspire staff through CPD.
- STEM Week allows all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills.
- At the end of each topic, as well as throughout the learning, key knowledge is reviewed by the children and checked by the teacher, and consolidated as necessary.

Impact:

A whole school coverage map has been created to ensure that there is clear progression in science across the school, alongside 'Science Matrices'. The 'Science Matrices' provide the key learning, vocabulary and working scientifically skills for each science topic that is taught in each year group. Lessons are carefully planned to show progression in knowledge for each year group, and to build knowledge from one year to another – every year group has created a medium-term plan for each science unit, whether taught discreetly or as part of a wider topic, which shows the sequence of learning. Book looks show that there is a good balance of practical and investigational science being taught across the school. To further enhance teachers' knowledge and CPD, science training sessions have been delivered by subject leads to teaching staff, with a focus on the different types of scientific enquiry. This has aided their confidence in teaching practical science to ensure consistency in science teaching across the school. Science newsletters are also given out to staff on occasion to keep them up-to-date.

Assessments such as low stake quizzes are carried out by each class for every topic that is taught with a science focus. Pupils revisit prior learning as an introduction to their new learning, and this provides a context upon which pupils can integrate their 'new knowledge' into a wider context. Pupils are also involved in assessing their own learning, using self and peer assessment by reflecting on their previous learning and the progress they have made. Assessments are validated by the class teachers, which helps aid their next steps for teaching and shows clear progression of key knowledge across the science unit that has been taught.

At The Canons, we adopt the 'mastery' approach to teaching, however, adaptive teaching is still key to ensure there is progression in science for all, including pupils with additional learning needs. Questioning (verbally and through marking) is evident to challenge pupils as much as possible within all lessons. Pupils with SEND are supported through explicit instruction, questioning, scaffolding, group/partner work, adult support and technology is also sometimes used to further support them.

Aims

- To develop the natural curiosity of children about the world around them.
- To develop investigative minds through a range of enjoyable and interesting experiences.
- To develop scientific knowledge, concepts and skills through a process of enquiry and investigation.
- To develop the ability to reason, predict, think logically and to work sympathetically and accurately.
- To provide opportunities for children to apply theoretical ideas to the solving of practical problems both independently and collaboratively.
- To foster a positive attitude towards science and increase pupils' understanding of how science is used across the curriculum and in the wider world.
- To develop the accurate use of scientific vocabulary and the ability to communicate scientifically.

Teaching and Learning

At The Canons we use a variety of teaching and learning strategies in our science lessons. Our principle aim is to develop children's knowledge skills and understanding.

- Sometimes we do this through whole class teaching and discussion while other times teachers will provide practical opportunities for children to investigate scientific concepts.
- We encourage children to ask as well as answer questions.
- Children will engage in a variety of problem solving activities and wherever possible, we involve pupils in scientific activities.
- Children will be given the opportunity to use a variety of data such as graphs, pictures and photographs to take part in discussions and represent results.

- Pupils are encouraged to develop the skills of the 5 different types of scientific enquiry.



Leadership

The co-ordinators are responsible for:

- Understanding the requirements of the subject.
- Preparing policy documents, curriculum progression maps and schemes of work.
- Encouraging all staff to provide effective learning opportunities for all pupils.
- Helping staff to develop confidence in their own subject knowledge.
- Ordering resources across both sites when requested. We can also use our partnership to assist with this.
- Ensuring age appropriate assessment is carried out.
- Communicating developments within the subject through staff meetings and training opportunities for professional development.
- Organising and monitoring the teaching of science through book trawls and coverage across the year.
- Providing children with extra-curricular activities to promote a positive attitude towards science.
- Planning a STEM week each year.

Staffing

The class teacher is responsible for timetabling to ensure that relevant sections of the Schemes of Work are covered throughout the year. Teachers will use a balance of:

- Teacher-prepared materials.
- Accessing White Rose and Developing Experts to further support planning.
- Practical tasks.
- Visitors.
- Educational visits (where appropriate)

The class teacher is also responsible for monitoring the progress of the children through the use of 'learning ladder' statements, formative assessments and pre and post assessments.

Planning

Planning in Years 1 to 6 is based on thematic teaching as well as some discrete teaching to ensure coverage. Through long and medium term planning we are able to see how the curriculum will be covered over the year as well as assessment opportunities. Short term planning is used flexibly and will provide a more in depth look at learning intentions, scientific vocabulary to be covered, skills to be taught and adaptive teaching.

EYFS

We teach science in the Early Years as an integral part of the topic work covered during the year, similar to that seen in Key Stage 1 and 2. Scientific aspects of the children's work is related to the objectives set out in the Knowledge and Understanding of the World Early Learning Goals.

Assessment and Recording

Assessment at The Canons CE Primary is designed thoughtfully, inspired by Rosenshine's principles of instruction, to shape future learning and considers assessment that is not excessive or onerous as it is part of the day to day working practices of the classroom. Teachers ensure that pupils embed key concepts in their long-term memory through the use of recapping, reviewing, knowledge organisers, carefully considered questioning, and marking and feedback. Pupils re-visit and review prior learning as an introduction to their new learning and this provides a context upon which pupils can integrate their 'new knowledge' into wider context. Assessment is reliable and monitored by subject leads to ensure that expected outcomes are fully understood by all staff and there is consistency across the school. Children are encouraged to reflect on the big question and ensure they answer using their acquired learning to show understanding. Pupils are also involved in assessing their own work using peer and self-assessment by reflecting on their learning and the progress they have made.

Continuity, Progression and Standards

Progression is promoted throughout the school through progression maps and science matrices supplied by the science coordinators. The science matrices outline each year group's objectives, what is covered previously and future and examples of suitable investigations that can be carried out. The use of the National Curriculum and the

breakdown of learning intentions through 'learning ladders' are used in conjunction with this. Continuity across the subject will be monitored by coordinators to ensure depth and breadth of different topic areas. This will be done through monitoring such as book looks, pupil voice discussions and lesson drop ins. At The Canons, we set high expectations for all learners.

Health and Safety

The school's Health and Safety policy outlines the safe codes of practice for our school and provides the necessary guidance on the responses and reporting of all incidents.

Children are encouraged to assess hazards and discuss the appropriate precautions. Children are taught the appropriate safe practice when using equipment. This will include:

- How to use equipment correctly and in accordance with guidelines.
- To behave in a considerate and responsible manner, showing respect for other people and the environment both in and out of school.

Equalities Statement

The Canons C.E. Primary School is committed to valuing diversity and to equality of opportunity. We aim to create and promote an environment in which pupils, parents and staff are treated fairly and with respect, and feel able to contribute to the best of their abilities.

The Governing Body recognises that it is unlawful to take into account anyone's gender, marital status, colour, race, nationality, ethnic or national origin, disability, religious belief, age or sexual orientation. Full consideration has been given to this during the formulation of this policy as it is the governors' aim that no one at The Canons School should suffer discrimination, either directly or indirectly, or harassment on any of these grounds.