

St Matthew's Catholic Primary School



Science Policy

Approved by Governors: January 2024

“Welcome to our happy school, where everyone is valued and given the opportunity to ‘let their light shine.’ With Jesus in our hearts, we encourage love and respect for all. We strive to reach our goals, as we learn, and grow, in a safe and enjoyable environment.”

Policy Purpose:

Science is a core subject in the National Curriculum and it is vital that we ensure our teaching of science will support children's learning throughout their time at school. Our policy will show the statutory orders for science across the primary phase. This policy will outline the intent, implementation, teaching and learning, assessment, planning and resources, development throughout the school, equal opportunities, inclusion, role of the subject lead and health and safety. This should support and inform teachers of our expectations here at St Matthew's Catholic Primary School.

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.'

The National Curriculum for science 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 investigations and 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.
- Develop an enthusiasm and enjoyment of scientific learning and discovery.
- Develop the vital scientific enquiry skills to deepen their scientific knowledge

We recognise the importance of science as a core subject, and we give the teaching and learning of the subject the importance it requires. The scientific area of learning is concerned with increasing pupils' knowledge and understanding of our world and with developing skills associated with science as a process of enquiry. We think it is vital to develop the natural curiosity of a pupil and allow them to ask and answer challenging questions and successfully carry out investigations.

The National Curriculum provides a structure and skills development for the science curriculum being taught throughout the school, which, where possible, links to learning across a range of subjects to allow for a depth of learning. Additional opportunities are provided in science through school trips and visits from Captain Chemistry.

We strive to ensure that the science curriculum we provide will give children the confidence and motivation to continue to further develop their skills into the next stage of their education and life experiences.

Implementation:

Our 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 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 a greater depth of knowledge.
- In the EYFS, continuous provision is in place to support children in meeting the Early Learning Goals; this is covered throughout the year, based on topics, children's interests and the time of the year.
- Prior knowledge is checked at the beginning of each topic, asking children what they already know. Retrieval is also used at the start of each lesson to support the teacher in understanding which concepts have been learned confidently and which may need some more work on. This ensures that teaching is informed by the children's starting points and allows teachers to adapt planning if needed.
- Through our planning, we involve problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves. Children are encouraged to ask their own questions and are given opportunities to use their scientific skills and research to discover the answers.
- The delivery of science aims to be engaging, 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 children's 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 challenges to all learners, in line with the school's commitment to inclusion.
- In line with the trust, all children have topic sheets which are put in their books at the start of each topic that have all of their scientific vocabulary for each topic to support their learning.
- We build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases, they become more independent in selecting, using scientific equipment, collecting and analysing results, they become increasingly confident in their growing ability to come to conclusions based on their findings.
- Scientific 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.
- Teachers model how to use scientific equipment, and the various skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts, such as Captain Chemistry.

- Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum; these are purposeful and link with the knowledge being taught in class.
- Regular events, such as Science Week, allow us to provide broader provision and the acquisition and application of knowledge and skills.
- At the end of each topic, key knowledge is reviewed by the children and checked by the teacher.

Impact:

Our purposeful approach results in an engaging, high-quality science education that provides children with the foundations and knowledge for understanding the world and supports their future learning. Frequent, continuous and progressive learning outside the classroom is embedded throughout the science curriculum. Through various workshops, trips and interactions with experts, children have the understanding that science has changed our lives and that it is vital to the world's future.

Teaching and Learning:

The science curriculum is mapped to ensure alignment with the National Curriculum content and programme of study. Key knowledge relates directly and builds towards the achievement of end of phase (KS1, Lower KS2 and Upper KS2) 'end points', informed by the National Curriculum statements. Key skills are also mapped so that these are developed systematically and align directly to the specified working scientifically statements as outlined in the National Curriculum for each phase.

Science is best taught when:

- We are given increasing responsibility and independence to lead our own investigations.
- We ask questions and work in groups to discover the answers.
- We gather scientific knowledge and develop our conceptual understanding through a range of scientific enquiries
- We create and carry out investigations and can share and explain our hypotheses and conclusions.
- We apply our skills to solve problems, explore and investigate
- We are able to link our learning to the real world and are provided with a sense of purpose.
- We build on our prior learning, enabling us to progress and develop our scientific knowledge further.
- Our learning is enhanced through the outdoors, specialist visitors and access to a range of high-quality resources.

To ensure we have high standards of teaching and learning in science:

- Children are encouraged to ask their own questions and are given opportunities to use their scientific knowledge, skills and research to discover the answers.
- Teachers ask a range of open and closed questions, which enable all children to take part, listening carefully to answers and moving learning forward and allowing children time to think.
- Short-term plans strive for engaging lessons, 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 good progress.
- New scientific vocabulary and concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.
- Scientific skills are embedded into lessons and these focus on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching. Pupils are given the opportunity to seek answers through collecting, analysing and presenting data.
- Teachers demonstrate how to use scientific equipment through modelling.
- Teachers find opportunities to deepen children's understanding through learning outside the classroom.
- Science lessons provide a quality and variety of subject specific language to enable the development of children's use of scientific vocabulary and their ability to articulate scientific concepts clearly. Children are encouraged and supported in making their thinking clear, both to themselves and others, and teachers ensure that pupils build secure foundations by using discussion to find and address their misconceptions.

Assessment:

At the start of each topic, teachers review the children's prior knowledge of what they will have learned in previous years. This helps to inform teachers with their planning to see if there is any particular parts of a topic that need revisiting. The school overview ensures that topics are built on gradually as children move up the school. In addition to this, lessons are planned to ensure that key knowledge is developed over time, in a progressive sequence. Key knowledge is reviewed by the children and checked and consolidated by the teacher at the end of each topic.

Lessons within each unit are also planned to ensure the systematic development of the key identified skills across the school.

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study as set out in the National Curriculum. These are set out as statutory requirements.

Teachers provide children with effective feedback. Where misconceptions arise, these are addressed by the teacher. Accurate spelling of topical vocabulary is also identified in books.

Ongoing assessment also includes:

- Observing children at work, individually, in pairs, in a group, and in classes.
- Questioning, talking and listening to children.
- Considering work/materials/ investigations produced by children together with discussion about this with them.
- Retrieval used at the beginning of each lesson.

Equal opportunities and Inclusion:

We are committed to provide a teaching environment which ensures all children are given the same learning opportunities regardless of gender, social class, race, culture, special educational needs or disability.

In addition to this, science teaching considers the needs of different individuals and groups and ensures work is designed and differentiated appropriately to ensure each child is sufficiently challenged. Teaching assistants also support children where necessary.

Role of the subject leader:

- To ensure the high profile of the subject and provide a strategic lead and direction for science in the school.
- To maintain, update and ensure use of the central supply of science resources, in accordance with those specific to each year group and topic.
- To support colleagues in their teaching of science and support the CPD of others.
- To ensure progression of the key knowledge and skills identified within each unit.
- To monitor books and ensure that key knowledge is evidenced in outcomes and to ensure that the trust scheme is being followed across all year groups.
- To monitor planning and oversee the teaching of science.
- To lead further improvement in and development of the subject as informed by effective subject overview.
- To ensure that the science curriculum enables progress and raises attainment of all pupils, including those who are disadvantaged or have low attainment.
- To establish and maintain existing links with external agencies and individuals with specialist expertise to enrich teaching and learning in science.
- To organise an annual whole-school science week, in accordance with the national theme, ensuring a focus on practical and investigative activities.

Health and safety:

Teachers should ensure they are following the school's health and safety policy when undertaking investigations that may be harmful. This could include using equipment such as batteries, wires, glass, torches, sharp objects, magnets, liquids and food-based items (any food-based items used need to be checked by the first aid lead to ensure they are safe to use in school).

Date Reviewed: Spring 2024

Next Review Date: Spring 2026