



St Mary's Science

Intent, Implementation and Impact

Intent

At St Mary's, we recognise the importance of Science in every aspect of daily life. Our science curriculum encourages pupils to be inquisitive and fosters a sense of excitement and curiosity in raising questions about the world around them. At St. Mary's, we believe that a high-quality science education provides the foundations for understanding the world. In line with the National Curriculum, it is our aim that children will:

- 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 enquiries that help them to answer scientific questions about the world around them
- be equipped with the scientific skills required to understand the uses and implications of science, today and for the future

We believe science encompasses the acquisition of knowledge, skills and positive attitudes. Our pupils build up a body of key foundational knowledge throughout their time at our school, whilst also developing ideas and ways of working that enable them to make sense of the world in which they live through carrying out a range of scientific investigations, involving predicting how things will behave, working systematically, explaining what is occurring and analysing causes. They are also encouraged to develop skepticism to challenge the reliability of what they believe to be true. Our aim is to equip our pupils with the scientific skills required to understand the uses and implications of science, today and for the future.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in science. We follow the National Curriculum for our lessons. 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. Key skills are also mapped for each year group and are progressive throughout the school. These too ensure systematic progression to identified skills end points which are in accordance with the Working Scientifically skills expectations of the national curriculum.

EYFS	KS1	KS2
<p>Science in our EYFS is taught indirectly through the following areas:</p> <ul style="list-style-type: none"> · Understanding the world · Communication and language · Mathematics · ELG- The natural world <p>Key skills covered are: Noticing change/difference Experimenting with textures and materials. Exploring nature and seasons. Caring for living things, plants and animals and observe their changes over time. Naming parts of the body and senses and understand our needs. Understanding the affect humans have on the world.</p>	<ul style="list-style-type: none"> · Everyday materials Including uses of everyday materials · Animals including humans Human sense organs (Y1) Animal offspring (Y2) · Plants Naming plants and trees (Y1) The need for water and light (Y2) · Seasonal changes · Living things and habitats 	<ul style="list-style-type: none"> · Animals including humans Human nutrition (Y3) The digestive system (Y4) Changes in humans (Y5) The circulation system (Y6) · Light Reflections, shadows, seeing things(Y3) How we see (Y6) · Rocks · Forces and magnets Friction (Y3) Gravity (Y5) · Plants · Living things and habitats Grouping living things (Y4) Life cycles (Y5) Classification system (Y6) · States of matter · Sound · Electricity · Properties and changes of materials · Earth in Space · Evolution

- At St Mary's, Science is taught through a sequence of weekly lessons which are planned to cover the knowledge from the national curriculum, whilst also containing opportunities for as much investigative work as that unit allows. The essential relevant information for a particular unit can be found on the corresponding Knowledge Organiser.
- Progression in science is ensured through the design of our curriculum where knowledge and skill build year on year as children revisit prior learning and broaden and deepen their scientific knowledge.
- Recall tasks form part of every lesson. As the children's knowledge and understanding increases, and 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.
- Fortnightly quadrant quizzes are carried out from year 2 upwards, which provide pupils with opportunities to revisit essential knowledge from previous units.
- Working Scientifically skills are embedded into lessons to ensure that skills are systematically developed throughout a child's science journey at St Mary's and new vocabulary and challenging concepts are introduced progressively through direct teaching.
- At the beginning of each unit, pupils will answer 'start of unit questions' on that unit's Knowledge Assessor to assess the cohort's initial knowledge and understanding and provide an opportunity to adapt the content within the sequence of lessons accordingly. In Year 1, this will be carried out through a show of hands following the teacher having read out each question.
- Teachers use precise questioning in class to test conceptual knowledge and skills and assess children regularly to identify those children with gaps in learning, so that all children keep up.
- At the end of each unit a summative test is carried out and a 'pop' (proof of progress) task is completed to gauge children's level of understanding.
- Each class has a science working wall, which children make regular use of. Key vocabulary is displayed, and their scientific journey is made clear, allowing children to reflect on their previous learning.
- Trips and visits are tailored to extend and deepen children's knowledge.
- Visitors linked to topics are encouraged to come into school, to allow children to ask questions, be curious and broaden their understanding.
- Lunch and after school clubs are offered.
- Science links are made across the curriculum, including a strong link with outdoor learning.

Impact/Assessment

As a scientist leaving St Mary's, every child will:

- Have a sense of awe, wonder and curiosity in the science in the world around them and have the skills to investigate, experiment and discover for themselves
- Be confident to ask their own questions and use their scientific skills to try to discover the answers
- Understand, and be inspired by the fact, that science is ever-changing and science changes our lives
- Have experienced a wide range of inspiring engagement and enrichment activities including educational visits and expert visitors
- Have a firm grounding in the disciplines of biology, chemistry and physics and a secure bank of knowledge and scientific skills which they can build on in the next stage of their science education.

We measure the impact of our curriculum through the following methods:

- A reflection on standards achieved against the planned outcomes;
- Knowledge Assessors are used at the start and end of a unit to assess knowledge and understanding gained during the unit, both for individuals (Y2-Y6) and for cohorts (Y1-Y6).
- Tracking of knowledge in pre and post learning quizzes
- POP tasks
- Pupil discussions and conferences to assess their understanding of key knowledge and vocabulary
- Book Monitoring
- Learning Walks including drop ins and formal lesson observations