

Vision

"In Science there are no limits, you have the power to change the world." (Science Ambassadors)

At St Mary's First School, our vision is to give children a science curriculum which enables them to explore and discover the world around them, confidently, so that they have a deeper understanding of the world we live in. We aim to develop children to life- long, passionate learners of science and the world around them. We provide a stimulating science curriculum that nurtures children's natural curiosity and their on-going intellectual development.

Through a hands-on, inquiry-based curriculum, children will experience the joy of having wonderful ideas, exploration and investigation - that is, the joy of finding out. Pupils' individual spiritual development is fostered throughout the curriculum, especially when our focus is on the outdoors, the awe and wonder in our beautiful world. Our Christian distinctiveness encourages to develop skills of reflection, meditation and stillness and to develop a personal response to God and the world.

Our aim is that these stimulating and challenging experiences help children secure and extend their scientific knowledge and vocabulary.

We believe it is important to show children there are no limits to their ability and show how science has a high profile within everyday life, with examples of careers within science and engineering becoming part of regular practice and discussions. From this, children can be inspired and want to inspire others with a passion for science all around them.

Aims

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 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.

Spiritual, moral, social and cultural development: Science teaching 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 sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of smoking, and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet, and how science can contribute to the way we manage the earth's resources. 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.

Science principles:

- The children learn with **practical** experiences, covering all areas of scientific enquiry.
- The children are provided with **exciting and engaging activities**, that stimulate curiosity and the awe and wonder of science all around them.
- Teachers plan differentiated tasks that are **creative** and thought provoking science.
- Teachers engage the children with **outdoor** learning opportunities, highlighting that science is all around us, with learning going beyond the classroom.

A range of teaching styles allow for **children to ask their own questions** and plan their own investigations. Pupil voice is valued, and the children learn through

- first hand experiences, developing their own scientific minds.
- Teaching and learning is **relevant** and current, often linking into ideas that are prevalent in the news or media. Activities are related to real life situations which allows for contextual learning. The children begin to think like a scientist because of these 'real' situations.

Objectives

- To provide opportunities that will engage the children in relevant, interactive first hand practical experiences. This will develop children's knowledge, skills and concepts.
- To encourage children to ask, as well as answer scientific questions.
- To provide opportunities to build upon vocabulary by having visible consistency in flipcharts and the delivery of science, working walls and vocabulary activities within their weekly lessons.
- To develop science capital for all pupils.
- To develop oracy skills so that children speak and think as a scientist.

Guidelines

EYFS "Understanding the world" involves guiding children to make sense of their physical world and their community through first hand experiences. Children will have frequent opportunities to increase their knowledge, vocabulary and their thirst to explore. They will have opportunities to explore the natural world, making observations and drawing animals and plants. They will explore similarities and differences between contrasting environments, drawing on their experiences and through stories and texts they have looked at. They will understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Floor books will be used to motivate children, encourage collaborative working and provide evidence of scientific enquiry.

At Key Stage 1: Pupils observe, explore and ask questions about living things, materials and physical phenomena. They begin to work together to collect evidence to help them to answer questions and to link this to simple scientific ideas. They begin to evaluate evidence and consider whether tests or comparisons are fair. They use reference materials to find out more about scientific ideas. They share ideas to communicate topic specific language and tiered vocabulary, drawing, charts, and tables with the help of ICT if it is appropriate. Floor books will be used to collate children's ideas and engagement of scientific enquiry and skills across the year groups.

At Key Stage 2: Pupils learn about a wider range of living things, materials and physical phenomena. They make links between ideas and explain things using simple models and theories. They apply their knowledge and understanding of scientific ideas to familiarise phenomena, every day things and their personal health. They think about the effects of scientific and technological developments on the environment and in other contexts. They carry out more systematic investigations, working on their own and with others. They use a range of reference sources in their work. They talk about their work and its significance, using a wide range of tiered scientific language, conventional diagrams, charts and ICT to communicate their ideas.

Assessment

Children work at their own level of understanding in Science.

We aim to ensure that children are given the opportunity to achieve through their experience of Science tasks and activities, and always provide the opportunity for our children to work towards higher level tasks.

Assessment in Science is based upon scientific knowledge and understanding, rather than achievement in English or Mathematics. Ongoing teacher assessment is carried out by the class teacher in various ways including end of topic tests, observations, questioning, elicitation activities and written evidence and explanations, to inform planning and assess the children's knowledge. TAPS assessment activities are planned in half termly to ensure the scientific skills are being assessed and to show progression across the key stages. All staff strive to ensure that our children reach their full potential in Science and that they understand and enjoy their experiences.

Assessment opportunities will be in place to ensure the children retain important knowledge and subject specific tiered vocabulary, and they are able to convey their ideas in a coherent spoken way. Activities are provided to record in a variety of ways including recordings, presentations, drawings and written work.

Monitoring children's achievements and attainment

Every teacher is encouraged to develop a breadth of evidence relating to children's achievements. These could include: the children's science book, big books used by groups or the class, models, notes and assessment sheets used by the teacher, and electronic examples of children's learning (e.g. video, graphs, their own concept cartoons, etc). At least once a year all teaching staff will meet in order to perform some moderation. At the end of each topic, teachers will update records to show where the children are working at. This summative assessment will enable the science leader to track children's attainment over time. Children who appear not to be making the expected progress will be highlighted, and actions will be taken to support them with developing the aspect of the learning with which they are struggling with. The science leader will perform children interviews/pupil conferencing throughout the year to assist the other teacher with making summative judgements, as well as identify aspects of the children's learning that require developing.

Roles and responsibilities

SLT:

- Review changes to the National Curriculum requirements and advise on their implementation.
- Maintain a record of wider opportunities that have been provided for the children.

Science Lead:

- Attend relevant CPD courses for Science as appropriate in line with the School Development plan.
- Observe science lessons being taught across the school. These observations will be used to identify areas of strength and where learning can be better developed in the future.
- Monitor the use of science resources (equipment, IT, written materials, people, places and spaces) throughout the year.
- Monitor the learning and teaching in Science and provide support for staff when necessary.
- Organizing Science events in school in line with LA and national initiatives.
- Develop science capital across the school for staff and children.

Class Teachers:

- Develop 'Initial and End of topic Assessments' and comparative tasks to show clear progress within a unit of work, and set new priorities for development of Science in subsequent years.
- Check that all aspects of science have been taught, as indicated in the long term plan and the curriculum progression documents.
- Endeavour to involve parents/ carers in their children's learning in and through science.

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