



Science Policy

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Science Policy

Rationale

Science is a systematic investigation of the physical, chemical and biological aspects of the world which relies on first hand experiences and on other sources of information. The scientific process and pupils' problem-solving activities will be used to deepen their understanding of the concepts involved. The main aspects of science to be studied will be determined by the programmes of study of the National Curriculum 2014. Through science, pupils at St Mary's will continue to deepen their respect, care and appreciation for the natural world and all its phenomena.

School Aims

We live in an increasingly scientific and technological age where children need to acquire the knowledge, skills and understanding to prepare them for the wider community. Through the framework of the National Curriculum 2014, science aims to:

- Stimulate children's interest and enjoyment in science.
- Build on children's enthusiasm, inquisitiveness and natural sense of wonder about the world.
- Encourage children to raise questions and learn how to investigate and explore these using both first-hand experience and secondary sources.
- Build an appreciation of science's contribution to all aspects of everyday life.
- Use a planned range of investigations and practical activities to give pupils a greater understanding of their concepts and knowledge of science.
- Develop through practical work the skills of observation, prediction, investigation, interpretation, communication, questioning and hypothesising.
- Develop pupils' use of computing and maths skills through their science studies.
- Encourage children to treat the living and non-living environment with respect and sensitivity.
- Help children recognise and assess risks and hazards to themselves and to others when working with living things and materials and to take action to control them.

- Introduce pupils to the language and vocabulary of science.
- Extend the learning environment for our pupils via our environmental areas and the locality.
- Promote a 'healthy lifestyle' in our pupils.

Curriculum, Progression and Planning (Intent)

At St Mary's, we provide our children with a high-quality science education through following Ark Curriculum. This is a fully resourced, knowledge-rich curriculum that aims to ensure children leave primary school with skills that are vital to the learning process. By having a strong foundation of knowledge, it will make the children's practising of skills meaningful. Our curriculum encourages curiosity, interest and enquiry into our world and the universe around us through the specific disciplines of biology, chemistry and physics. Children will be immersed into the science curriculum through being exposed to a varying type of lesson structures to develop their understanding of scientific: processes, knowledge, methods and uses. To develop greater independence, children are encouraged to ask scientific questions, plan and perform experiments to practice their scientific knowledge practically. As children progress through our school, they will build upon their prior knowledge, ensuring the knowledge and ability to work scientifically is embedded in their long-term memory. Children are provided with a rich and broad science curriculum which includes: relevant science vocabulary; a conceptual understanding; scientific knowledge; the ability to ask deep questions with the appropriate investigative skills to answer them where possible. The children at St Mary's will be able to recognise how each topic they learn connects to everyday life and equips and empowers them to participate, challenge and reshape the world around them.

Teaching (Implementation)

We ensure a positive learning experience for our children through high standards of teaching and learning. In order to do this, we implement a curriculum that is progressive and builds upon a child's prior knowledge. Teachers plan for science using the Ark Curriculum which is in line with the 'The National Curriculum programmes of study for Science 2014' and 'Understanding the World' for the Early Years Foundation Stage; adapting it to the individual needs and aspirations of our children. At St Mary's, our whole school approach to the teaching and learning of science includes:

- Science will be taught in a planned cycle of lessons and arranged in topic blocks in a sequence from Ark Curriculum. Planning involves teachers using Ark to create engaging

lessons, involving resources and other forms of stimulus to develop children's conceptual understanding.

We ensure that lessons have problem solving opportunities that allow children to find out for themselves. Children are encouraged to ask their own questions (sometimes at the beginning of topics) within lessons and are given opportunities to use their scientific skills to discover the answers.

Teacher assessment is used regularly to identify those children with gaps in learning, so extra support and intervention can be given where needed. Weekly quizzes are used to recap previous learning and children answer our topic enquiry question at the end of each unit, presenting their learning in a style of their choice.

- Whilst building upon previous knowledge, we discuss the importance of prior learning with the children, so they understand how different lessons and learning are linked. 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.
- Skills that are developed through working scientifically, are embedded into lessons to ensure these skills are being developed throughout the children's school journey. Key vocabulary and challenging concepts are introduced through direct teaching.
- To achieve a fully embedded science curriculum, we need to encourage our children to use their scientific knowledge and skills, throughout our broad and balanced curriculum, for example curiosity is encouraged and the ability to ask scientific questions and plan ways of discovering the answers, will be seen during other learning experiences.
- St Mary's access outside agencies to support the teaching and learning that takes place within school, where possible. We believe it is important to meet the needs of our individual children, therefore invite in support that will be inspiring to them.

Science is taught once a week, but is also taught in many different contexts throughout all areas of the curriculum. For example, through English, i.e. writing a biography of a famous scientist's life. Teachers are encouraged to focus at least one writing genre, a school year, on a piece of scientific writing whether it be a write-up from an experiment, or a set of instructions on how to plant a seed, for example.

Children are provided with pre and post learning activities that provide the teacher with the necessary assessment information; this informs the planning and intervention processes. Conversations are also encouraged between the children and staff, about what they are learning/have learnt and vitally, why they have learnt it.

Assessment (Impact)

The science learning journey, that our children will engage in during their time at St Mary's, will provide them with not only the necessary age-related scientific knowledge and skills they need, but also with experiences, life skills, confidence and abilities that will equip them for taking their next steps in life.

All our children at St Mary's will:

- Develop scientific knowledge and conceptual understanding of the world we live in and the universe surrounding us.
- A rich scientific vocabulary which they understand and can use.
- Have scientific knowledge required to understand the uses and implications of science, today and for the future.

EYFS

Ways of teaching in EYFS can look a little different to those used in KS1 and 2. Many of the objectives are covered through play based activities and tasks, within the continuous provision both inside and outside and whole class teaching is rarely used.

Assessment is done by observing the children in a range of different activities across the half term, term and year. Children in F1 are expected to be at least 30-50 months secure by the end of the year. Children in F2 are expected to achieve the ELG's for each area. As the objectives are from a variety of different areas of learning and the main bulk of learning ones are from the area 'Understanding the World', there is no separate assessment for Science.

Please refer to the separate document produced by the EYFS leader for further details about how science is taught in EYFS and for more detailed planning of unit titles to be covered throughout the year.

Health and Safety

A risk assessment will be made, as part of the planning process, before any potentially dangerous scientific activity is undertaken. Children will be taught to use scientific equipment safely when using it during practical activities. They will be informed of any risks or hazards but will also be encouraged to assess and identify risks for themselves. Class Teachers and

Teaching Assistants will check equipment regularly and report any damage, taking defective equipment out of action. Safety glasses will be used where appropriate.

Resources

Science resources are stored in the resource cupboard which is kept locked during school hours. Resources are in labelled drawers and boxes. Some pieces of equipment are shared across to the maths resource shelf. Teachers are responsible for returning any equipment and resources used as soon as possible after lessons to the appropriate box or drawer, so that it can be used by others. Any broken or missing equipment should be reported to the science leader, who will keep a log of resources that need to be re-ordered. The science leader is then responsible for creating an order from for replacement/new items and returning to the Head of School. All teachers should inform the science leader of any equipment or resources that may be needed for the upcoming year in September, so the budget can be spent accordingly.