Science Policy

Rationale

Science is an important and valued part of children's education at St. Mary's. Science takes place through challenging, practical and creative activities, based initially on the application of personal experience. This fully supports the ethos of our mission statement and underpins our commitment to fulfil every child's potential.

Science at St Mary's aims to teach our children the skills, knowledge and understanding they need to question and understand concepts and phenomena that occur in the world around them and equips them with the motivation to seek explanations for these. Children learn the skills required for scientific enquiry and they will begin to appreciate the way science will affect their future on a personal, national and global level.

Science can make a particular contribution to spiritual, moral, social and cultural development, for example, allowing children to consider issues such as exploitation of the environment.

Aims

- To provide an opportunity to interest and equally challenge all abilities, where possible using quality resources as a stimulus.
- To stimulate enthusiasm and interest by providing a range of challenging investigations through a cross-curricular approach.
- To develop existing scientific knowledge and promote further enquiry.
- To promote accurate use and understanding of scientific vocabulary.
- To encourage individual and collaborative work.
- To provide evidence of learning and progression throughout the Science Curriculum.
- To promote, through our Scheme of Work, identifiable progression in the children's learning and to attain high standards by developing individual potential.
- To promote Understanding of the World in the Early Years Foundation Stage.

Teaching and Learning

The Science Scheme of Work covers the requirements of the 2014 National Curriculum for Science for each key stages and is linked to the Dimensions Curriculum where relevant.

We achieve quality first teaching and learning through:

- Ensuring that we, as teaching staff, continue to develop professionally, taking opportunities as they arise, e.g. attending courses, awareness of curriculum changes.
- Using varied and differing teaching styles, planning for individual needs, taking account of prior experiences and abilities. Children being given the opportunity to work collaboratively and individually.
- Making use of resources available, both in school and outside.
- Implementing cross-curricular links where possible, thus adding interest, variety and consolidation.
- Providing challenge through differentiated work, based on prior knowledge of children's capabilities.

- Promoting all areas of Science and its progression, but in particular Working Scientifically, following the Scheme of Work, through: -
    - Observations over time
    - Pattern seeking
    - Challenging questioning and problem solving activities
    - Working from unstructured exploration through to systematic investigation
    - Describing events, moving on to explaining events
    - Using and interpreting simple drawings through to using/interpreting scientific diagrams/graphs
    - Applying mathematical knowledge to the understanding of science
    - Modelling investigation practices leading on to children taking responsibility for setting up their own investigative work and appropriate recording
    - Comparative and fair testing
    - Highlighting the links between science and all other curriculum areas
- Using accurate scientific vocabulary communicated throughout each lesson.
- Evidence of learning and progression within Science is gained, through observation of the children being able to draw conclusions and generalisations from their work and use using the information derived to prove/disprove prior understanding.

We recognise the fact that we have children of differing scientific ability in all our classes and so we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of way by:
• Setting common tasks that are open-ended and can have a variety of responses
• Setting tasks of increasing difficulty (we do not expect all children to complete all tasks)
• Grouping children by ability and setting different tasks for each group
• Providing a range of challenges with different resources
• Using additional adults to support the work of individual children or small groups
• Incorporating high order questions that apply to scientific thinking to extend the most-able children in science

We have planned the topics in science so that they build upon prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit and we also build progression into the science scheme of work, so that the children are increasingly challenged as they progress through the school. More able learners are identified and throughout the year, enrichment opportunities are offered, often in partnership with other local schools, St Nicholas High School and Middlewich High School.

St Mary's also has close links with St Nicholas High School who provide science activities for the children in Key Stage 2. Year groups travel to the High School to take part in science workshops.

Foundation Stage
We teach science in the Foundation stage as an integral part of the topic work covered during the year. It comes under Understanding the World in the EYFS. Children must be supported in developing the knowledge, skills and understanding that help them to make sense of the world. Their learning must be supported through offering opportunities for them to use a range of tools safely; encounter creatures, people, plants and objects in their natural environments and in real-life situations; undertake practical 'experiments'; and work with a range of materials.

The contribution of science to teaching in other curriculum areas

English
Science contributes significantly to the teaching of English at St Mary's by actively promoting the skills of thinking, reading, writing, speaking and listening. The children develop oral skills in science lessons through discussions and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

Mathematics
Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn to use and apply number skills. Through working on investigations, they learn to estimate and predict. They develop the skills of accurate observation and recording of events. They use numbers in many of their answers and conclusions.

Computing
Children use computing in science lessons where appropriate. They use it to support their work in science by learning how to find, select, and analyse information on the internet. Children use computers to record, present and interpret data and to review, modify and evaluate their work and improve its presentation.

Personal, social and health education (PSHE) and citizenship
Science makes a significant contribution to the teaching of personal, social and health education. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare and healthy eating and exercise. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. Science promotes the concept of positive citizenship.

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 and the Creator. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of pollution 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.

Teaching science to children with special needs
We teach science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education for all children. Through our science teaching, we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning challenges and responding to each child's different needs. Assessment against the National Curriculum allows us to consider each child's attainment and progress against age related expectations. Our work in science takes into account the targets set in the children's SEN Support Plans.

Assessment and recording
We assess children's work formatively in science through observations and marking. These assessments inform the class teacher's planning for future lessons. At the end of a unit of work, the class teacher makes a judgement about the children's achievements. At the start of the year, key objectives are identified that will be assessed in each unit and opportunities for assessment are planned for. Progression Statements are used to inform and record children's progress. Wherever possible, children are the first to assess their learning. Assessments may take the form of a practical activity, a concept map or a written assessment. The teacher uses these assessments to inform reports to parents and the next class teacher at the end of the year.

Safety
Specific advice relating to Science issues is given in the ASE booklet 'Be Safe 4th Edition: Health & Safety in School Science & Technology for Teachers of 3-12 Year Olds'

Resources
We have a range of resources to support the teaching of Science across the school and all our resources are kept in the science cupboard in the central resource area. As applicable, Pupil Premium funding may be made available to ensure that children who are in receipt of this funding and who may normally miss out on opportunities to make progress are supported to do so. Low stocks of consumables should be reported to the Science Coordinator.

Monitoring and review
It is the responsibility of the Science Subject Leader, the Headteacher and Governors to monitor the standards of children's work and the quality of teaching in science. The Science Subject Co-ordinator is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. An action plan is written and reviewed annually. The science subject co-ordinator helps with the levelling and moderation of work samples to ensure consistency and calls in books and assessment folders for scrutiny and evidence of progress, with feedback being given to staff on a termly basis. We are working with a cluster of schools to share ideas and look at how we moderate our science books.

Conclusion
Science does not tell us everything we need to know about life, but it does stimulate and excite children's curiosity about phenomena and events in the world around them. Through Science, children obtain the skills and knowledge that will be required for the essential routines of life, work, pleasure and creativity in their future.

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