



Rationale

Curriculum

At St Mary's Primary School, we are committed to providing pupils with an education that is rich in opportunities and experiences and influences a lifelong love of learning. We believe that our curriculum should be broad, balanced, creative and relevant in meeting the needs and learning styles of every individual pupil. It is planned in a way which integrates, wherever possible, subjects across themes and offers pupils a range of exciting learning experiences that challenge, stimulate and promote thinking alongside learning.

Science

Science has changed the way we live our lives and is central to many aspects of day to day life. Here at St Mary's we aim to enthuse and excite students' curiosity about the world around them and how it works. We take an investigative approach to the teaching of science, encouraging children to ask questions, devise investigations and solve problems. Through encouraging children to work scientifically, we aim to teach a balance of scientific knowledge and essential skills.

Aims and Objectives

In Science we aim to extend children's natural curiosity about the world around them. The children are encouraged to devise investigations to solve problems and answer questions. Children are taught skills of observation, prediction, fair testing, measuring, interpretation and evaluation.

Statutory requirements

Statutory requirements for the teaching and learning of Science are laid out in, 'The National Curriculum in England: science programme of study.'

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

Teachers at St Mary's will encourage, support and help pupils to:

- acquire, develop and extend significant knowledge and understanding of scientific concepts
- prepare for life in an increasingly scientific and technological world
- ask and answer scientific questions about the world around them
- initiate investigations and develop scientific and investigative skills (including observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating).
- develop an inquiring mind using critical and creative thinking
- develop the use of scientific language, recording and techniques
- become effective communicators of scientific ideas, facts and data
- acquire first hand experiences of scientific activities, both as an individual and as part of a group
- foster concern about, and actively care for our environment



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Content

Pupils will be offered a variety of experiences, situations and tasks at the level which suits their individual needs. Currently the statutory requirements from the National Curriculum are followed.

The programmes of study are divided into 4 sections:

Scientific enquiry	(known as SC 1)
Life processes and living things	(known as SC 2)
Materials and their properties	(known as SC 3)
Physical processes	(known as SC 4)

Scientific enquiry (SC1) will be taught each term through the contexts of SC 2, 3 and 4. The majority of the elements and content taught in SC 2, 3 and 4 will be revisited and built upon every year. This reflects the importance given to 'process' in the National Curriculum. Wherever possible, the teaching and learning of Science is enhanced by educational visits, using the local area as a resource or visitors to the school.

Organisation

At St Mary's we recognise that Science is an important subject and therefore, pupils have Science lessons timetabled each week. Although Science is taught mainly as a discrete subject, opportunities for cross curricular learning, particularly Literacy, Mathematics, ICT and Design and Technology, are often identified. Links with termly themes and other subjects are encouraged. The teaching of Literacy and Numeracy is promoted strongly in Science as part of this school's drive to raise standards in these core subjects. Teaching is in class groups, with the class teacher taking the main responsibility for the delivery of lessons. Depending on the tasks children may work in groups of various sizes in mixed or similar abilities.

The role of the class teacher is:

- To ensure that the work given to pupils is at the appropriate level and builds on prior knowledge and understanding.
- To follow the school guidelines and scheme of work, to provide progression and continuity throughout the key stages.
- To use pupils' mind mapping for planning and assessment at the beginning and end of a topic.
- To ensure that there are sufficient resources and equipment within the classroom available to allow independent investigation.
- To carry out their own risk assessment within planning and ensure children are also aware of health and safety issues when taking part in practical investigations
- To prioritise the use of practical work to help understanding by:
 - Developing the children's knowledge of a variety of equipment and their purposes.
 - Encouraging children to relate science to their own experiences and everyday life.
 - Creating an atmosphere of open discussion where children can bring their own questions and follow their own ideas.

The role of the co-ordinator is to:

- Advise and support staff in the teaching and learning of science.
- Keep equipment in working order.
- Consider resources, their updating and replacement.
- Be aware of issues that need staff development.



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- Monitor teaching and learning through observation of lessons, plans, pupil books and monitoring assessment.
- Review Assessment for Learning in line with amended Government directives.
- Take the lead in policy development.
- Monitor and evaluate pupil progress;
- Help to improve the quality of the learning environment

Resources

All resources are stored in the outdoor store or those specific to a year group are located in their classroom. Resources are kept in labelled boxes so that class teachers are able to take relevant equipment into their classrooms easily. Books specific to a year group or topic are kept by class teachers. ICT Resources (data loggers, electronic microscopes etc.) are kept in the ICT cupboard.

Planning

All teachers are involved in planning a curriculum which gives full coverage of, 'The National Curriculum in England: science programme of study,' and 'Understanding of the World' in the Early Years Foundation Stage.

Teachers have drawn upon many resources to help support planning for example the Twinkl and Hamilton Trust Science units which are in line with the New Curriculum. Scientific knowledge, conceptual understanding and scientific enquiry are incorporated within each unit of work. Each unit and topic is developed and built on as the children progress through the school. Children will develop their range of scientific vocabulary. Science will be taught to the whole class with opportunities to carry out investigative work in small groups.

Learning and Teaching Styles

The pupils will be taught in a variety of styles in accordance with the schools teaching and learning policy. Teachers plan to suit their children's interests, current events, their own teaching styles, the resources available and the use of any support staff. All lessons have clear learning objectives which are shared and reviewed with the pupils effectively.

All pupils should practise the following skills in their science work:

- Problem solving
- Observing
- Estimating
- Predicting / hypothesising
- Measuring
- 'Fair testing'
- Communicating
- Explaining
- Recording
- Applying findings
- Pattern seeking
- Drawing conclusions



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The following attitudes should be fostered in all children:

- care of equipment, and consideration of safety aspects
- care of the environment and living things
- a critical approach and reasoned judgement
- curiosity and enthusiasm
- integrity (results)
- tolerance for the point of view of others.

During science lessons pupils should be helped to:

- acquire first hand experiences of scientific activities, both as an individual and as part of a team
- initiate investigations
- develop an inquiring mind through creative and critical thinking
- acquire significant knowledge
- develop basic concepts

Pupils should experience a range of recording and communicating:

- graphical (eg diagrams, graphs, computer presentations, cartoons)
- written (eg notes, procedural writing, creative writing such as poems, logs, questionnaires, adult scribing)
- spoken (eg interviews, debates, drama)
- visual (eg photography, displays, models)

Teachers at St Mary's will adopt different methods of organisation and teaching styles depending on the nature of the task set. However science is organised, the differing abilities of pupils should be catered for.

Differentiation

Differentiation within Science lessons is in line with St Mary's teaching and learning policy. The needs of all children must be met through careful planning and differentiated success criteria.

When planning, class teachers will identify pupils or groups of pupils who are under-achieving and take steps to improve their attainment. Children will be assisted and supported during lessons in order to help them reach their full potential.

We recognise that Science may strongly engage our gifted and talented children, and we aim to challenge and extend them through challenge activities and tasks prepared for them beyond those covered in the scheme of work.

Equal Opportunities

Science is planned to meet the varied needs of all learners regardless of their gender, background, and culture, physical or cognitive development. All pupils will receive a balanced creative curriculum through carefully planned lessons. We aim to provide for all children so that they achieve as highly as they can in Science according to their individual ability. Additional activities such as workshops and clubs will be provided when possible to further engage the children.

At St Mary's we aim to make the subject more relevant to everyday life, situations and the interests of the children. Through our positive attitude and ethos we reduce the prospect of failure by focusing on the



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process and 'learning from' any situation. Learning takes place inside and outside the classroom where children are involved in developing their own learning, knowledge and understanding.

Computing

ICT is used effectively as a tool for learning in Science. Each year group will carry out a Data Handling Computing unit that will coincide with one of the Science units. Children are therefore given the opportunity to practise science skills and enhance the presentation of their findings using carefully-chosen software.

Pupils may use ICT (including Learn pads) to:

- locate and research information (CD ROM, internet)
- record findings (using text, PowerPoint's, spreadsheets of data, graphs and tables)
- log changes to the environment over time (sensing equipment, data loggers, digital recorders, photographs and videos)
- gain confidence in using calculators, cameras and tape recorders, as well as computers and other devices

Spiritual, moral personal, social, cultural aspects

At St Mary's we aim to promote spiritual, moral, personal social and cultural aspects through stimulating the children's curiosity about the world around them and encouraging respect for our world. This is encouraged through the topics covered in each year group.

Assessment and Recording

Regular assessment provides vital information about a child's learning and how the teacher can adapt their planning to support emerging needs. The school is currently using the Rising Stars (New Curriculum) and Statutory Assessment materials to track individual pupil progress in Science.

The Rising Stars tests should be taken at the beginning of each topic to assess learning and adapt planning based on pupils' emerging needs. Assessment is only effective if it is a continuous process and teachers are actively questioning and challenging children's thinking through discussion and whilst investigating. At the end of each topic area, class teachers will use summative assessments (provided in the Rising Stars assessment book) to indicate progress. Results from these will be recorded on the foundation assessments record.

Judgements about pupil performance and progress are based on this assessment and can be supported by teachers' formative assessments where appropriate and a variety of AfL strategies where the children are involved in the process of self-assessment, recognising their achievements and identifying where they could improve. A child's knowledge, understanding and skills should be looked at on many occasions and in many contexts if it is to be meaningful alongside recorded evidence.

Using the assessment strategies stated above, at the end of each unit of work, target books should be updated, highlighting whether the child has reached bronze, silver or gold against statements taken from the National Curriculum.

Health and Safety / Risk Assessments

It is important that safe practice is promoted at all times in order to ensure that it becomes integral to children's experiments and investigations, from a young age. Teachers must take into account all relevant Health and Safety issues, including consideration of the age of the children and the type of equipment



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being used. When carrying out scientific activities, materials and equipment must be treated with respect and care; children should treat their classroom as if it were a fully equipped science laboratory.

Please refer to the school's Health and Safety policy and specific risk assessments. Advice and safety guidance can be found in the Association for Science Education's 'Be Safe!' document.



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Appendix

Programmes of Study, Assessment Criteria and advice for staff can be found in the Staff Shared Area.
There are no paper appendices to this policy.

Policy written by: Leanne Robertson

Next review due: Autumn 2019