

Science Policy

2023-2024

St Mary's C of E Primary School



'Learning to live life in all its fullness'

John 10.10

Approved by:	The Governing Board	Date: Autumn 2023
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Introduction to Science at St Mary's

At St Mary's Primary School we believe that teaching and learning in Science should stimulate and excite children's curiosity about the world around them. We value Science because it makes an increasingly important contribution of all aspects of life and allows all of our children a deep understanding of the environment around them and how to protect our environment at a time of great change. Science at St Mary's provides first hand experiences and support for children to develop enquiring minds, learning how to question and discuss science through collaboration. A planned range of practical experiences, set in meaningful contexts helps to develop a range of investigative skills and allows children to take risks and learn from their mistakes, developing them into independent learners.

We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability. At St Mary's children are learning to live life in all its fullness (John 10.10). Science plays a vital part in all aspects of life and our aim is to develop children's interest and curiosity about the world in which they live, and foster in them a respect for the environment for future generations.

Intent

At St Mary's we fully adhere to the national curriculum for science which aims for all pupils to:

- 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.

Our specific school aims for all children at St Mary's in science are to:

- Foster children's curiosity about the world around them and develop their respect for our planet and environment, considering how they themselves can impact change for the future
- Develop skills of scientific inquiry to design and carry out scientific investigations and evaluate scientific evidence to draw conclusions.
- Communicate scientific ideas, arguments and practical experiences accurately in a variety of ways using correct scientific vocabulary
- Develop, through practical work, the skills of observation, prediction, investigation, communication, questioning, and hypothesizing, and increased use of precise measurement skills and ICT.
- Encourage and enable pupils to offer their own suggestions, and to be creative in their approach to science, and to gain enjoyment of their scientific work.
- Enable children to have a wealth of experiences which help them explain their own environment and the world around us.

- Enable children to develop their skills of cooperation through working with others, and to encourage where possible, ways for children to explore Science in forms which are relevant and meaningful to them.
- Stress the need for personal and group safety by the correct usage and storage of resources.
- Enable children to appreciate that we do not always know the answers and results when we carry out scientific enquiry.
- Build our children's self-confidence to enable them to work independently.

Implementation

To meet the aims of the national curriculum, science is taught through three key strands:

Scientific knowledge and understanding of:

- Biology - living organisms and vital processes.
- Chemistry - matter and its properties.
- Physics - how the world we live in 'works'.

Working scientifically - processes and methods of science to answer questions about the world around us.

Science in action - uses and implications of science in the past, present and for the future.

Children in the Foundation Stage are taught their scientific elements of the Foundation Stage Curriculum towards their Early Learning Goals. The majority of this teaching forms part of the 'Understanding of the World' ELG 13, 14, 15.

St Mary's science curriculum is a spiral curriculum, with essential knowledge and skills revisited with increasing complexity, allowing pupils to revise and build on their previous learning. A range of engaging recall activities promote frequent pupil reflection on prior learning, ensuring new learning is approached with confidence. Cross-curricular links are included throughout each unit, allowing children to make connections and apply their Science skills to other areas of learning, in line with our school aims, for children to learn to live life in all its fullness (John 10:10).

Each unit is based upon one of the key science disciplines; Biology, Chemistry and Physics and to show progression throughout the school we have grouped the National curriculum content into six key areas of science:

- **Plants**
- **Animals, including humans**
- **Living things and habitats**
- **Materials**
- **Energy**
- **Forces, Earth and space.**

Pupils explore knowledge and conceptual understanding through engaging activities and an introduction to relevant specialist vocabulary. As suggested in Ofsted's Science research review (April 2021), the '**working scientifically**' skills are integrated with conceptual understanding rather than taught discretely. This provides frequent, but relevant, opportunities for developing scientific enquiry skills. Our school utilises practical activities that aid in the progression of individual skills and also provides opportunities for full investigations.

Each year group are taught 'Making connections' units that delves beyond the essential curriculum, assimilating prior knowledge and skills to evoke excitement and to provide an additional method of assessing scientific attainment.

- **Inclusivity and equal opportunities**

Lessons incorporate various teaching strategies from independent tasks to paired and group work, including practical, creative, computer-based and collaborative tasks. This variety means that lessons are engaging and appeal to those with different learning styles.

Lessons and activities are planned to include all children by using a range of approaches. This includes: questioning, use of equipment, and mixed ability grouping to enable children to offer peer support.

Day to day assessments carried out by the class teacher will support the identification of children working at different abilities.

In line with The Disability Discrimination Act St Mary's promotes equality of opportunity for all pupils.

All pupils will have an equality of access to a broad and balanced curriculum irrespective of gender, ethnicity or special educational needs. Some children will require close supervision and more adult support to allow them to progress, whilst more able children will be extended through differentiated activities. By being given enhancing and enriching activities, more able children will be able to progress to a higher level of knowledge and understanding appropriate to their abilities.

- **Breadth and Balance**

We will ensure that in any key stage the national curriculum for science reflects the importance of deeper level thinking in pupils across the whole curriculum – cognitively, socially and linguistically. The quality of how deeply children think is a key factor in developing their scientific vocabulary. Pupils are assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions. Children are encouraged to ask themselves, 'what if' questions.

- **Cross curricular links**

We provide our pupils with an understanding of how scientific language and thinking impacts upon every aspect of our lives and culture. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and presenting a scientific justification, argument or proof. It pervades the whole curriculum through the skills, knowledge, values and attitudes which are central to all scientific activities. Many opportunities will be provided to develop pupils’:

- problem solving ability.
- knowledge and understanding of how to reason scientifically
- awareness of the ideas, attitudes and beliefs of others within linked activities between science and other subjects.

Pupils will engage in learning through science to apply their knowledge to cross-curricular links with Mathematics and English ensuring that these are mutually enriching.

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

- **Assessment, reporting and recording**

Opportunities for assessment will be identified when planning. Children will have regular teacher assessment. Pupils will be encouraged to reflect upon their work as individuals, as appropriate. Teachers will record key aspects of pupils’ progress throughout the year.

At the end of each term teachers will make summative assessments of the attainment and progress made by pupils towards the key skills, a level of emerging, expecting and exceeding will then be recorded. This will then inform the assessment shown on each child’s end of year report. This data will inform future planning and development. This data will be assessed by the subject co-ordinator for Science.

We mark work positively, making it clear verbally, or on paper, where work is good, and how it could be further improved. We mark Science in accordance with the whole school marking policy. The Science Co-ordinator monitors progress throughout the school in a variety of ways e.g. by sampling children’s work at regular intervals or collating children’s views of the subject.

The unit assessment sheets will also be reviewed by the Science Co-ordinator to identify possible areas of strengths and weakness across the school. Patterns and trends in data may lead to wider evaluations such as subject knowledge of staff or resources needed, to allow teaching and learning in particular areas of Science to accelerate.

Reports to parents are made verbally at parent Interviews on a termly basis. A written report stating a child's progress and achievement in Science is provided for parents once a year.

- **Health and Safety**

It is important that all teachers are aware of the responsibility they have regarding health and safety both inside and outside of the classroom. Teachers need to take account of both the children's and their own health and safety when involved in science activities. Teachers should hold up to date records of allergies and health issues of the children involved their lessons.

- **Time Allocation**

The time allocated to the teaching of Science on average is approximately 1 hour per week.

- **Role of the subject Co-ordinator**

The science coordinator is responsible for ensuring that high quality science activities are carefully planned in all year groups to ensure there is adequate breadth across the different areas of science and that skills are developed over the key stage to ensure children meet the end of key stage expectations. Curriculum coverage will be monitored via the medium-term plans for the subject.

The co-ordinator, alongside the SMT, will also take on a monitoring role in lessons, to ensure quality of teaching and learning in science.

A regular audit of science equipment and materials is overseen by the science co-ordinator. New materials and equipment is then purchased in light of the findings and through any specific requests/ needs from staff.

The coordinator is also responsible for co-ordinating the science portfolio by collecting examples of planning, children's work and displays as well as through discussions and questionnaires with staff and pupils. The co-ordinator will also work with the CPD co-ordinator to meet the training needs of the staff that have been identified through the above activities through either peer coaching, paired teaching and planning or by sourcing external agencies.

- **Role of the subject Co-ordinator**

Funding for science is dependent on the budget. A regular audit of science equipment and materials is overseen by the science co-ordinator.

Science resources are stored in the cupboard at the back of the staffroom. All plant and gardening equipment is stored in the forest school shed