ST MARY'S CE PRIMARY SCHOOL

Science Policy

INTENT

Aims and Objectives:

We, at St Mary's CE Primary School, believe that the teaching of science develops in children an interest and curiosity about the world in which they live and fosters in them a respect for the environment. Through the framework of the National Curriculum, St Mary's Science aims 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
- provide pupils with the scientific knowledge required to understand the uses and implications of science, today and for the future.

The Philosophy and Ethos:

We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Children will acquire and develop these skills throughout their Primary Years.

We believe that science promotes communication in a specific and precise language involving mathematical and logical thinking. It allows children to develop ways of finding out for themselves and gives them practice in problem solving. It gives children a greater understanding of the world in which we live.

As their knowledge and understanding increases and they become more proficient in selecting and using scientific equipment and collating and interpreting results they will become increasingly confident in their growing ability to come to conclusions based on real evidence. Science fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. Children develop a respect for our world allowing them to develop original ideas and a questioning attitude.

IMPLEMENTATION

How science is structured through the school:

In the Foundation Stage, science is taught as an integral part of the topic work. The children in Pre-school, Nursery and Reception are given opportunities to explore the world using their senses and a 'hands-on' approach to learning. They are encouraged to ask questions and develop a sense of wonder about the world around them. They follow objectives set out in the Knowledge and Understanding of the World area of learning.

In Key Stage 1 and 2, science is taught using the programmes of study outlined in the Primary National Curriculum for Science. Alongside the science knowledge which is taught through various topics throughout the year, the children are also taught specific scientific skills as outlined by the Working Scientifically objectives.

During years 1 and 2, pupils are taught to:

- ask simple questions and recognise that they can be answered in different ways;
- observe closely, using simple equipment
- perform simple tests
- identify and classify
- use their observations and ideas to suggest answers to questions
- gather and record data to help answer questions.

During years 3 and 4, pupils are taught to:

- ask relevant questions and use different types of scientific enquiries to answer them
- set up simple practical enquiries, comparative and fair tests
- make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gather, record, classify and present data in a variety of ways to help in answering questions
- record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identify differences, similarities or changes related to simple scientific ideas and processes
- use straightforward scientific evidence to answer questions or to support their findings.

During years 5 and 6, pupils are taught to:

- plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- use test results to make predictions to set up further comparative and fair tests
- report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identify scientific evidence that has been used to support or refute ideas or arguments.

Each class will have at least one taught science lesson per week. Although some Science topics are repeated in different year groups, the Objectives and Skills taught will be progressive and will be specific to age-related expectations as outlined in the Primary Curriculum.

CURRICULUM OVERVIEW

	AUTUMN TERM	SPRING TERM	SUMMER TERM
EYFS Year A	Traditional Tales Space	Colours/Dinosaurs All about me/Being Healthy	Our World: on the wild side Transport and Travelling
EYFS Year B	Traditional Tales All about me: Multicultural	Water Patterns and Shapes	Our World: In Summer All about Me: When I Grow Up
KEY STAGE ONE YEAR ONE	Seasonal Changes Animals including Humans	Seasonal Changes Everyday Materials Plants	Seasonal Changes Plants
KEY STAGE ONE YEAR TWO	Animals including humans Living things and their habitats	Living things and their habitats Uses of everyday materials	Plants
LOWER KEY STAGE 2 YEAR 3	Animals including humans Plants	Plants Light	Rocks Forces and Magnets
LOWER KEY STAGE 2 YEAR 4	Living things and their habitats Animals including humans	States of Matter	Sound Electricity
UPPER KEY STAGE 2 YEAR 5	Animals including Humans Living things and their habitats	Properties and Changes in Materials	Earth and Space Forces
UPPER KEY STAGE 2 YEAR 6	Animals (including humans) Living things and their habitats	Evolution and Inheritance	Light Electricity

Assessment and Record Keeping:

Assessment for learning is continuous throughout the planning, teaching and learning cycle. A variety of assessment methods are used, these include:

- Observing children at work (individually, in pairs, in a group and in classes)
- Questioning, talking and listening to children
- Monitoring of pupils' work through regular book scrutinies, including giving children an opportunity to discuss and reflect upon their own work
- End of unit focused assessments (working scientifically)
- Children's work is continually monitored and tracked

Teachers use a range of formative assessment opportunities to enable them to make a judgement about each child at the end of a unit of work. At the end of each term this information is put onto the Educater Tracker. The science subject leader analyses the data from the on a termly basis to gather information on pupil's achievement and progress throughout school.

At the end of each Key Stage, teachers use the Statutory Assessment Framework to make a judgement about whether or not a pupil is working at the expected standard in science.

Equal Opportunities:

At St Mary's CE Primary School we are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of ethnic origin, gender, class, aptitude or disability. We also take into consideration children's Moral, Social, Cultural and Spiritual values.

Inclusion:

In school we aim to meet the needs of all our children by differentiation in our science planning and in providing a variety of approaches and tasks appropriate to ability levels. This will enable children with learning and/or physical difficulties to take an active part in scientific learning and practical activities and investigations and to achieve the goals they have been set. Some children will require closer supervision and more adult support to allow them to progress whilst children that are more able are extended through differentiated activities and appropriate challenges. By being given enhancing and enriching activities, children will be able to progress to a higher level of knowledge and understanding appropriate to their abilities.

Science Resources

We have sufficient resources for all science teaching units in the school. Each Year Group has a 'Science Box' with resources specific for their Science Topics set out in the National Curriculum. We also keep a central store of 'general science equipment' in the Science Resource Cupboard. We also have a good selection of Teacher's Resources which are useful for planning and assessment. These are stored in the Science Resources Locker in the staffroom.

The contribution of science to teaching in other curriculum areas

English
Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some of the texts that the children study are of a scientific nature. The children develop oral skills in science lessons through discussions and collaborative work 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 are taught to make accurate measurements during investigations. They also learn to estimate and predict. They use maths skills in presenting their data through graphs and charts.

Creative Curriculum
The teachers are encouraged to plan in a cross-curricular way, so that links can be made with other subjects.

Computing
Children use ICT 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 ICT to record, present and interpret data. They also use digital recording equipment eg. Data loggers.

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. For example, children study the way people recycle material and how environments are changed for better or worse. Secondly, the children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. They organise campaigns on matters of concern to them, such as helping the poor, or global issues. 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. 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.

Health and Safety

A significant amount of practical work is carried out in our Science lessons. In some cases it is necessary to carry out risk assessments prior to the teaching of these lessons. As a school, we follow the guidance in the booklet '*Be safe! Health and safety in primary school science and technology* [**4th edition, 2011, Association for Science Education (ISBN 9780863574269)**]. This booklet is kept in the Science Locker in the staff room, so that teachers can easily refer to the guidance when planning their science lessons.

Monitoring and review

The policy will be evaluated in line with the school's review policy.

Evaluation will include: effectiveness, ease of implementation, resourcing issues, identifying any amendments needed and additions required to the policy as a result of legislation or other changes in the Science Curriculum.

Governors

Governors will play a key role in the monitoring and evaluating of policy and the implementation of science across the whole school. This will include focused visits by the subject link governor, policy evaluation and analysis of data and curriculum development.

IMPACT

Children develop:

- a positive attitude towards science and an awareness of how science is linked to the real world.
- Competence and confidence in scientific knowledge, concepts and skills.
- a deeper understanding of science concepts in the context of questions they ask and answer through working scientifically.
- an ability to communicate their scientific knowledge, understanding and findings effectively using correct scientific vocabulary.
- an ability to work both independently and in collaboration with others.
- to their fullest potential in science so that they are ready for their next stage of education.