

Science is a systematic investigation of the physical, chemical and biological aspects of the world we live in and beyond. It relies on first hand experiences and on other sources of information. Scientific processes and problem solving activities will be used to develop pupils' understanding of fundamental concepts. The main aspects of science to be studied will be determined by the programmes of study of the National Curriculum.

Science is a body of knowledge built up through experimental testing of ideas. Science is also methodology, a practical way of finding reliable answers to questions we may ask about the world around us. Science in our school is about developing children's ideas and ways of working that enable them to make sense of the world in which they live through investigation, as well as using and applying process skills.

We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability

### **Aims** (What skills, knowledge and understand the subject provides):

Our aims in teaching science include the following:

- Preparing our children for life in an increasingly scientific and technological world.
- Fostering concern about, and active care for, our environment.
- To develop pupils' enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life.
- To build on pupils' curiosity and sense of awe of the natural world.
- To introduce children to the language and vocabulary of science.
- Encourage every child to investigate, question and discuss in order to acquire scientific knowledge, understanding and skills. 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
- Children equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future
- Promote key skills by offering a range of contexts for the development of:  
Literacy – communicating facts, ideas and opinions  
Mathematics – application of number through collecting, considering and analyzing data.  
ICT – through using a wide range of ICT
- Provide opportunities that engage the children in relevant, interactive first hand experiences. Encourage children to work co-operatively and collaboratively, developing children's confidence communicating ideas.

## Organisation (How the teaching and learning will be delivered):

### **Our Objectives**

We will fulfil the aims by:

- Using the environments that surround our schools to enable us to provide opportunities for learning about life processes and living things, through observation, questioning and wonder.
- Providing a wide range of interactive, practical activities for individual and group work that encourage the children to explore and find out and develop their understanding of key scientific ideas and make links between different experiences.
- Developing the children's investigative skills and understanding of Science through the use of questioning and giving them opportunity to express their findings and ideas to their peers and a wider audience.
- Planning opportunities to develop skills predicting, asking questions, making inferences, drawing conclusions and making evaluations based on evidence and understanding.
- Teaching scientific and mathematical language, including technical vocabulary and conventions, and drawing diagrams and charts to communicate scientific ideas.
- Planning opportunities to extract information from sources such as reference books or ICT as well as through science visits and visitors to school.
- Working collaboratively in pairs or groups, listening to and sharing ideas and treating these with respect.
- Taking part in the annual National Science Week activities.

### **Organisation**

In KS1 and KS2, teachers have access to a range of resources to help support their planning and delivery of science. Teachers have been signed up to Rising Stars to help with planning and they also use other websites like STEM, Twinkl etc. for stimuli.

All of these resources are adapted to suit the needs of each class and individual children. They should not be used individually, as they would not enable sufficient enrichment. Lessons are weekly and although, links to English and Maths are encouraged, Science is taught discretely.

In EYFS, Science is often taught through the half termly topic through the Early learning Goal of Understanding of the World. We actively encourage our EYFS pupils to engage in the world around them and make use of our outdoor spaces to allow children to observe changes as the year progresses.

### **Resources**

Science resources are managed by the science subject lead and s/he is responsible for ordering new/replacement equipment, in consultation with the staff and the Head Teacher.

The subject leader is responsible for checking all resources annually. We have sufficient resources to support science teaching in our school. We keep these in a central cupboard. The library contains a good supply of science topic books to support children's individual research which is enhanced by the use of computers. All children should be encouraged to develop necessary skills in order to handle the equipment in the appropriate scientific way. These skills should be progressively built upon as the children move through the key stages. All children should be made aware of safety factors

### **Equal Opportunities**

Curriculum planning will ensure that all pupils have an equal opportunity to take part in the full scheme of work and its associated practical activities regardless of gender or cultural background. Gender stereotypes are challenged when they arise and the context in which science is taught is monitored to ensure the interests of boys and girls are maintained.

Contexts used in teaching will also be sensitive to different ethnic backgrounds and both gender and cultural differences will be reflected positively in the teaching materials used.

### **Additional Educational Needs (Including SEN)**

For pupils with SEN the task will be adjusted or pupils may be given extra support. The grouping of pupils for practical activities will take account of their strengths and weaknesses and ensure that all take an active part in the task and gain in confidence. Writing frames for investigations and other tasks have been developed. Where possible, teaching assistants will be used to support individual needs.

### **More Able Pupils**

Most importantly we ensure that good differentiation provides challenging activities for all pupils. For the most able, we are building a bank of resources that challenge their understanding and require them to apply their knowledge. At times, more open-ended investigations are set. Gifted and talented pupils are routinely challenged with probing questions from the teacher either within the whole group or individually.

## **Assessment and record keeping:**

### **Assessment for learning**

We aim to ensure that pupils understand what is required of them and what they need to do to improve. Learning objectives are shared at the beginnings of lessons and reviewed at appropriate intervals. Clear guidelines are given on what is expected for each piece of work. Children have an opportunity at the beginning of each lesson to review teacher feedback from previous lessons. They are expected to correct any scientific vocabulary and answer questions that have been set to either support or challenge them.

### **Recording**

In EYFS, assessment is through observation and is mainly formative. The Foundation Stage Guidelines offer examples of what children do to help identify when knowledge, skills, understanding and attitudes have been achieved by individuals or groups of children to inform planning for the next stage in the children's learning. Children's progress in science is monitored throughout the year. Parents are informed of children's progress through parent consultation evenings and an end of year report.

Assessment opportunities will be identified within schemes of work. At key stage 1, pupil progress is judged against the expectations of the National Curriculum Programme of studies. Teachers will monitor progress and understanding from practical activities during science lessons and evidence in books in relation to the learning objective. Teachers can assess children during practical lessons where they will have given lots of opportunities for speaking about scientific concepts. Children will be assessed from an end of year test and teacher assessments throughout the year as to whether they are meeting the statements from the Science KS1 Programme of study.

At Key Stage 2 similar arrangements will be followed with teacher assessment throughout lessons and an end of year test. The assessment of scientific enquiry will rely on a mixture of evidence from pupils' everyday practical work throughout the key stage and other more independent investigations carried out by the pupils.

### **Moderation**

Moderation of work is a key to raising standards in science and the coordinator will help each key stage to level work against the Science Programme of studies.

### **Statutory requirements**

At Key stage 1 the statutory requirement is that children are taught all of the concepts from each topic in the KS1 Science programme of Study. Working Scientifically should not be taught separately but implemented into all lessons.

At the end of Key stage 2 children should have been taught the KS2 Science Programme of Study. 'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study.

### **Equal Opportunities:**

We are committed to treat every person with equality of esteem and the respect and dignity due to a child of God.

At St Mary's we believe that all human beings are equal in the eyes of God regardless of their race, gender, disability, religion, belief or age.

Due to this we aim to ensure that all members of our school have equal opportunities to learn, develop and grow with dignity in a community of mutual respect.

We value science as a vehicle for the development of language skills, and we encourage our children to talk constructively about their science experiences.

We recognise the particular importance of first-hand experience for motivating children with learning difficulties.

We recognise that science may strongly engage our gifted and talented children, and we aim to challenge and extend them.

We are committed to valuing and celebrating the diversity within our community.

### **Health and Safety:**

Health and safety is an integral part of teaching. As teachers and citizens in a dangerous world, we have a responsibility to encourage children to approach hazards in a safe way. There are few risks associated with primary science but children should be taught the importance of safety and the correct way of handling tools, materials and equipment. Teachers will use their professional judgments as to the suitability of any experiment for their class, bearing in mind their age and maturity. Teachers will always supervise all activities and it will sometimes be appropriate to have the support of other adults. Accidents will be recorded in the school's accident book.

All electrical appliances in school are PAT tested. All staff should visually check electrical equipment before they use it and take any damaged equipment out of use. Where children are to participate in activities outside the classroom (a trip to a science museum, for example) we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

### **The role of the Coordinator and Curriculum Team:**

The co-ordinator will be responsible for developing their curriculum area and working together with their curriculum team.

The role of the co-ordinator is to:

- Ensure teachers are familiar with documents and schemes of work to help them to plan lessons. Provide support and advice to all staff
- Lead by example in the way that they teach lessons in their own classrooms.
- Track progress in the subject area, analyse assessment data
- Prepare, organise and lead INSET
- Monitor the subject through:
  - Observing colleagues from time to time, with a view to identifying the support they need.
  - Scrutiny of pupil's work and displays
  - Planning.
  - Pupil Interviews.
- Develop the action plan
- Review resources and manage the budget for the subject area
- Update policy and documents with the curriculum team
- Attend all relevant inset and support staff in training needs
- Work cooperatively with the Inclusion manager coordinator in providing advice and support for staff.
- Meet with the governors and discuss the subject area