



# MARSHBROOK FIRST SCHOOL

## Science Policy

### January 2016

#### 1. Introduction

This policy outlines the teaching and management of Science taught and learnt at Marshbrook First School. The school's policy for Science is based on the National Curriculum for Key Stages 1 and 2 and the Early Years foundation stage for reception age children. The policy has been drawn up to reflect our whole school approach to Science and has been discussed with staff and has the agreement of the Governing Body.

#### 2. Purpose of Study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

#### 3. Aims

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.

The Marshbrook vision for teaching and learning in science is:

- Teachers are knowledgeable and creative in their approach to teaching science.
- Children develop an enquiring mind, they are confident to ask questions and are enthusiastic to learn.
- Learning is purposeful, relevant to the world around them and encourages children to make cross curricular connections.
- Children are actively involved in all aspects of experimentation, which includes: planning, investigating, problem solving and reflecting.
- Science has a high profile and is valued across the school through the use of high quality resources, interactive displays, educational visits and visitors.
- Children make good progress and can build on their learning.

#### **4. Teaching and Learning Style**

We use a variety of teaching and learning styles in science lessons. Our principal aim is to develop children's knowledge and concepts. Primarily children will learn through first-hand practical activities. We encourage the children to ask, as well as answer, scientific questions. They have the opportunity to use a variety of secondary sources, such as statistics, graphs, pictures, books, videos and photographs.

We recognise that in all classes children have a wide range of scientific abilities, and we ensure that 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 ways:

- setting tasks which 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 in the room, and setting different tasks for each ability group;
- grouping children by mixed ability to encourage peer support;
- providing resources of different complexity, matched to the ability of the child;
- using classroom assistants to support the work of individual children or groups of children.
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#### **5. Science and Curriculum Planning**

The programmes of study for science are set out year-by-year. We are, however, only required to teach the relevant programme of study by the end of the key stage. Within each key stage, we therefore have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, we can introduce key stage content during an earlier key stage if appropriate.

The long-term plan for each year group, maps the scientific topics studied in each term during the key stage, this information is available on line. The science subject leader works this out in conjunction with teaching colleagues in each year group. In most cases we combine the scientific study with work in other subject areas, when this is not possible, the children study science as a discrete subject.

The class teacher is responsible for writing plans for each lesson, either formally or informally at their own discretion. These plans list the specific learning objectives and expected outcomes of each lesson. The class teacher keeps these individual plans, and s/he and the science subject leader often discuss them on an informal basis.

Topics in science are planned so that they build on 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 move up through the school. The teacher highlights the national curriculum objectives covered throughout each unit of work to ensure that skills, knowledge and progression needs are met.

#### **6. The Foundation Stage**

We teach science in Early Years as an integral part of the topic work covered during the year. As the reception class is part of the Foundation Stage of the National Curriculum, we relate the scientific aspects of the children's work to the objectives set out in the Early Years Foundation stage, which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to developing a child's knowledge and understanding of the world, for example through investigating what floats and what sinks when placed in water.

## **7. 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, and spoken language. Some of the texts that the children study in English are of a scientific nature.

The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. Pupils are assisted in making their thinking clear, both to themselves and others, and teachers ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

At key stage 1, pupils read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge. At key stage 2, pupils read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

### **Mathematics**

Science contributes to the teaching of mathematics, particularly the ways in which pupils collect, present and analyse data.

### **Personal, social and health education (PSHE) and citizenship**

Science makes a significant contribution to the teaching of PSHE and citizenship. 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 subject gives children numerous opportunities to debate and discuss. They can organise campaigns on matters of concern to them, such as helping the poor or homeless. Science thus 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. 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.

### **Computing**

Information and communication technology enhances the teaching of science in our school significantly, because there are some tasks for which it is particularly useful. It also offers ways of impacting on learning which are not possible with conventional methods. Software is used to animate and model scientific concepts, and to allow children to investigate processes which it would be impracticable to do directly in the classroom. Data loggers are used to assist in the collection of data and in producing tables and graphs. Children use technology to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation. Children learn how to find, select, and analyse information on the Internet and on other media.

## **8. Science and Inclusion**

At our school we teach science to all children, whatever their ability and individual needs. Science forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our science teaching we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details see individual whole-school policies: Special Educational Needs; Disability Non-Discrimination; Gifted and Talented; English as an Additional Language (EAL).

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors - classroom organisation, teaching materials, teaching style, differentiation - so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

Intervention may lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to science.

We enable all pupils to have access to the full range of activities involved in learning science. 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.

## **9. Assessment**

Teachers will assess children's work in science by making informal judgements during lessons. On completion of a piece of work, the teacher assesses it (see next paragraph), and uses this assessment to plan for future learning. Written or verbal feedback, in line with the school's marking policy, is given to the child to help guide his/her progress. Older children are encouraged to make judgements about how they can improve their own work.

Teachers assess pupils' ability to work scientifically and their scientific understanding using a skills grid that is kept inside each pupils' science or topic book. Teachers use these assessments twice yearly to monitor the progress of pupils individually.

Teachers make an assessment of the children's work in science at the end of Key Stage 1. We report these assessment results to parents.

#### **10. Resources and Safety**

We have sufficient resources for all science teaching units in the school. We keep these in a central store. The library contains a good supply of science topic books and computer software to support children's individual research.

For safety we follow COSHH guidance "Be Safe" handbook, a copy of which can be found with the science resources.

#### **11. Monitoring and Review**

It is the responsibility of the subject leader to monitor the standards of children's work and the quality of teaching in science. The subject leader is also responsible for supporting colleagues in their teaching, for being informed about current developments in the subject, and for providing a strategic lead and direction for science in the school. The subject leader gives the headteacher an annual summary report in which s/he evaluates strengths and weaknesses in science, and indicates areas for further improvement. The subject leader has specially-allocated time for fulfilling the vital tasks of reviewing samples of children's work, monitoring planning and assessment, and visiting classes to observe science teaching.

This policy will be reviewed at least every three years.

**Date:**

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