



Signed by Chair of Governor .....

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## Science Policy

### Aims and Objectives

Science teaches an understanding of natural phenomena and responses to them. It aims to stimulate a child's curiosity in finding out why things happen in the way that they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way in which science affects them on a personal, national and global level.

The objectives of the teaching of science are to:

- task and answer scientific questions;
- plan and carry out scientific investigations, with the correct use of equipment;
- know about life processes;
- know about materials, electricity, light, sound, and natural forces;
- know about the nature of the solar system, including Earth;
- know how to predict, make observations, evaluate evidence, and to present conclusions both clearly and accurately.

### Teaching and learning style

We use a variety of teaching styles in science lessons. Our principal aim is to develop children's knowledge, skills, and understanding. Sometimes, we do this through whole-class teaching, while at other times, we engage the children in an enquiry-based research activity. We encourage the children to ask, as well as answer, scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures and photographs. They use ICT in science lessons where it enhances their learning. They take part in role-play and discussions, and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the pupils in real scientific activities, such as investigating a local environmental problem, or carrying out a practical experiment and analysing the results. We recognise that science needs to be taught inside and beyond the classroom and provide outdoor learning experiences.

### Science curriculum planning

Science is a core subject in the National Curriculum. The school uses the National Curriculum document as the basis of its curriculum planning, adapting it to the local circumstances of our school. We carry out our curriculum planning in science in three phases (long-term, medium-term and short-term). The long-term plan maps the scientific topics studied in each year during the key stage. As we have mixed-age classes, we do our long-term planning on a two-year rotation cycle. In this way, we ensure complete coverage of the National Curriculum, without repeating topics. Our medium-term plans, which are often linked to class topics, give details of each unit of work for

each term. Short-term planning lists the specific learning objectives and specific outcomes. Class teachers are responsible for keeping these. In many cases, we combine the scientific study with work in other subject areas but at other times, the children study science as a discrete subject. The science subject leader keeps and reviews these plans. Science is planned so that it builds 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 Early Years Foundation Stage**

We teach science in Reception as an integral part of the topic work covered during the year. The reception class is part of the Early Years Foundation Stage. We therefore relate the scientific aspects of the children's work in the Understanding the World (UW) area of learning to the objectives set out in the Early Learning Goals (ELGs), which underpin the curriculum planning for children aged three to five and is more exploratory than "taught". 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.

### **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. The children develop oral skills in science lessons through discussions (e.g. of the environment) 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. Children actively use and apply number and learn to estimate and predict during investigative work. They develop accuracy in their observation and recording of events. Many of their answers and conclusions may include numbers.

#### ICT

ICT enhances the teaching of science in the school significantly. 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 impractical 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 ICT 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. They also use e-mail to communicate on their scientific findings with children in other schools and countries.

#### Geography & History

Science contributes significantly to the teaching of humanities. There are many overlaps with geographical understanding as children learn about their environment and how it has changed over time. Some important people important to the development of science are studied as part of history. Teachers take opportunities that arise in science lessons to explore issues of the natural world.

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

Science makes a significant contribution to the teaching of PSHE and citizenship. The subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way in which people recycle material and how environments are changed for better or worse. Drugs education and Sex and relationships education hold scientific content too (see PSHE policy). 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 in which we manage 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.

### **Science and inclusion**

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. Science teaching provides learning opportunities that are matched to the needs of children with learning difficulties and enable all pupils to make good progress. We strive hard to stretch more able children with opportunities to represent the school and participate in Science competitions against other school. 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 (e.g. a trip to a science museum), we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

For further details, see Special Educational Needs and Gifted and Talented policies.

### **Assessment and Recording**

Recording 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. 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, and uses this assessment to plan for future learning. Written or verbal feedback is given to the child to help guide progress. Older children are encouraged to make judgements about how they can improve their own work. At the end of a unit of work, the teacher makes a summary judgement about the work and progress of each pupil. This information forms the basis for assessing the progress of each child over the academic year and is reported to parents as an end of year report which is passed on to the next teacher.

### **Health and Safety**

There are a number of working practises that need to be considered to ensure the risks associated with science teaching are controlled. Refer to the 'G643e Primary Curriculum Code of Practice' document for health and safety aspects relating to the teaching of science (*specifically point 4.1*).

### **Resources**

Sufficient resources for all science teaching units in the school are kept in a central store. We also have access to a wide range of excellent project loan boxes that can be borrowed from the *Teacher Scientist Network (TSN)*, based at the *John Innes Centre*.

To support the planning and implementation of the curriculum, we purchase 'Developing Experts'- a web based resource which delivers high quality materials and input the lesson, enthusing pupils in their scientific enquiries.

### **Monitoring and review**

The coordination and planning of the science curriculum are the responsibility of the subject leader who also supports colleagues in their teaching, by keeping informed about current developments in science and providing a strategic lead and direction for this subject. It is also the subject leader's responsibility to give the headteacher and governing body an annual summary report in which the overall provision is evaluated; strengths identified and areas for further improvement indicated.