

Emersons Green Primary School



SCIENCE POLICY

Draft to Governors – December 2017	Draft to staff- November 2017
Ratified:	Next Review: January/Term 3 2021

Aims and objectives

Science aims to stimulate a child's curiosity in finding out why things happen in the way they do. Science aims to develop process and enquiry skills as well as knowledge and understanding. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way Science will affect their future on a personal, national, and global level. The children will begin to use Science to explain their world in terms of how and why.

The aims of Science are to enable children to:

- ask, answer and explain scientific questions;
- plan and carry out scientific investigations, selecting and using equipment, including computers, correctly;
- identify the key processes within scientific enquiry: making predictions, fair testing, making observations and measurements;
- know and understand the life processes of living things;
- know and understand the physical processes of materials, electricity, light, sound and natural forces;
- know about the nature of the solar system, including the earth;
- evaluate evidence and present their conclusions clearly and accurately.
- become fluent in the fundamental skills of scientific enquiry
- become familiar with Scientists, their work and the impact of this work
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Teaching and learning style

At Emersons Green we use a variety of teaching and learning 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. The children will experience whole class, small group, paired and independent work. Practical activities for the children to participate in and observe are planned into the teaching – these include opportunities to develop both their understanding and enquiry skills through demonstrations, explorations and investigations.

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 I.C.T. (Information and Communications Technology) 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,

Science Policy

we involve the pupils in 'real' scientific activities, for example, researching a local environmental problem or carrying out a practical experiment and analysing the results.

We recognise that there are children of widely different scientific abilities in all classes 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 by:

- setting common tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty so all children are challenged (we do not expect all children to complete all tasks);
- planning activities/lessons in which both the lower achieving children and G&T children can progress and achieve;
- grouping children by ability in the room and setting different tasks for each ability group;
- providing resources of different complexity, matched to the ability of the child;
- using teaching assistants or other adults to support the work of individual children or groups of children.
- using a variety of teaching strategies and stimuli to cater for the various learning styles within the class.

Science curriculum planning

Science is a core subject in the National Curriculum and we use the renewed objectives as the basis for implementing the statutory requirements of the programme of study for Science.

The school uses the National Curriculum 2014 Objectives, Science APP and the Creative Learning Journey Topic Wheels (CLJ) as the basis of its curriculum planning. These schemes have been adapted to the local circumstances of the school in that we make use of the local environment in our fieldwork. The knowledge objectives from the national programme of study and enquiry skills from Science APP are covered throughout the 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 term during the key stage. In some cases we combine the scientific study with work in other subject areas, especially at Key Stage 1; at other times the children study science as a discrete subject.

Our medium-term plans, which we have based on the National Curriculum Objectives and the CLJ, give details of each unit of work for

Science Policy

each term, including our objectives and opportunities for practical experiences.

Within each unit of work we aim to include at least one example of scientific enquiry for the children to undertake. We try to vary the type of investigation – fair test, survey, classification and pattern seeking. We also include specific opportunities for the children to focus upon the skills of scientific enquiry.

Each year group has mapped out the teaching of enquiry skills, progressing throughout the school, to ensure coverage of each strand – questioning, predicting, planning, analysing. The undertaking of a complete investigation is not always necessary when focussing upon a specific skill. In each term a new skill has been identified and taught across the school.

The class teacher is responsible for the daily lesson plans for each lesson (short-term plans). These plans include the specific learning objectives, activities and differentiation of each lesson. The class teacher keeps these individual plans, and s/he and the Science Subject Leader discuss them on an informal basis.

We plan the topics in Science so that they build upon 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.

In every unit taught to the children, class teachers ensure there are specific skills teaching. The skills are key skills related to Scientific Enquiry and identified from Science APP. The focus of this skill teaching changes every term.

Foundation Stage

We teach Science in Reception class 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 Learning Goals (ELGs), which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to the objective in the ELGs of developing a child's knowledge and understanding of the world, e.g. through investigating what floats and what sinks when placed in water.

The contribution of Science to teaching in other curriculum areas

English

Science Policy

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 in the Literacy Hour are of a scientific nature. The children develop oral skills in Science lessons through discussions (for example 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. The children use weights and measures and learn to use and apply number. Through working on investigations they learn to estimate and predict. They develop the skills of accurate observation and recording of events. They use numbers in many of their answers and conclusions. They draw and interpret graphs, tables and charts.

Information and communication technology (ICT)

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 and on CD-ROMs. They also include the use of digital cameras and microscopes to support their learning. Children use ICT to record, present and interpret data and to review, modify and evaluate their work and improve its presentation.

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, health and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. 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, 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.

Teaching Science to children with special needs

Science forms part of the school curriculum policy to provide a broad and balanced education for all children. We provide learning opportunities that are matched to the needs of all children. Our work in Science takes into account the targets set in the children's Individual Education Plans (IEPs).

At Emersons Green we have a Resource Base for children with physical disabilities and/or visual impairment. Every effort is made to ensure that all children are included fully in Science lessons. However, it may sometimes be necessary to modify the activity or resources to enable pupils to access the Science curriculum.

At Emersons Green Primary School we teach Science to all children, whatever their ability. English forms part of the school curriculum policy to provide a broad and balanced education to all children. Teachers plan learning activities in Science that take account of children's individual needs to ensure good progress.

Teachers provide help with communication and Science through:

- using models that children can understand;
- using visual and written materials in different formats including braille;
- using ICT, other technological aids and taped materials;
- alternative communication such as signs and symbols; Makaton
- using translators and amanuenses.
- Use of communication aids e.g. Tellus.

Assessment and recording

We assess children's work in Science by making informal judgements as we observe them during lessons. On completion of a piece of work, the teacher marks the work and comments as necessary. At the end of a unit of work s/he makes a judgement about the work of each pupil in relation to the skills identified in Science APP. This combines across the school year, so that each child is levelled at the end of the academic year. This information is passed to the next class teacher. This information is also recorded in SIMS and children's progress is tracked across the school.

Science Policy

Teachers make an assessment of the children's work throughout the school year. Science levels for all children is reported at the end of Key Stage 1 and Key Stage Two. We report the results of these tests to parents along with the teacher assessments, which we make whilst observing the work of children throughout the year.

Inclusion

We ensure that all pupils have access to a broad and balanced curriculum which includes Science. Staff work towards removing barriers to learning and participation. Science activities may be adapted to allow access through means such as ICT, Braille or AAC (Alternative and Augmentative Communication). Real objects and creative practical experiences are used whenever possible. Alternative methods of responding and recording are planned where appropriate. Staff work towards ensuring that all children are challenged appropriately. Science activities are intended to be used as a way of increasing pupils understanding of Global issues such as environmental issues.

Equal Opportunities

All children have equal access to the Science curriculum. We aim to provide suitable learning opportunities regardless of gender, ethnicity or home background.

We ensure that bilingual children receive appropriate support and that teachers are aware of the implications of English as a Second Language.

Resources

Science resources are kept in a central store. The library contains a supply of Science topic books and computer software to support children's individual research.

Monitoring and review

It is the responsibility of the Science Subject Leader to monitor the standards of children's work and the quality of teaching in Science. The Science Subject Leader is also responsible for supporting colleagues in the teaching of Science, for being informed about current developments in

Science Policy

the subject and for providing a strategic lead and direction for the subject in the school.

The Science Subject Leader gives the Headteacher an annual summary report in which s/he evaluates strengths and weaknesses in the subject and indicates areas for further improvement.

The Science Subject Leader has specially-allocated time for fulfilling the vital task of reviewing samples of children's work and visiting classes to observe teaching in the subject.

The Science Subject Leader is supported by The Science and Technology Team in many of the above.

The Science and Technology Team sets annual targets aimed at improving the teaching and quality of the Science Teaching in the school, which will have an impact on attainment in the children. These are monitored and reviewed regularly by the team.