



Southfields Primary School

Science Policy

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To be reviewed: Biennially

Intent

Science is a source of fascination and wonder for all children. At Southfields School we enable children to pursue their natural curiosity to fuel exploration of our world around us. We consider how Science impacts society in order to foster a respect for our environment.

Across a range of topics, all children are encouraged to become independent learners and develop their Scientific enquiry skills, which include raising scientific based questions, planning, observations and following through practical investigations. Through 'social learning' we promote collaboration, critical thinking and embed scientific vocabulary.

1 Aims

1.1 Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way 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 will affect the future on a personal, national, and global level.

1.2 The objectives of teaching science are to enable children to:

- ask and answer scientific questions;
- plan and carry out scientific investigations, using equipment (including computers) correctly;
- 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.

Implementation

2 Teaching and Learning

2.1 Teachers create a positive attitude to science learning within the school environment and reinforce an expectation that all pupils are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following:

- Children are encouraged to ask their own questions and are given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up.
- Teaching Staff build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.
- Working Scientifically skills are embedded into all topics to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed in-keeping with the topics.
- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.
- Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. Regular events, such as Investigation Week, Stem Week and Stem Fairs allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills.

2.2 At Southfields it is recognised that in all classes children have a wide range of scientific abilities, and suitable learning opportunities for all children are provided by matching the challenge of the task to the ability of the child. This is achieved in a variety of ways:

- setting tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (There is no expectation for all children to complete all tasks);
- grouping children by ability in the room, and setting different tasks for each ability group;
- asking children to work in Literacy partners, to help those struggling with literacy
- providing resources of different complexity, matched to the ability of the child;
- using classroom assistants effectively to support individual children or groups of children's needs.

3 Science curriculum planning

3.1 The school uses a tailored curriculum based on 'The Essentials Curriculum' by Chris Quigley. In addition to a broad and balanced curriculum, it is designed with the school key driver, 'experiences', at the heart of it.

3.2 The Science Curriculum Coverage maps for all year groups specify the Milestones covered, which are the same for each phase to promote depth of learning. (Milestone 1 for Years 1 & 2; Milestone 2 for years 3 & 4 and Milestone 3 for Years 5 & 6.) These are monitored by the Science Coordinator, to ensure continuity and coverage of progression skills.

3.3 The planned topics in science build on prior learning ensuring that there are opportunities for children of all abilities to develop their skills and knowledge, so that children are increasingly challenged as they progress through the school. More able learners are identified and enrichment activities linked with Stem are offered.

3.4 Teachers follow discreet and thematic topic medium term plans, which also specify the teaching sequence of the different strands.

4 The Foundation Stage

4.1 Science is an integral part of the topic work covered during the year in the Foundation Stage. It comes under 'Understanding of the World' in the EYFS. Children are supported to develop the knowledge, skills and understanding that help them to make sense of the world, through exploration and investigations. Learning is supported through offering opportunities for the use of a range of tools safely; encounter creatures, people, plants and objects in their natural environments and in real-life situations; undertake practical 'experiments' and work with a range of materials.

5 The contribution of science to teaching in other curriculum areas

Through cross-curricular links, Science teaching promotes **Southfields School's GARK values**, Good Learning-Acceptance-Respect-Kindness.

5.1 English

Science contributes significantly to the teaching of English at our school by actively promoting the skills of reading, writing, speaking and listening. Children have access to decodable Science non-fiction books. Through discussions, children develop their oral skills, use scientific vocabulary and are given an opportunity to clarify misconceptions. They develop their writing skills through writing reports and projects and by recording information.

5.2 Mathematics

Science contributes to the teaching of mathematics in a number of ways at Southfields Primary School. When the children use weights and measures, they are learning to use and apply number. Through working on investigations they learn to estimate and predict. They develop accuracy in their observation and recording of events. Many of their answers and conclusions include numbers.

5.3 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.

5.4 Spiritual, moral, social and cultural development

Science supports **spiritual** development by providing many opportunities for children to think and spend time reflecting on the amazing wonders which occur in our natural world. It also promotes **moral** development by showing children that different opinions need to be respected and valued. There are many moral and ethical issues that we cover in science including discussions about environmental and human issues. Science supports **social** development by exposing children to the power of collaborative working in the science community which has led to some amazing and life changing breakthroughs in medicine. When undertaking experiments and research children work collaboratively. Through the study of scientists, children consider **cultural** development by looking at how scientists from a range of cultures have had a significant impact globally. It also helps children to understand how important science is to the economy and culture of the UK.

6 Science and ICT

6.1 Children use computing in Science lessons where appropriate. Virtual Reality 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 iPads and PCs to support their work in Science by learning how to find, select and analyse information on the internet. They are also able to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation.

7 Science and inclusion

7.1 At Southfields 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 and Inclusion.

7.2 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.

7.3 Intervention through School Action and School Action Plus will 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.

7.4 All pupils are enabled 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) teachers carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

Impact

8 Assessment

8.1 Teachers 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 his/her progress. Older children (from year 1 onwards) are encouraged to make judgements about how they can improve their own work.

8.2 Child-friendly Milestones with visual prompts are placed before each Science Topic. 'Working Scientifically' Milestones are placed at the front of the Stem books. These are annotated by Teachers to show progress and also enable children to self-reflect on their learning and next steps.

8.3 At the end of each topic, teachers make a summary judgement about the work of each pupil in relation to the annotated Topic Milestones. The teacher records the cohort's assessment data and this information is passed on to the next teacher at the end of the year.

8.4 Every Topic also includes an opportunity for scientific enquiry and after this the teacher annotates the 'Working Scientifically' Milestones appropriately. This information is passed on to the next teacher at the end of the year too.

8.5 Teachers make formative assessments of the children's work in science at the end of Key Stage 1 and 2.

8.6 The science subject leader monitors Science books and folders of work and comments are kept in the Science Coordinator's file. These are used to demonstrate the expected level of achievement in science for each age group in the school.

9 Resources

9.1 There are sufficient resources for all science teaching units in the school and they are kept in a central store. There is also a collection of science equipment which the children use to gather weather data. The library contains a supply of science topic books and computer software to support children's individual research.

10 Role of Science Subject Leader

10.1 The Science Subject Leader maintains a culture of high expectations for all children and staff and leads by good example. There is a consistent focus on improving outcomes in Science for all children, and especially for those who are disadvantaged. Effective and regular monitoring takes place, to identify and spread good practice across the school. An evaluation of aspects of Science teaching is carried out, whether in the form of lesson observations, speaking to children or scrutiny of work to ensure effective delivery, differentiation and progression towards targets set. An understanding of the school's effectiveness of Science provision is also informed by what pupils, parents and governors think. Stakeholder feedback is actively sought.

The Science Subject Leader engages supportively with colleagues, managing them and their workload in realistic and constructive ways. There is also a focus on improving their own and colleagues' subject knowledge in Science.

Through professional dialogue and monitoring activities the Science Subject Leader is able to recognise any particular difficulties staff may have in delivering the curriculum and will determine any additional subject leader support or whole school INSET which may be required.

10.2 This policy will be reviewed annually.