

All Saints CE Primary School

Science Policy

1 Aims and objectives

- 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 science will affect their future on a personal, national, and global level.
- 1.2** The aims of 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.

2 Teaching and learning style

- 2.1** 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. 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, for example, researching a local environmental problem or carrying out a practical experiment and analysing the results.
- 2.2** 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 (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;
 - providing resources of different complexity, matched to the ability of the child;
 - using Learning Support and classroom assistants to support the work of individual children or groups of children.

3 Science curriculum planning

- 3.1** The school uses the national scheme of work for science as the basis of its curriculum planning. The national scheme has been adapted to the local circumstances of the school in that we make use of the local environment in our fieldwork and we choose a locality where the physical environment differs from that which predominates in our immediate surroundings.
- 3.2** We carry out our curriculum planning in science in three phases (long-term, medium-term and short-term). The long-term plan, in the form of curriculum maps, maps the scientific topics studied in each term during the key stage. Where possible 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.
- 3.3** Our medium-term plans are topic based. These outline which Science attainment targets and skills will be covered in each topic.
- 3.4** The class teacher is responsible for writing the daily lesson plans for each lesson (short-term plans). These plans list the specific learning objectives of each lesson. The class teacher keeps these individual plans, and s/he and the science subject manager reviews these along with pupil work.
- 3.5** We have planned 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.

4 Foundation Stage

- 4.1** We teach science in the Foundation Stage within the Exploration and Investigation aspect of Knowledge and Understanding of the World. 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 objectives in the ELGs of developing children's knowledge and understanding of the world around them eg learning about their senses, growing plants, exploring materials and finding out which objects float and sink when placed in water. Children explore and learn through play and child initiated activities.

5 The contribution of science to teaching in other curriculum areas

5.1 English

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 are of a scientific nature. The children develop oral skills in science lessons through discussions (for example how to care for living things, environmental issues) and through recounting their observations of scientific experiments. 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. 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. We emphasise the use of data handling in science lessons such as recording information in a table or plotting a graph and interpreting these to present conclusions.

5.3 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 such as Virtual Experiments. Children use ICT to record, present and interpret data and to review, modify and evaluate their work and improve its presentation.

5.4 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 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. They organize campaigns on matters of concern to them, such as helping the poor or homeless. Science promotes the concept of positive citizenship. Science also helps children to understand how their bodies change as they grow older.

5.5 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.

6 Teaching science to children with special educational needs

6.1 Children with special educational needs will have access to additional support

in the form of resources, staffing and appropriately matched activities. Weekly planning should be sufficiently differentiated to match the needs of all learners. Practical resources should be provided to support and/or challenge their learning.

- 6.2 At our school we teach science to all children, whatever their ability. 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 progress. We do this by setting suitable learning challenges and responding to each child's different needs. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels.
- 6.3 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, and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. This ensures that our teaching is matched to the child's needs.
- 6.3 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.
- 6.4 We enable pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom, for example, 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.

7 Assessment and recording

- 7.1 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 summary judgement about the work of each pupil in relation to the National Curriculum level of attainment. The teacher records attainment onto the Sandwell Curriculum Tracker. This gives each child a level for science. We use these levels as the basis for assessing the progress of each child and we pass this information on to the next teacher at the end of the year.
- 7.2 Teachers make an assessment of the children's work in science at the end of Key Stage 1 and Key Stage 2. 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.
- 7.3 The science subject leader keeps samples of children's work in a portfolio and uses these to demonstrate what the expected level of achievement is in science for each age group in the school.

8 Resources

- 8.1** We have sufficient resources for all science teaching units in the school. We keep these in a central store where there is a box of equipment for each unit of work. The library contains a good supply of science topic books and computer software to support children's individual research. There is a wooded area outside which provides opportunities for children to explore different aspects of science such as plant growth, life cycles and variation. A school garden is in the process of being created as part of our Healthy and Sustainable schools policy. This will allow children to grow and care for plants, trees and herbs.

9 Monitoring and review

- 9.1** It is the responsibility of the science subject manager to monitor the standards of children's work and the quality of teaching in science. The science subject manager is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. The science subject manager gives the head teacher regular reports in which she evaluates strengths and weaknesses in the subject and indicates areas for further improvement. The science subject manager has allocated time for fulfilling the vital task of reviewing samples of children's work and visiting classes to observe teaching in the subject.

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To be reviewed June 2012