

## 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, where appropriate, and setting different tasks for each ability group;
- providing resources of different complexity, matched to the ability of the child;
- planning for adults (teachers, LSA or volunteers) to support the work of individual children or groups of children, where appropriate

### **3 Science curriculum planning**

**3.1** The school uses the 2014 national curriculum 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 maps the scientific topics studied in each term during the key stage. The science subject leader works this out in conjunction with teaching colleagues in each year group. 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.

**3.3** Our medium-term plans, which we have based on the national scheme of work in science, give details of each unit of work for each term. The science subject leader keeps and reviews these plans. As we have some mixed-age classes, we do our medium-term planning on a two-year rotation cycle in KS1 and a three-year rotation in classes 3 and 4. Y6, in class 6, follow their science scheme of work each year. In this way we ensure complete coverage of the National Curriculum. Medium term plans ensure that some re-visiting of topics is planned at the start of some units.

**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 leader often discuss them on an informal basis at our Book and Planning Scrutiny Sessions during Staff Meetings. To help children revisit ideas and vocabulary, topics covered in previous terms and years may be revisited regularly through 'Flashback' quizzes'. Each ½ term, children explore the work of real-life scientists through the 'A Scientist Just Like Me' resource on the Primary Science Teaching Trust website.

**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, particularly through 'Working Scientifically' so that the children are increasingly challenged as they move up through the school.

### **4 Foundation Stage**

**4.1** We teach science in reception classes 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.

### **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 English are of a scientific nature and some of the contexts for writing reflect the science topics. 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.

## **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 and scale readings. They use numbers in many of their answers and conclusions and represent findings using graphs. Children may also use a scientific context in their maths lessons to teach a concept, e.g mean pulse rates

## **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. 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 and links to our Healthy Schools curriculum

## **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** 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

**Birch C of E Primary School Science Policy**

January 2024

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.

**6.2** 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. This ensures that our teaching is matched to the child's needs.

**6.3** 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.

**6.4** The class teacher uses a 'Working Wall' to record the sequence of work and display appropriate vocabulary and concepts for the class. At the end of the unit this is then stuck into a Big Book and can be referred to throughout the year.

## **7 Assessment and recording**

**7.1** We use the Teacher Assessment in Primary Science (TAPS) Pyramid to guide our varied approaches to assessment, recording and reporting. With carefully planned success criteria, children can assess their own work and that of their peers and provide useful feedback or make changes. Teachers provide feedback as part of ongoing formative assessment and use this to plan the next steps for children in the class. At the end of a unit, evidence from books and observations is used to make a judgement about the child's learning, which is recorded in Target Tracker.

**7.2** Children may still be required to take the national tests in science at the end of Key Stage 2, if the school is selected to take part in national sampling tests. Teachers make an assessment of the children's work in science at the end of Key Stage 1 and 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** There are regular staff meetings to scrutinise the work of each year group in science. In EYFS and KS1 the Big Books reflect the majority of the work carried out in science and in KS2 these demonstrate the range of practical activities. Both the big books as individual work are monitored regularly.

## **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 we have ICT facilities to support children's individual research.

## **9 Monitoring and review**

**9.1** 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,

**Birch C of E Primary School Science Policy**

January 2022

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 leader gives the headteacher an annual subject improvement plan in which s/he evaluates strengths and weaknesses in the subject and indicates areas for further improvement.

### **10 Science Capital and Wider Opportunities in Science**

Science capital is a concept that can help us to understand why some young people participate in post-16 science and others do not. In particular, it helps shed light on why particular social groups remain underrepresented and why many young people do not see science careers as being 'for me'. At Birch we engage with science as the leader of a Primary Science Teaching Trust cluster group; as members of and Ogden Trust Partnership; and through numerous projects to help children and families experience wider opportunities in science and therefore increase their 'science capital' e.g science leaders, cabinet of curiosities, science vocabulary project, science lectures, family science homework, Great Science Share for Schools

REVIEWED BY SUBJECT LEADER	JANUARY 2025
TO BE REVIEWED	JANUARY 2026