

## Science Policy

### Statement of intent.

**As a church school what and how we teach, what and how our pupils learn within and beyond the classroom are and must be rooted in Christian values:**

**Love, respect, honesty generosity, forgiveness, humility, positive morality, unselfishness and tolerance.**

**These values are fundamental in the implementation of this policy to ensure that we maintain our distinctive Christian character of which we are proud.**

## 1 Aims

1.1 Science teaches an intellectual and practical understanding of the behaviour of the physical and natural world, through observation and experiments. The aim of teaching science is to stimulate a child's curiosity in discovering how and why things happen the way they do. The subject teaches the child how to apply methods of enquiry and investigation, in a systematic manner, to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way in which science affects the future on a personal, national, and global level.

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

- Develop **scientific knowledge and conceptual understanding** of the natural world through the specific disciplines of biology, chemistry and physics
- Develop understanding of the **nature, processes and methods of science** through different types of science experiments and literature reviews that help them to answer scientific questions about the world around them
- Be equipped with the scientific knowledge that helps them to understand the **uses and implications** of science, to forge a better world today and in the future.

## 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. This is achieved

through a number of teaching activities that include; whole-class teaching, and enquiry-based research activities. 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. An ICT component is used in science lessons to enhance their learning activities. The children take part in role-play and discussions, and they present reports to the rest of the class to enhance presentation skills. They engage in a wide variety of problem-solving activities to enhance their analytical and creative skills. Wherever possible, we involve the pupils in real scientific activities, for example, investigating a local environmental problem, or carrying out a practical experiment and analysing the results to give context and purpose to their study.

- 2.2** We recognise that in all classes children have a wide range of scientific abilities, 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. This is achieved by ensuring all lessons and science lessons are fully inclusive and differentiated accordingly.

### **3 Science curriculum planning**

- 3.1** The school uses the National Curriculum for science as the basis of its curriculum planning. A curriculum map has been charted for all year groups to ensure coverage.
- 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. 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, 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 monitors and reviews these plans.
- 3.4** The class teacher is responsible for writing the weekly lesson (short-term plans). These plans list the specific learning objectives and success criteria 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.
- 3.5** We have planned the topics in science so that they build 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.

### **4 The 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 developing a child's knowledge and understanding of the world, for example 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 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.

### **5.2 Mathematics**

Science contributes to the teaching of mathematics in a number of ways. 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 and in the construction and interpretation of graphs and charts. 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 it provides opportunities for the children to understand how their bodies change and grow. Science thus promotes the concept of positive citizenship.

## **6 Science and ICT**

**6.1** Information and communication technology enhances the teaching of science in our school significantly, because there are some tasks for which ICT is particularly useful. 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 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 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 in other media.

## **7 Science and inclusion**

**7.1** At our school 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 check the Inclusion Policy.

- 7.2** 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 (a trip to a science museum, for example) we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

## **8 Assessment for learning**

- 8.1** Teachers will assess children's work in science by making informal judgements during lessons. Written or verbal feedback is given to the child to help guide their progress and is used by the teacher to plan for future learning. Older children are encouraged to enter into self-assessment activities, in which they make judgements about how they can improve their own work.

- 8.2** At the beginning of each topic pupils will carry out an activity to gauge current knowledge and understanding of the topic. Assessment for learning is planned into every unit of work to inform future short term planning. At the end of a unit of work the teacher makes a summary judgement about the work of each pupil in relation to the National Curriculum objectives. The teacher will determine as to whether the child has met, not met, or exceeded each objective.

- 8.3** Standardised tests are administered in a sample of schools every two years. The sample is composed of 1900 schools. Five children are randomly chosen from each school. Each pupil takes 3 papers (each 25 minutes long) – biology, chemistry and physics. 'Working scientifically' will be assessed within context of topic areas, but greater emphasis on knowledge and understanding. Questions will be attributed to the content described in the key stage 2 framework.

- 8.4** The science subject leader keeps samples of children's work in a portfolio, and uses these to demonstrate the expected level of achievement in science for each age group in the school.

## **9 Resources**

- 9.1** We strive to 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.

## **10 Health and Safety**

- 10.1** All staff are familiar with the 'Be Safe' Policy. Children are taught to handle scientific equipment and material safely. Children are aware of potential risks and damages that may arise during scientific investigations.

## **11 Monitoring and review**

- 11.1** It is the responsibility of the subject leader to monitor the standards of children's work and the quality of teaching in science. The subject leader is also responsible for supporting colleagues in their teaching, for being informed about current developments in the subject, and for providing a strategic lead and direction for science in the school. The subject leader gives the headteacher an annual summary report in which s/he evaluates strengths and weaknesses in

science, and indicates areas for further improvement. The subject leader has specially-allocated time for fulfilling the vital task of reviewing samples of children's work, and visiting classes to observe science teaching.

**11.2** This policy will be reviewed at least every two years.

**Signed:**

**Date:**