

# Science Policy

## Richmond Hill

### 1 Aims and objectives

**1.1** Science teaches an understanding of natural phenomena. Science at Richmond Hill aims to stimulate a child's curiosity in finding out why things happen in the way they do. Science 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;
- develop scientific knowledge and conceptual understanding;
- are equipped with the scientific knowledge required to understand the uses and implications of science today and for 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 in line with The National Curriculum 2015. We do this through a mixture of 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. This includes our schools practical STEM activities, which are mandatory for class teachers to plan and deliver each half term for KS2 and each term for KS1. The EYFS is also encouraged to partake in STEM activities throughout the school year.

**2.2** Science units will be taught as a whole week at the beginning of each half term. Cross curricular links should be made with other subjects such as Literacy and Maths and practical lessons/experiments should be incorporated as much as possible.

**2.3** 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 classroom assistants to support the work of individual children or groups of children.

### **3 Science curriculum planning**

- 3.1** The school uses Kapow for science as the basis of its curriculum planning. The national scheme includes detailed planning with the scientific knowledge teachers need to deliver effective science teaching and learning. Every lesson addresses National Curriculum Science objectives so teachers can plan for (and track) progression throughout the academic year.
- 3.2** We carry out our curriculum planning in science in three phases (long term, medium and short-term). The long-term plan maps the scientific units studied in each term during the key stage.
- 3.3** Our medium-term plans, which we have based on the national scheme of work in science in conjunction with Kapow give details of each unit of work for each term.
- 3.4** The class teacher is responsible for the daily lesson plans in conjunction with Kapow 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.
- 3.5** We have planned the units 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.
- 3.6** Science books for each year group will include knowledge organisers before each unit of work, which include key vocabulary, key questions, prior knowledge and what learning will take place over the course of the unit.

### **4 Early years**

- 4.1** We teach science in the Early years as an integral part of the teaching and learning covered during the year. It comes under Understanding the World in the Early Years and encourages the early development of scientific curiosity and understanding of skills such

as experimentation and observation. Children are supported in developing the knowledge, skills and understanding that help them make sense of the world. Their learning must be supported through offering opportunities for them to use 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. We guide children to question and find answers and to use their growing knowledge to explain what they see.

## **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 communication 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. They use numbers in many of their answers and 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. 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.

### **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 needs**

- 6.1** We teach science to all children, whatever their ability. 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 children with learning difficulties. Our work in science takes into account the targets set in the children's Individual Education Plans (IEPs).

## **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 each unit the children will take part in an assessment activity from the Kapow scheme of work. Teachers to make an informed assessment on the progress that has been made over each unit. The teacher records the attainment grades using the Science data tracker and scholarpack throughout the school year. We use these grades as the basis for assessing the progress of each child to inform our teaching.
- 7.2** 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. The library contains a good supply of science topic books and there is computer software/iPads 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, 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 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.

**Signed: Miss O'Neil**

**Date: 26<sup>th</sup> September 2024**

**To be reviewed: September 2025**