

## Netherleigh and Rossefield School

# Science Policy

September 2016

### 1 Aims and Objectives

- 1.1 Science teaches an understanding of natural phenomena. It aims to stimulate a child's natural curiosity in finding out why things happen in the way they do. It teaches the scientific method of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions, and how to answer them in a scientifically valid way.
- 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 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;
  - be able to plan investigations, evaluate evidence, draw appropriate and supported conclusions, and present them 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 encourage 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 interpret a variety of data, such as statistics, graphs, pictures, tables of results, and photographs. Where it enhances learning, the children will have the opportunity to use ICT in Science lessons. Where possible, we involve the pupils in "real" scientific activities, for example, in 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 classroom assistants to support the work of individuals or groups.

### **3 Science Curriculum Planning**

- 3.1** The school uses the 'Switched on Science' scheme of work as the basis for curriculum planning. The scheme has been adapted to the local circumstances of the school in that we make use of the local environment in our fieldwork.
- 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 year group 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 in the Foundation Stage. In Key Stage 1 and 2, the children study Science as a discrete subject.
- 3.3** Our medium-term plans give details of each unit of work for each term. The science subject leader reviews these plans. As we now have some mixed-age classes, we are reviewing the planning to ensure complete coverage of the curriculum without omitting or repeating topics.
- 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 reviews them after each lesson.
- 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, and their knowledge deepens as they progress 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 classes are part of the Foundation Stage, we relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals (ELG's) which underpin the curriculum planning for children aged two to five. Science makes a significant contribution to the objective in the ELG's 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. The children develop oral skills in Science lessons through discussions 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, including the use of graphs. They use numbers in many of their answers and conclusions.
- 5.3 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 their presentation, including graphing/data handling software.

## **6 Teaching Science to Children with Special Educational Needs**

- 6.1** At our school, we teach our Science to all our 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 children 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 children's needs.
- 6.3** Intervention may ultimately lead to the creation of a School Support Plan (SSP) for children with SEN. The SSP may include 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 the attainment grades on the class tracker sheet. We use these grades as the basis for assessing the progress of each child, and we pass this information onto the next teacher at the end of the year.

- 7.2** As part of the 'Switched On Science' Scheme, children complete a diagnostic assessment before the science topic for that half term has been taught. The information gathered is then used to inform future planning. The children then complete an end of topic test, to establish the depth of their understanding. This enables teachers and the science subject leader to track progress over the course of the half term. It also supports the teacher in making a judgement of each child's overall attainment levels in relation to age related expectations, both in terms of that half term's topic and an overall judgement for the year.

## **8 Resources**

- 8.1** We have sufficient resources for all science topics in the school. We keep these in a central store where there is a box of equipment for the units of work. There is also a collection of science equipment which the children can use to gather weather data. The library contains a good supply of science topic books which can be used to support children's research.

## **9 Monitoring and Review**

- 9.1** It is the responsibility of the Senior Management Team and the Science Subject Leader to monitor the standards of children's work and the quality of planning and teaching in Science. This may also involve supporting colleagues in their knowledge and understanding, keeping up to date with developments in the subject, and providing a strategic lead and direction for the subject in the school, as well as reviewing strengths and weaknesses, and indicating areas for development.