

***“A unique family working together to be the best”***

**Forest Lodge Community Primary School**



# **Science Policy**

## **Aims and objectives**

Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way that 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 in which science will affect the future on a personal, national and global level.

The aims of this policy are:

- to establish and emphasise the entitlement for all children
- to reflect the ethos we create for the teaching and learning of Science at Forest Lodge
- to discover and promote the philosophy that Science is a fun activity
- to let children explore and discover the world around them through working scientifically

Our objectives in the teaching of science are for all our children:

- to develop an enquiring, investigative approach to science
- to develop the skills of hypothesising/predicting
- to plan and carry out scientific investigations, with the correct use of equipment (including computers)
- to develop a questioning attitude to their environment
- to share and communicate their knowledge of scientific ideas using scientific language, drawings, diagrams, charts, graphs and tables, with the aid of ICT as appropriate
- to know about life processes
- to know about materials, electricity, light, sound, and natural forces
- to know about the nature of the solar system, including the earth
- to use their experiences to develop understanding of key scientific ideas
- to make informed decisions based on evidence and their own experiences, and be able to apply scientific knowledge to new situations.

## **Teaching and learning styles**

Teaching and learning in Science is both active and interactive, including visual, auditory and kinaesthetic elements to ensure access for children with different learning styles. Science develops children's ability to think and act independently therefore several teaching styles are utilised to enable this development including questioning, analysing, recording, responding, sharing, discussing, managing, motivating, instructing, demonstrating and supporting.

The children have frequent opportunities to develop their skills in, and take responsibility for:

- planning investigative work
- observing with care and precision, using a range of measuring equipment
- exploring and sharing ideas with each other
- selecting relevant resources
- making decisions about sources of information
- carrying out activities safely
- deciding on the best form of communicating their findings
- being reflective about their own work.

## **Science curriculum planning**

Science is a core subject in the National Curriculum. Science planning and teaching at Forest Lodge Primary School is derived from the New National Curriculum (2014), taking the statutory and some non-statutory objectives and creating lessons around these. It is supported through reference to a range of teacher resources, including Internet based ones.

We carry out our curriculum planning in science in two phases (long-term, medium-term and short term). The long-term plan maps the scientific topics studied in each term during the Key Stages. Science is incorporated (where possible) with an overarching topic, to create a cross curricular theme. In this maths and English skills will be taught through Science as well as children applying their scientific knowledge through a context, making it more relevant to their lives, and hopefully, inspiring them to become passionate about Science as a topic.

All teachers are responsible for the medium and short term planning and delivery of Science to their own class which is completed with year group partners. Our medium-term plans, which we have based on the new Science curriculum introduced in 2014. The plans are collected centrally and the science subject leader reviews them.

Scientific units are now taught throughout topics, connecting them to other areas of the curriculum. Prior to the topic children can discuss what they know or want to learn- this can take the form of concept maps, KWL grids or discussion with the children. From this is should also be noted what the children want to learn about so that topics can be tailored to the children's interests as well as meeting the learning objectives specified. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each topic, 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.

Science planning is focused on learning through scientific enquiry, getting children to discover for themselves and to develop their skills of questioning the world they live in for themselves. Thus, planning must be adaptable to follow the children's questions. Within this however, some knowledge based lessons are required but these should be minimal and equally engage children.

Another aspect when planning is to focus on a scientists from that area, living or deceased, to give children knowledge of the work people have done throughout history and also to introduce careers within Science.

## **The Foundation Stage**

Science activities are planned in line with current Curriculum Guidance for the Foundation Stage. Science is incorporated into topic planning and includes opportunities for experimenting and investigating.

## **The contribution of science to other aspects of the curriculum**

### **Cross Curriculum Topic**

Science is now taught through cross curricular topics. This year we have been trialling new topics, which teachers have been planning themselves. These have been including the new science objectives, given to them by the Science Coordinator. This approach will hopefully embed Science into all subjects and teach it within an engaging concept. At the end of the 2016 academic year this will be reviewed by the Science Coordinator to ensure all the objectives have been covered and any alterations can be made for the future year.

### **English**

Throughout the school, from Foundation Stage up, children are encouraged to use their speaking and listening skills to describe their observations, predict what may happen and explain their findings. Some of the texts that the children study in Literacy are of a scientific nature thereby contributing to their knowledge and understanding. From Key Stage 1 and increasingly through Key Stage 2, children are encouraged to develop their writing skills through recording of their planning, observations, relevant information and explanations. Children are also encouraged to write biographies, explanation texts and non-chronological texts involving Science, as well as improving reading skills through comprehension and note taking.

### **Maths**

Children are expected to use their knowledge and understanding of measurement and data handling at appropriate levels. They develop accuracy in their observation and recording of events. Children are encouraged to present their data using graphs, both hand drawn and using ICT.

### **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 in which people recycle material and how environments are changed for better or worse. Secondly, the subject gives children numerous opportunities to debate and discuss. Health education is also taught as part of several topics, e.g. teeth and eating, keeping healthy and life cycles.

### **Spiritual, moral, social and cultural development**

Science teaching offers children many opportunities to examine some of the fundamental questions in life, e.g. 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.

### **ICT**

ICT is used in various ways to enhance the teaching and learning of science in our school. It also offers ways of impacting on learning which are not possible with conventional methods, particularly through the use of the interactive whiteboard. In addition, teachers use some internet based resources which allow for effective teaching of Science, including virtual experiments, interactive games and multimedia clips. 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. Children learn how to find, select, and analyse information on the Internet and on other media.

## **Science and inclusion**

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.

Lessons are differentiated to ensure all children are able to access the topic and achieve. This can be done in a number of ways from adult support, using scaffolds and word banks or the level of challenge.

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.

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. We achieve this in a variety of ways:

- setting 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;
- working in mixed ability groups during investigative work so that children can share their ideas learn from each other;
- providing resources of different complexity, matched to the ability of the child;
- using teaching assistants to support the work of individual children or groups of children.

Able, gifted and talented children are supported and challenged through developing analysis, investigative and evaluative skills. Teachers use questions that allow the more able child to maintain their involvement in the lesson and demonstrate their knowledge and abilities.

## **Assessment for learning**

Short-term assessments are an informal part of every lesson to check the children's understanding and to give the teacher information to adjust future lessons. Written or verbal feedback is given to the child to help guide his/her progress. Older children are encouraged to make judgements about how they can improve their own work.

Nationally, teachers are required to make an assessment of the children's work in science at the end of Key Stage 1 and Key Stage 2. These assessments are based on working scientifically objectives, which can be found in the New National Curriculum 2014.

Teachers make a termly assessment for each child (Y1 to Y6) based on National Curriculum level descriptors for Working Scientifically, deciding whether children are working towards, within, or beyond their age expectation. This system is currently being tested in the school and will be changed accordingly. To help test knowledge end of unit Rising Star tests are given to aid assessment of subject knowledge.

### **Health and Safety**

In their planning of activities, teachers anticipate likely safety issues. Children are taught essential life skills to enable them to participate confidently and safely in scientific enquiry. When children are engaged in investigations they are taught to consider health and safety issues and consequences. They are taught to operate in a safe manner. Reference should be made to the whole school Health and Safety policy and to the 'Be Safe' publication.

### **Resources**

The majority of practical science resources are kept in a central store, accessible by all teachers and teaching assistants. There is an ongoing programme to replenish and extend these resources with specific regard to investigations. In addition, there is a computer based selection of web-based resources for each topic as well as a school login for the STEM database

### **Monitoring and review**

The Science Leader and/or Senior Leadership Team monitor planning, teaching and learning and assessment in all year groups, regularly. This includes observations of lessons, work sampling, audits of resources, reviewing planning against year group expectations and analysing assessments.

This policy will be reviewed in May 2017.