Gretton Primary School

Science Policy
November 2022

1. Rationale

Science stimulates and excites pupils' curiosity about phenomena and events in the world around them; because Science links direct practical experience with ideas, it can engage learners at many levels. Scientific method is about developing and evaluating explanations through experimental evidence and modelling. This is an ignition to critical and creative thought; through Science, pupils understand how major scientific ideas contribute to technological change-impacting on industry, business and medicine and improving the quality of life. Pupils recognise the cultural significance of Science and trace its world-wide development. They learn to question and discuss Science-based issues that may affect their own lives, the direction of society and the future of the world.

2. Definitions

N/A

3. Aims

The school aims to:

- Stimulate and excite pupils' curiosity about changes and events in the world;
- Satisfy this curiosity with knowledge;
- Engage pupils as learners at many levels through linking ideas with practical experience;
- Help pupils to learn to question and discuss scientific issues that may affect their own lives;
- Help pupils develop, model and evaluate explanations through scientific methods of collecting evidence using critical and creative thought;
- Show pupils how major scientific ideas contribute to technological change and how this impacts on improving the quality of our everyday lives;
- Help pupils recognise the cultural significance of Science and trace its development.

4. Objectives

Foundation Stage

Pupils in the Foundation Stage develop their knowledge, understanding through play activities and direct teaching from which the pupils undertake planned tasks (Understanding of the World). They begin to look for similarities and differences in the world around them, learn about their bodies and the need to stay healthy, explore changing states and learn about life cycles of different animals.

Key Stage 1

The work covered in Key Stage 1 builds on the Curriculum Guidance for the Foundation Stage. Pupils observe, explore and ask questions about living things, materials and physical phenomena. They carry out simple tests and begin to work together to collect evidence to help them answer questions and to link this to simple scientific ideas. They use reference materials to find out more about scientific ideas. They share ideas and communicate them using scientific language and simple drawings, charts and tables with the help of ICT as appropriate. The topics covered within Key Stage 1 are; Animals, including humans; Plants, Everyday materials and their uses; and Seasonal changes.

Key Stage 2

The focus of Science teaching within lower Key Stage 2 is on broadening pupils' scientific view of the world around them. They will achieve this through exploration and discussion of everyday phenomena. They will ask questions and make observations as well as making decisions on how they can test out different theories through fair testing. They should be helped to develop conclusions and notice patterns which can be discussed and recorded as well as making predictions. The topics covered at this stage include; Plants; Animals, including humans; Rocks; Light; Forces and magnets; Living things and their habitats; States of matter; Sound; and Electricity.

In Upper Key Stage 2, pupils need to develop a deeper understanding of a range of scientific ideas. They should explore and discuss their ideas as well as asking questions about different scientific phenomena. They will also be analysing functions, relationships and interactions in a more systematic way. Pupils should select the most appropriate ways to answer scientific questions by using different types of scientific enquiry including; carrying out comparative and fair tests, observing changes, making classifications and through research of secondary sources of information. They should talk about their work and its significance, using a wide range of scientific language, conventional diagrams, charts, graphs and ICT to communicate their ideas. The topics covered in upper Key Stage 2 are; Living things and their habitats; Animals, including humans; Properties and changes of materials; Earth and Space; Forces; Evolution and Inheritance; Light; and Electricity.

5. Strategies and Procedures

Science is a compulsory subject in the National Curriculum and pupils undertake Science lessons either on a weekly basis or within a week block during the half term. Science objectives are covered through topics in each class and the Science Subject Leader monitors the completion of objectives and ensures continuity when variations in mixed age classes occur. Planning takes into account that the school places a high emphasis on the development of pupils' skills of working scientifically. In the majority of lessons, the skills for working scientifically are taught concurrently with the different subject topics.

6. Roles

Teacher

Teachers will use the learning objectives in the National Curriculum to plan their lessons over the course of each unit. Teachers will plan a range of activities in order to engage pupils. Tasks will also encourage children to develop their skills in working scientifically and their understanding of different methods of testing. Marking of books is carried out in line with current school policy. Teachers will seek guidance and support either from the Science subject leader, other teachers or from training, for any subject areas they feel less confident in.

Subject leader

The role of the Science Coordinator is to:

- Take the lead in policy development and review, including the continuing successful implementation of the Science curriculum;
- Support colleagues in the development of plans from schemes of work;
- Keep up-to-date on local and national initiatives and disseminate information;
- Take responsibility for the purchase and organisation of scientific resources;
- Encourage the professional development of staff;
- Promote different Science events both in and out of school time.

Governors

In line with timetable for Governor visits, which forms part of the school's on-going monitoring and evaluation programme, the nominated Governor will meet with the Science Subject Leader and carry out a monitoring visit; the findings of which will be recorded and reported to the Governing Body at the next available meeting.

7. Review Period

This policy was reviewed: November 2022
Next review date: November 2025

8. Guidance on Teaching

Teaching and learning

Long term planning at Key Stage 1 and 2 is linked, where possible, to topics as part of a Creative Curriculum. All lessons have clear learning objectives that are shared and reviewed with the pupils effectively and relate to the National Curriculum programmes of study. A variety of strategies, including questioning, discussion, concept mapping and marking, are used to assess children's knowledge and skills on a regular basis that informs next steps in learning. Activities develop the skills of enquiry, observation, locating sources of information, selecting

appropriate equipment and using it safely, measuring and checking results, making comparisons and communicating results and findings. Lessons make effective links with other curriculum areas and subjects, especially English, Mathematics and ICT. Activities are challenging, motivating and extend pupils' learning. Pupils have frequent opportunities to develop their skills in, and take responsibility for, planning investigative work, selecting relevant resources, making decisions about sources of information, carrying out activities safely and deciding on the best form of communicating their findings. Forest School often provides an excellent opportunity to reinforce children's learning from the classroom and this is done through consultation between the Forest School leader and class teacher.

Assessment and recording

Teacher's assessment mostly takes place at the end of each unit of work which notes any attainment and progress which is significantly lower or higher than expected. This can be carried out through a 'Mini Quiz' elicitation activity at the end of each topic which covers the main learning objectives for each unit. Teachers analyse pupils' progress in the units of work they have completed at the end of each school year to complete the annual report to parents. This report takes the form of a summary of the teachers' observations and continued assessment of the pupils at work thus giving parents a view of what their children know, understand and can do. Assessment of pupils' abilities to work scientifically relies on observation and/or the collection of written evidence of investigation skills. Key skills are monitored and may be assessed through the highlighting of the Science unit plans. The 'best fit' level is highlighted for the majority of the class and notes are made of children who fall above or below this level.

Continuity and progression

The school ensures curriculum continuity by following the two-year rolling program of Science units of work as highlighted on long term plans and by close liaison between staff at the planning stages.

Inclusion/SEN/ More Able

Planning at all levels ensures that the interests of boys and girls are taken into account, as well as catering for the range of abilities within the class. The pupils work individually, in pairs, as part of a small group and as a whole class each term. They use a variety of means for communicating and recording their work. All pupils, including those with special educational needs, undertake the full range of activities. Children that are more-able and talented in Science are given extension work to challenge their thinking and understanding even further. Teacher assessment determines the depth to which individuals and groups go during each unit of work. There are sometimes opportunities to further children's knowledge for particularly able children e.g. the Inter-school wildlife quiz.

Organisation

Science is taught as a discrete subject but can also be included in a topic based unit. The programmes of study are covered in units of work using the school's agreed long term plans for Science during Cycle A and Cycle B.

Curriculum

Long term planning; the Programmes of Study are covered in a two year rolling programme of units. Medium term planning identifies, within each unit of work, learning objectives, Science activities, assessment opportunities, the vocabulary to be taught and used, safety issues and how information and communications technology, along with other resources, should be used.

Learning resources

Learning resources are kept in the resource area in the staff room. Relevant equipment is taken to the class by teachers or responsible pupils. The Science Subject Leader is responsible for the maintenance of this area. The children are taught not to be careless with equipment, to respect animals and plants and to use consumables effectively.

The learning environment

Classrooms may have displays of current Science topics. The profile of Science should reflect its importance. Resources for the unit of work being covered should be appropriately accessible. Other sources of information should be available.

Health and Safety

Safe practice must be promoted at all times. Teachers must also take into account the school's Health and Safety policy and the risk assessment for the subject of Science. Particular attention must be given to avoiding the use of anything that aggravates individual pupils' allergies. Safety issues will have been identified in medium-term planning and risk assessments must be completed, when activities are identified that are unusual and beyond the scope of normal safety practice.

9. Links

The teaching of English, Mathematics and ICT is promoted strongly in Science as part of this school's drive to raise standards in these areas. Science is used to extend and enable the pupils to practice the skills of language and literacy and numeracy.

English

In particular, at Key Stage 1, the pupils are encouraged to use their speaking and listening skills to describe what they see and explain what they are going to do next. At Key Stage 2, the pupils are encouraged to develop their skills of writing to record their planning, what they observe and what they found out. In relation to Science, they should be applying their literacy skills at levels similar to those that they are using in their English work.

Mathematics

At both Key Stages, the pupils are expected to use their knowledge and understanding of measurement and data handling at appropriate levels. In Science, they should be applying their numeracy skills at levels similar to those that they are using in their mathematics lessons.

Information and Communications Technology

The pupils' ICT skills are applied as identified in the medium-term planning. At both Key Stages this should involve the pupils using ICT to: locate and research information using iPads to access the internet; record findings (using text, data and tables); log changes to the environment over time; gain confidence in using a range of appropriate ICT equipment

Thinking Skills

The teaching of Science provides numerous opportunities for the development of higher order thinking skills. Scientific enquiry demands a range of different types of thinking and processes that can be developed through thoughtful questioning. Questions for thinking may be included in Science plans and can be further developed by the teacher. Concept cartoons are often used to develop these thinking skills.