

Rushwick Primary School Science Policy

“A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world’s future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes”

At Rushwick we aim to:

- stimulate and excite pupils’ curiosity about changes and events in the world;
- engage pupils as learners at many levels through linking ideas with practical experience;
- develop children’s scientific knowledge and conceptual understanding through biology, chemistry and physics;
- 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.
- develop pupil’s use of ICT and Computing to aid and enhance their scientific studies.

Delivery

At Rushwick we follow the National Curriculum Programmes of Study for KS1 and KS2.

These include the following units:

- Working Scientifically
- Plants
- Animals Including Humans
- Characteristics of Materials
- Living Things and Habitats
- Rocks (KS2)
- Light (KS2)
- Forces (KS2)
- States of Matter (KS2)
- Electricity (KS2)
- Earth and Space (KS2)
- Evolution and Inheritance (Y6)

ICT is taught as an integral part of our science curriculum across all units. Children are given opportunities to research their learning, use ICT to record data collected and use ICT to support investigation and enquiry.

Scientific enquiry is an integral part of all topics, units and aspects of the science curriculum.

Teaching and Learning

At Rushwick we believe that the characteristics of high quality teaching and learning of Science are:

- setting suitable learning challenges
- responding to pupils' diverse learning needs
- overcoming potential barriers to learning and assessment for individuals and groups of pupils
- the skills and knowledge of science have wide applicability in everyday life.

The fundamental skills and concepts are set out and categorised into 3 attainment objectives:

1: Scientific knowledge and conceptual understanding:

Children should have a deep understanding of all three scientific disciplines. This includes, applying mathematical knowledge to Science through data collection, presentation and analysis. They should be familiar with technical vocabulary and terminology accurately and precisely.

2: The nature, methods and processes of science:

Working scientifically is inextricably linked to all learning in Science. This objective embeds the knowledge of biology, chemistry and physics, focussing on the key features of scientific enquiry:

- *Observing over time*
- *Pattern Seeking*
- *Identifying, classifying and grouping*
- *Comparative and fair testing (controlled investigations)*
- *Researching using secondary Sources*

3: The uses and implications of Science today:

This is implicit in all units and will be linked to wider areas of the curriculum to ensure consolidation of all ideas. Children will be assisted in making their thinking clear, both to themselves and others, and build secure foundations by using discussion to probe and remedy their misconceptions.

These aims are taken directly from The National Curriculum Programmes of Study for Y1-Y6 (See: Parent Guide to National Curriculum)

Progression

Regarding scientific enquiry, some independence is expected in filling in tables at Yr2 and by Yr6 children should be able to select relevant tables and graphs.

In Yr2 children should carry out measurements using standard units while, by the end of Yr4 these measurements should be carried out with accuracy.

By the end of Key Stage 1 ICT should be used to produce block graphs and pictograms along with the use of relevant software to find out information.

At lower Key Stage 2 children should use ICT to produce bar graphs to aid scientific enquiry while in upper Key Stage 2 children should use ICT to produce line graphs and to select relevant information. Progression in knowledge and understanding, enquiring vocabulary and scientific words is covered in the Scheme of Work.

A variety of strategies including questioning, discussion, concept mapping and marking are used to assess progress. Activities inspire the pupils to experiment and investigate the world around them and to help them raise their own questions such as “Why ...?”, “How ...?” and “What happens if...?”.

Activities develop the skills of enquiry, observation, locating sources of information, selecting appropriate equipment and using it safely, measuring and checking results, and making comparisons and communicating results and findings.

Lessons make effective links with other curriculum areas and subjects, especially literacy, numeracy and information and communications technology (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.

Timetabling:

Each unit has a time scale of between eight and eleven hours. At Rushwick we have decided to leave the blocking of science lessons to the discretion of class teachers.

Differentiation

The scheme of work covers differentiated learning outcomes. 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.

Classroom assistants work as directed by the teacher. Where they are assigned to pupils with special educational needs, they are well briefed beforehand. All pupils undertake the full range of activities. Weekly planning shows how activities have been adapted or extended for the needs of all pupils, and where appropriate, how they relate to IEPs.

More able children will be given access to challenging resource material – both texts and on the computer.

Early Learning Goals

Science at Ruhwick supports the Early Learning Goals of:

- language and literacy
- mathematical development
- knowledge and understanding of the world

- personal, social and emotional development
- creative development
- physical development

Assessment and Recording

Teacher assessment takes place at the end of each unit, which notes any attainment and progress which is significantly lower or higher than expected.

Health and Safety

Health and safety is crucial in planning for Science investigations and research.

Topics that require teacher's to think about the risks for investigations can include:

- Electricity
- Food/Materials (allergies)
- E-Safety (research)

All investigations are carefully planned to minimise risk and use school equipment to ensure safety.

The Learning Environment

Classrooms can have displays of current science learning. They should display prominently the relevant scientific vocabulary being introduced in current units of work.

Displays will show examples of children's work, key vocabulary and questions.

Policy reviewed: February 2018

Next Review: Spring 2020