

# Science Policy

## Norman Street Primary School



Approved by Governors:

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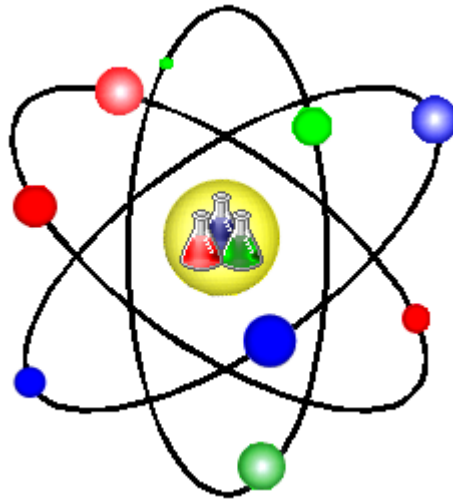
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Norman Street Primary School

## Science Policy



*'To raise new questions, new possibilities and to regard old problems from a new angle, requires creative imagination and marks real advance in science'.*

*Albert Einstein*



## Norman Street Primary School

### SCIENCE CURRICULUM POLICY

#### **PRINCIPLES**

Science, like Mathematics and English, is a core subject within the National Curriculum. The skills, knowledge and understanding of Science have wide applications in everyday life. Science provides a real and stimulating context for development of core skills and engages in meaningful discussion.

#### **Introduction**

This policy outlines the guiding principles by which Science will be taught and learnt at Norman Street Primary School. It follows The National Curriculum 2014 Science Guidelines and the Early Years Foundation Stage Framework (March 2021, effective 2021). Through building key knowledge and understanding of concepts, pupils will be encouraged to recognise the power of rational explanation and develop a sense of curiosity about natural phenomena.

We believe 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.*' (The National Curriculum in England Framework Document (DfE) 2014)

#### **Main Aims**

- To develop the natural curiosity of children about the world around them.
- To develop questioning and enquiring minds through a range of enjoyable and interesting experiences.
- To develop scientific knowledge and conceptual understanding in the following areas:
  - Physics: including seasonal changes, light, forces, magnets, sound, electricity and earth and space.
  - Biology: including plants, animals, habitats, evolution and inheritance.
  - Chemistry: including everyday materials and their uses, rocks, states of matter and the properties and changes of materials.
- To develop an understanding of scientific ideas.
- To stimulate our children to investigate and question.
- To develop understanding of the nature, processes and methods of Science through a variety of different scientific enquiries which help them to answer questions about the world around them.

- To encourage the children to understand how Science can be used to explain what is occurring, predict how things will behave, and analyse causes.
- To develop the skills to make systematic enquiries.
- To develop the accurate use of scientific vocabulary.
- To enable children to develop an increasing attention to detail and accuracy.
- To provide opportunities for children to apply theoretical ideas to the solving of practical problems.
- To equip the children with the scientific knowledge required to understand the uses and implications of Science, today and for the future.
- To foster a positive attitude to science and increase pupils' understanding of how science is used in the wider world.

Socially and emotionally – to foster and inspire a sense of wonder in the world around them.

### **Teaching and Learning**

- 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 this done through whole class teaching, while other times we engage the children in an enquiry-based activity.
- We encourage the children to ask, as well as answer, scientific questions.
- Children have the opportunity to use a variety of data, statistics, graphs, pictures and photographs.
- Children use IT in science lessons where it enhances their learning, which may include the use of data loggers.
- Children take part in discussions and present reports to the rest of the class, which links to our Oracy programme.
- They engage in a wide variety of problem-solving activities.
- Wherever possible, we involve the pupils in 'real' scientific activities.

### **Skills Developed**

- |  |   |
|--|---|
| • Exploring and observing first hand using all their senses. | • Communicating scientific ideas orally, in   |
| • Raising questions  | • writing, diagrammatically or graphically.   |
| • Planning investigations                                    | • Interpreting scientific data                |
| • Predicting   | • Comparative and Fair testing                |
| • Formulating hypotheses                                     | • Explain using scientific knowledge          |
| • Problem solving  | • Explaining and using scientific terminology |
| • Evaluating   | • Sorting and ordering                        |
| • Estimating   | • Pattern seeking                             |
| • Accurate measuring   | • Observation over time                       |
| • Collecting data  | • Identifying and classifying                 |
| • Drawing conclusions  |   |
| • Researching using secondary sources                        |   |

### **The Approach to Investigations**

Each child will plan, take part in and report on an investigation within each unit of work. The format for these investigations will be progressively systematic. By the end of Key Stage 2, children should be more independent in planning and carrying out these investigations, dependent on ability.

### **STRATEGIES FOR TEACHING SCIENCE**

During the Foundation Stage pupils are encouraged to use their senses to begin to develop an understanding of the world around them. Within Key Stage One and Two, Science is taught as a unit block of work and is used to ensure continuity and progression of children's learning. Wherever possible, the teaching of Science is creative and involves a practical hands-on approach which covers a breadth of investigative approaches outlined within, 'working scientifically'. Lessons develop skills to record gradually, focussing on different elements in order to make good progress. The Teacher's role is to use a variety of teaching strategies in order to motivate, enthuse, inspire, promote, engage and encourage the 'want' to learn about science and scientific skills. We have high expectations of all pupils to engage, question, understand, interpret, explain, conclude and progress.

### **Science Curriculum Planning**

The school uses the National Curriculum programme of study for science as the basis of its curriculum planning supported by relevant Alex Bedford materials where appropriate. Discrete teaching of science is carried out, ensuring pupils know and understand that science is split into three main disciplines: Biology, Chemistry and Physics. We endeavour to ensure that there are opportunities for children of all abilities to develop their skills, knowledge and learning. We also build progression into the science skills as outlined within our curriculum maps, so that the children are increasingly challenged as they move up through the school.

Planning for the delivery of Science in each classroom is the responsibility of each class teacher, with other adults working under the direction of the class teacher. To ensure a broad and balanced Science Curriculum, teachers refer to the school's long-term plan for Science which covers the content of the Science Curriculum (2014).

### **Early Years**

The EYFS learning and development requirements comprise of:

- the seven areas of learning and development and the educational programmes
- the early learning goals, which summarise the knowledge, skills and understanding that all young children should have gained by the end of the reception year
- the assessment requirements (when and how practitioners must assess children's achievements, and when and how they should discuss children's progress with parents and/or carers).

Science is taught largely within one of the seven areas of learning and development (Understanding the World) as an integral part of themed work covered during the year. The Early Learning Goals (ELGs) which underpin the curriculum planning for children from birth to age five, are followed. Science makes a significant contribution to developing a child's knowledge and understanding of the world, for example through exploration and investigation of what floats and what sinks when placed in water. Other areas of science appear within the other six areas and are summarised within our Science overview document for the early years.

### **Computing**

Computing is used to support and extend pupils scientific understanding, e.g. use of simulations, use of secondary sources for research, data loggers to collect data to support and investigate work, and video clips to reinforce concepts. iPads are used within school as a means to support scientific

enquiry, record investigations and as a tool to support SEND children as a means of recording their findings without hindering their ability to take part in all scientific enquiries.

### **E-Safety**

When IT is used in Science lessons, before every lesson the class teacher will remind children about how to use the internet safely and refer to the relevant documentation.

### **SEND**

Pupils with identified Special Educational Needs will receive extra input/support where relevant to develop their understanding of, and access to, Science. This is decided by the class teacher. However, Science is a subject which lends itself to pupils being able to participate in lessons fully whatever their ability level. It is an inclusive subject whereby many SEND pupils are nurtured and encouraged to develop their skills further as many things are practically based.

### **ENGLISH**

- Pupils will use and understand a growing breadth of science vocabulary and will use scientific words correctly in context when speaking and when writing.
- Pupils will record in different ways using and applying English skills according to the work undertaken.
- Pupils will learn about significant famous scientists from past and present day and their significance in our world and our lives.

### **PSHE AND CITIZENSHIP**

Science encourages children to:

- Work together, listen to each other's ideas and treat these with respect
- Develop a respect for our environment and all living things
- Have a growing awareness for their own health and safety, in addition to that of others
- Ask questions and be curious about what they are learning about and what they want to know

### **ASSESSMENT, RECORDING AND REPORTING PROCEDURES**

#### **Assessment**

In our school, assessment is purposeful, enables us to plan effectively and ensures each child makes appropriate progress. Assessment is recognised as an integral part of teaching and learning and is a continuous process. It is the responsibility of the class teacher to assess and keep up to date records of all children in their class.

Teachers will assess children's work in science by making informal judgements during lessons. On completion of a piece of work, the teacher assesses it on a formative basis, and uses this assessment to plan for future learning. Written or verbal feedback is given to the child, in line with the school feedback policy, to help guide their progress. Teachers make assessments of the pupils' progress throughout the course of their teaching through various methods such as discussion, observation, marking of work, quizzes and questioning.

Older children are encouraged to make judgements about how they can improve their own work (self evaluation) and to also work together to peer assess. Younger children self-assess using the symbols on their objective label.

At the end of a unit of science-based learning, teachers make a summary judgement about the work of each pupil in relation to the expectations for their key stage, with older children sometimes being assessed using a more formal test. This summary includes judgements on a child's knowledge and understanding of science and their practical use of scientific methods, processes and skills. We use these judgements as the basis for assessing the progress of each child. A summative assessment takes place at the end of each term using all information gained and a record of progress for each pupil, using the Science Assessment tracker, is made. Emerging, expected or exceeding terminology is used.

Evidence of progress will be monitored by the Science Lead throughout the year via tracking and monitoring pupils' Science/topic books, class science BIG books, iPad records and the Science tracker. Assessment of pupil progress is also made by the Science Lead working with a selected sample of pupils, from each class, for pupil interview.

### **Reporting**

At the end of Key Stage One (Year 2), teachers report the child's Science National Curriculum level to the Local Authority, as part of the Key Stage 1 SATs assessments. Science is subject to statutory assessment (SATs), in the form of Science Sampling in randomly selected schools, at the end of Key Stage Two (Year 6). Science is assessed and reported at the end of key stage 2.

Throughout Keys Stage 1 and 2, teachers make a final assessment of the children's attainment in science at the end of every year and report this to parents; this information is passed on to the next teacher. Formal verbal reports to parents at Open Evenings are bi-annual. Parents receive an annual summative report on Science as part of their end of year report.

### **PROCEDURES FOR MONITORING AND EVALUATION**

- A Scrutiny of Work will be carried out regularly, using BIG books, group and individual topic books and iPad evidence. Work samples will be retained by teachers, to ensure continuity and progression of the Science Curriculum across Year Groups.
- A triangulation process involving book scrutiny and pupil interviews provide a holistic overview of progress across the school.
- Assessment of pupil's progress is also made by the Science Leader working with a 'randomly selected sample of pupils,' looking at an agreed focus within working scientifically, throughout the year e.g. pattern seeking, fair testing, as well as ascertaining pupils' knowledge and understanding of themes.

### **ROLE OF THE SUBJECT CO-ORDINATOR/LEAD**

- To support teachers in their knowledge and understanding of the curriculum
- To provide guidance on the implementation of the Science policy.
- To provide support to those colleagues who request/require it, including help with planning and organisation.
- To monitor, evaluate and review the scheme of work in line with current practices and principles
- To suggest appropriate assessment activities where needed.

- To monitor the planning and delivery of lessons.
- To monitor the assessment of the pupils' and how this is then used to inform subsequent lessons or units of work
- To support teachers recording of pupil progress
- To review and evaluate the effectiveness of teaching and learning of Science.
- To coordinate and arrange staff in-service training as required.
- To audit resources, identify needs and order equipment in school after consultation with colleagues
- To ensure resources are available to enable teachers to effectively deliver schemes of work

### **Health and Safety**

The safe use of equipment and consideration of others is promoted at all times. The Association for Science Education publication, "Be Safe!" should be used by staff as a point of reference for issues regarding health and safety.

A copy of this is held by the Science Co-ordinator and teachers are encouraged to use this as an aid. The school's "Health and Safety Policy" should be consulted for details regarding scissors, craft tools, electrical equipment, wet areas, heavy equipment and use of other tools. When planning activities, safety issues should be identified in the weekly plans and acted upon accordingly. Children should be made aware of safety issues and, where appropriate, the reasons behind them. Activities which take place away from the school's premises will require a risk assessment to be filled in.

### **Equipment and Resources**

The science lead carries out an audit of the resources and reorders any consumables when necessary. New resources can be purchased through negotiation between class teacher and subject lead. A central resource area for both Key Stage 1 and Key Stage 2 Science is located in the shared resource cupboard in the school hall, however many resources are now held in class relating to the units being taught.

### **Monitoring the policy:**

**Subject Lead will monitor the implementation of the policy regularly.**

**Review Date: This policy was reviewed and updated in February 2022 (reviewed in consultation with staff according to our review cycle).**

**It will be reviewed again according to the School Development Plan – subject review cycle.**