

Northcote School



Science policy

Our Mission

To enable pupils to maximise their potential; both intellectually and socially, by creating a stimulating, secure and caring environment in which a broad and balanced education is provided.

School Aims

- To help pupils to develop lively, enquiring minds, the ability to question and argue rationally and to apply themselves to tasks and physical skills.
- To help pupils to acquire knowledge and skills relevant to adult life and employment in a fast changing world.
- To help pupils to use language and numbers effectively.
- To instill respect for religious and moral values, and tolerance of other races, religions and ways of life.
- To help pupils to understand the world in which they live, and the inter-dependence of individuals, groups and nations.
- To help pupils to appreciate human achievements and aspirations.
- To allow each child the opportunity to achieve his/her potential in happy, caring surroundings.
- To create a school community in which children, parents, teachers and governors work together for the common good.
- **To develop future scientists!**

At Northcote Primary School we believe that 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 Northcote Primary school, we have developed a set of principles for learning in science. We believe science teaching and learning is good when:

Teacher's views:

- Children lead scientific enquiries and can use this to confidently evidence and justify their learning
- Children are testing their ideas
- Learning is practical & engaging
- Children work collaboratively
- Learning is accessible and challenging for all
- Teachers and children are confident with vocabulary and knowledge
- Children are asking questions & using scientific vocabulary
- Children can apply their scientific knowledge outside of science lessons in a real-life context
- Children are investigating & exploring
- Children are learning beyond the classroom
- Assessment is used to plan effectively and for progression
- Children's knowledge is transferrable (evident in other subjects)

Children's views

- We work together in a group & help each other
- We learn new facts
- We sort things out (classifying)
- We are having fun, investigating & doing experiments
- We go outside
- Everyone is asking questions

The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Curriculum and subject content

The programmes of study for science are set out year by year for Key Stages 1 and 2 in the National Curriculum. Class teachers are responsible for ensuring that all of the relevant statutory content is covered within the school year. The National Curriculum gives a full breakdown of the statutory content to be taught within each unit. Non-statutory guidance is also provided which staff members are encouraged to use.

Working Scientifically:

EYFS

- **Questioning:** Children can begin to ask simple questions about what they observe, showing curiosity about their environment.
- **Predicting:** Even at this early stage, children can start to make basic predictions. For example, guessing what might happen next in a simple sequence or event.
- **Experimenting:** Through play and exploration, children engage in a form of experimentation. They see what happens when they mix colours or what happens to a toy when it's submerged in water.
- **Communicating:** Children should be encouraged to talk about what they see, think, and feel. This might be describing what they've observed, discussing an experiment, or expressing an opinion.

Key Stage 1

During Key Stage 1 the focus is on introducing pupils to basic scientific principles and methods. They learn to ask simple questions, make observations, perform simple tests, classify objects, and gather and record data. They're encouraged to use simple equipment and begin using basic scientific language.

Lower Key Stage 2

The focus shifts towards developing these foundational skills. Pupils learn to ask more relevant questions and to use different types of scientific enquiries. They start setting up simple practical enquiries and comparative tests. Measurement and equipment use become more accurate and varied. Pupils are also taught to draw conclusions, make predictions, and suggest improvements from their findings. Data recording and presentation skills are enhanced, and they're expected to use relevant scientific language to communicate their findings.

Upper Key Stage 2

Pupils are expected to plan different types of scientific enquiries, including controlling variables where necessary. Precision and accuracy in taking measurements increase, and they start taking repeat readings. Data recording becomes more complex, using scientific diagrams, classification keys, and various graphs. Pupils use their test results to make predictions for further tests. They are taught to present findings, including conclusions, causal relationships, and degree of trust in results, in oral and written forms. They also learn to identify scientific evidence that supports or refutes ideas or arguments. They have more autonomy in their decision-making process related to observations, measurements, and equipment use. Pupils learn to differentiate between opinion and fact and understand how scientific ideas have developed over time.

Staff training

The Science subject leader is responsible for ensuring that all staff are adequately trained so that they are able to deliver the curriculum effectively. This will include: organising CPD, leading staff meetings, sharing resources for planning and teaching and supporting colleagues. Regular communication with staff will be sustained and all staff can speak to the subject leader if they require any further support.

Planning

In early years and Key Stage 1, teachers use a mixture of resources to support their planning including but not exclusively; Hamilton Trust, Plan Bee, Engaging Science and Primary Science Teaching Trust.

Key Stage 2 follow The HEP Science curriculum.

Note – Key Stage 1 Science curriculum is under review and our plan is to introduce HEP Science curriculum into Year 1 and 2 as part of a rolling programme.

Ogden Trust

We are a member of the Ogden Trust. The Trust supports schools, teachers, projects and programmes that are committed to enhancing physics teaching and learning. We are provided this support working closely with Alsop High School and a cluster of local primary schools.

Scientists

Each year group researches and celebrates a scientist linked to each topic studied.

Cross curricular links

Science is often linked to other curricular areas, notably P.E. and P.S.H.E. when dealing with human needs such as exercise and healthy eating, Mathematics when data handling and measuring and Technology when looking at how forces can be applied.

The use of reference books supports the development of English skills. Factual writing skills are developed through report writing. Developing writing skills should be planned for, included within science lessons, and used when assessing children's writing.

I.C.T: including the use of Data Logs and electronic microscopes as well as software to aid the production of graphs and the presentation of scientific information are a core part of science teaching.

Differentiation and progression

The 2014 Science curriculum is a mastery curriculum and all children are expected to achieve. The scheme allows for differentiation by including extension through independent investigation work and re-enforcement activities for those pupils that require it. Progression will be demonstrated through long term planning. Children work collaboratively in mixed ability groups throughout the year. These groups remain the same all year.

Assessment

Primary Science is '*continuous, ongoing teacher assessment*'. Pupil assessment is ongoing through work, output and pupil response.

Teachers are required to make termly assessments in order to inform future planning, both about children's knowledge and understanding and about development of process skills. Teachers provide children with ongoing assessment tasks throughout units of work and towards the end of units of work in order to support their assessments. Assessments include short written and verbal tasks at the start of each lesson and more formal assessments at the end of a topic.

Recording and reporting

We report to parents through three parent consultation sessions. Parents also receive a written report at the end of each academic year.

SEND

Pupils with special educational needs follow the curriculum at an appropriate level and activities should be adapted, extended and reinforced for pupils as required. We ensure that we pre-teach key vocabulary and there are constant opportunities for repetition to secure, recall and revisit learning regularly. We have visuals to support understanding of concepts and chunking of tasks.

Equal opportunities

Every effort is made to ensure that science activities and investigations are of equal interest and relevance for boys and girls. Equality of access to the science curriculum is essential for all pupils regardless of gender and ethnic background.

Adults other than teachers

We welcome the support of additional adult support within the classroom in the form of Learning Support Assistants, student teachers or volunteers support assistants and recognise that responsibility for pupils remains with the teacher. It is essential that health and safety guidelines are communicated and complied with by students and other visitors.

Health and safety

The safe use of equipment is promoted at all times. The school's Health and Safety Policy should be followed at all times. Vegetation of a poisonous nature should be avoided for displays. Pupils must be taught that any investigations using "taste" are conducted using only materials provided by the teacher. The dangers of tasting unknown substances must be made clear. Any animals, including minibeasts, used for study should be treated with respect.

Resources

Science requires an extensive range of resources, both durable and consumable. The resource base is reviewed, renewed and developed each year. Class teachers are required to inform the Science Coordinator of any resources needed to be included in the next requisition. Resources are located in both classrooms and the science area. The Science Coordinator provides year group colleagues with resources relevant to topics taught within their year. All equipment may be requested by any member of staff. The outside garden area is available to develop skills related to living things and each year group is encouraged to grow food in the raised beds. Also, the school has a strong focus on ecological issues which are taught in a cross curricular way.

Review and development

This policy will be reviewed annually, as will all schemes of work.

Note: Change of coordinator – Mrs Flattery will be replacing Mrs Monks from September 2024.

Member of staff responsible: Mrs Monks

Date Policy written: July 2024

Date to be reviewed: July 2025