

Northcote Primary 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 instil 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 and all children are engaged and involved
- Children are working 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.

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Throughout early years, we ensure children gain an understanding of the similarities and differences in relation to places, objects, materials and living things. We talk about the features of our own immediate environment and how environments might vary from one another. We make observations of animals and plants and explain why some things occur, and talk about changes that happen. In EYFS, we teach topics based around children's needs and interests and therefore the Science we cover may differ from year to year. The Science in the Early Years is found within the 'Understanding of the World' element of the curriculum. Children experience these elements through both indoor and outdoor provision.					
1	Animals including humans My body, senses	Animals including humans Grouping animals, animal bodies	Seasonal changes	Properties of everyday materials	Plants Trees	Investigating plants.
2	Uses of everyday materials	Uses of everyday materials	Animals, including humans	Plants	Living things and their habitats	Living things and their habitats
3	Animals including humans	Animals including humans	Rocks including fossil formation	Forces and magnets	Investigating plants	Light
4	Sound	Electricity	Animals including humans	Living things and their habitats	States of matter	States of matter
5	Living things & their habitats Animals including humans		Properties of everyday materials Reversible change Changes that form new materials	Properties of everyday materials Reversible change Changes that form new materials	Earth and Space	Forces
6	Living things and their habitats	Evolution & Inheritance	Animals including humans	Light	Electricity	Transition

Early Years Foundation Stage

In the Early Years Foundation Stage children follow the objectives from the Foundation Stage Profile. The Early learning Goals from the 'Understanding the World' strand have considerable scientific content. The children participate in activities based on first hand experiences that encourage exploration, observation, problem solving, prediction, critical thinking, decision making and discussion and are provided with an environment which offers

a wide range of activities indoors and outdoors that stimulate children's curiosity. The skills acquired in Early Years Foundation Stage are further developed and refined in Key Stage 1.

Working Scientifically:

Years 1 and 2

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: -

asking simple questions and recognising that they can be answered in different ways - observing closely, using simple equipment - performing simple tests - identifying and classifying - using their observations and ideas to suggest answers to questions - gathering and recording data to help in answering questions.

Years 3 and 4

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them - setting up simple practical enquiries, comparative and fair tests - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - gathering, recording, classifying and presenting data in a variety of ways to help in answering questions - recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions - identifying differences, similarities or changes related to simple scientific ideas and processes - using straight forward scientific evidence to answer questions or to support their findings.

Years 5 and 6

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate - recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs - using test results to make predictions to set up further comparative and fair tests

- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations - identifying scientific evidence that has been used to support or refute ideas or arguments.

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; 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

Long Term Planning:

The curriculum map (see above) outlines the units to be taught in each year group. Teachers use a mixture of resources to support their planning including; but not exclusively Hamilton trust, Twinkl, Plan Bee, Engaging Science.

Medium Term Planning:

Teachers complete a medium term plan for each unit of work so that they can plan for clear progression.

INITIAL THINKING (mind maps, glossaries, **KWL** grids –what pupils already **KNOW**, what they **WANT** to learn & at the end what they have **LEARNED**, question boards) • IMMERSION (Lots of Scientific Enquiry opportunities and Key Learning explored and defined) • WHAT HAVE WE LEARNED? (Reporting to an audience, children showing their knowledge in action.)

I.C.T.

I.C.T. is used to support the science curriculum and to enrich pupils learning experiences.

CROSS CURRICULAR LINKS

Science is often linked to other curricular areas, notably P.E. and P.S.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. Science supports english at K.S.1 through the use of Science Big Books which are sometimes used in english planning as examples of factual books, sometimes used as the introduction to new topics. At K.S.2 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*'. Teachers assess their children on every lesson basis through observations, questioning, responses from pupils and work output. They record for each topic their teacher assessments which feeds into the termly assessments.

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 at the end of both key stages are required to make formal End of Key Stage Assessments.

Pupils are encouraged to develop their own evaluation skills and evidence of this is through the traffic light 'Assessment for Learning' system or recording using smiley/sad faces in books and other assessment for learning strategies. Pupils are also encouraged to evaluate their own learning at the start & at the end of each topic through 'I can' statements. This is recorded in their science big books. Children are also set pre-unit activities and post-unit activities to show progression in knowledge and skills over each unit.

Teacher provide children with 'Proof of Progress' (POP) tasks throughout units of work and towards the end of units of work in order to support their assessments.

RECORDING AND REPORTING

We report to parents through three open evenings, one in October, one in the Spring Term and one at the end of the Summer Term. Parents also receive a written report detailing coverage and attainment in regard to the National Curriculum at the end of the Summer Term.

SPECIAL EDUCATIONAL NEEDS

Pupils with special educational needs follow the curriculum at an appropriate level and activities should be adapted, extended and re-enforced for pupils as required.

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. Please refer to the '*Northcote Primary School health and safety for primary science*' policy which can be obtained from the Science Co-ordinator & a copy of which is on permanent display on the staffroom notice board. The school 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 from money delegated from capitation. Class teachers are required to inform the Science co-ordinator of any resources needed to be included in the next requisition. Resources are located in classrooms. The Science co-ordinator provides year groups 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. (As part of the Eco school's programme.)

REVIEW AND DEVELOPMENT

This policy will be reviewed bi-annually, as will all schemes of work. Development of teacher's expertise may be provided through in-school inset provision, in class support from the co-ordinators, focused staff meetings and attendance at externally held courses.

Member of staff responsible: **Victoria Pitfield**

Date Policy written: **March 2019**

Date to be reviewed: **March 2021**

Date approved by Governors:

Signature of Chair of Governors: