**Netherthorpe Primary School**

**Science Policy (2019)**



“The joy of discovery is certainly the liveliest that the mind of man can ever feel.”

**Claude Bernard**

“Science is a way of thinking much more than it is a body of knowledge.”

[**Carl Sagan**](https://everydaypower.com/carl-sagan-quotes/)

This policy outlines the teaching, organisation and management of science taught at Netherthorpe Primary School. The school’s policy for science is based on the new primary curriculum which is statutory from September 2014. The implementation of this policy is the responsibility of all teaching staff.

**Rationale**

At Netherthorpe Primary School, we believe it is important that children are given the opportunity to explore and understand the world in which they live. Teaching Science is about giving children the tools to develop their ideas and ways of working that enable them to understand the world through investigation with independence, resilience and enjoyment. At Netherthorpe, we feel strongly that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or ability. Through Science, pupils at Netherthorpe will continue to deepen their respect, care and appreciation for the natural world and all its phenomena.

**Aims**

* to develop pupils’ enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life;
* to build on pupils’ curiosity and sense of awe of the natural world;
* to use a planned range of investigations and practical activities to give pupils a greater understanding of the concepts and knowledge of science;
* to introduce pupils to the language and vocabulary of science;
* to develop pupils’ basic practical skills and their ability to make accurate and appropriate measurements;
* to promote a ‘healthy lifestyle’ in our pupils;
* to develop links between Science, Maths, Technology and Engineering (STEM) in order to equip pupils with the right skills for the future;
* to extend the learning environment for our pupils via our environmental areas and the locality.

**Legal framework**

This policy has due regard to statutory legislation and guidance including, but not limited to, the following:

* DfE (2014) ‘Statutory framework for the early years foundation stage’
* DfE (2013) ‘Science programmes of study: key stages 1 and 2’
* The Control of Substances Hazardous to Health Regulations (COSHH) 2002
* The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013

This policy will be used in conjunction with the following school policies and procedures:

* Health and Safety Policy
* Primary Science Health and Safety Policy
* Accident Reporting Procedure Policy
* Primary Assessment Policy
* Loaning School Equipment Policy

**Roles and responsibilities**

The subject leader is responsible for:

* Preparing policy documents, curriculum plans and overviews of work for the subject.
* Reviewing changes to the national curriculum and advising on their implementation.
* Monitoring the learning and teaching of science, providing support for staff where necessary.
* Encouraging staff to provide effective learning opportunities for pupils.
* Helping to develop colleagues’ expertise in the subject.
* Organising the deployment of resources and carrying out a regular audit of all science resources.
* Communicating developments in the subject to all teaching staff.
* Leading staff meetings and providing staff members with the appropriate training.
* Organising, providing and monitoring CPD opportunities in the subject.
* Ensuring common standards are met for recording and assessment.
* Advising on the contribution of science to other curriculum areas, including cross-curricular and extra-curricular activities.
* Collating assessment data and setting new priorities for development of science in subsequent years.

The classroom teacher is responsible for:

* Acting in accordance with name of school’s Primary School Science Policy, ensuring that lessons are taught in line with the school’s Health and Safety Policy at all times.
* Liaising with the science leader about key topics, resources and supporting individual pupils.
* Ensuring that all of the relevant statutory content is covered within the school year.
* Monitoring the progress of pupils in their class and reporting this on an annual basis.
* Reporting any concerns regarding the teaching of the subject to the subject leader or a member of the senior leadership team (SLT).
* Undertaking any training that is necessary in order to effectively teach the subject.

**Teaching and Learning**

At Netherthorpe, teachers plan and deliver high-quality and engaging science lessons incorporating a range of teaching and learning styles.

Teachers will provide opportunities for pupils to:

* Learn about science, where possible, through first-hand practical experiences;
* Develop their research skills through the appropriate use of secondary sources;
* Work collaboratively in pairs, groups and/or individually;
* Plan and carry out investigations with an increasing systematic approach as they progress through the school;
* Develop their questioning, predicting, observing, measuring and interpreting skills;
* Record their work in a variety of ways e.g. writing, diagrams, graphs, tables;
* Read and spell scientific vocabulary appropriate for their age.
* Be motivated and inspired by engaging and interactive science displays which include key vocabulary and relevant questions.
* Learn about science using the outdoor learning environment.

Areas of learning within key stage 1 and 2 ensure that statutory requirements are being covered through the specific disciplines of biology, chemistry and physics. There is a clear progression of skills in each area of study both within and between year groups and teachers consider these when planning for their classes.

 ‘Working scientifically’ is embedded throughout the areas of learning in key stage 1 and 2; this focuses on the key aspects of scientific enquiry which enable pupils to investigate and answer scientific questions. Working scientifically objectives are at the forefront of the teachers’ planning process and lesson content is chosen to support an even coverage of these skills.

**The National Curriculum**

During **Reception** class, in accordance with the ‘Statutory framework for the early years foundation stage’, focus will be put on the seven areas of learning, with the scientific aspect of pupils’ work relating to the objectives set out within the framework.

During **Years 1 and 2**, pupils will be taught to:

* Ask simple questions and recognise that they can be answered in different ways.
* Observe closely, using simple equipment.
* Perform simple tests.
* Identify and classify.
* Use their observations and ideas to suggest answers to questions.

During **Years 3 and 4**, pupils will be taught to:

* Ask relevant questions and use different types of scientific enquiries to answer these questions, setting up simple practical enquiries, comparative and fair tests.
* Make systematic and careful observations and, where appropriate, take accurate measurements using standard units and a range of equipment, including thermometers and data loggers.
* Gather, record, present and classify data in a variety of ways to help answer questions.
* Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.

During **Years 5 and 6**, pupils will be taught to:

* Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
* Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
* Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
* Use test results to make predictions to set up further comparative and fair tests.
* Report and present findings from enquiries, including conclusions, causal relationships and explanations of the results and the degree of trust in them. This should be in oral and written forms such as displays and other presentations.
* Identify scientific evidence that has been used to support or refute ideas/arguments.

**Planning**

Whole school Science long-term plan outlines the units taught within each year group.

Medium-term planning is used to outline the ‘working scientifically’ skills and the knowledge based objectives that will be taught in each unit of work, as well as highlighting the opportunities for assessment. Medium-term plans need to identify learning outcomes, main learning activities, vocabulary and differentiation. They are shared with the subject leader to ensure there is progression between years.

Short-term planning is used flexibly to reflect the objectives of the lesson, the success criteria and the aim of the next lesson. Short-term planning is the responsibility of the teacher. This is achieved by

building on their medium-term planning, taking into account pupils’ needs and identifying the method in which topics could be taught. Short-term plans are solely for the benefit of the classroom teacher and donot need to be shared with the subject leader.

All relevant staff members are briefed on the school’s planning procedures as part of staff training.

**Cross-curricular links**

Wherever possible, the science curriculum will provide opportunities to establish links with other curriculum areas:

English

* Pupils are encouraged to use their speaking and listening skills to describe what is happening.
* Pupils’ writing skills are developed through recording their planning, what they observe and what they found out.
* Science based texts are regularly used in English lessons and in guided reading sessions.

Maths

* Science will involve a degree of numeracy at all levels.
* Pupils use their knowledge and understanding of measurement and data handling.
* Where appropriate, pupils record their findings using charts, tables and graphs.

ICT

* Pupils will use ICT to locate and research information.
* ICT will be used to record findings, using text, data and tables.
* Pupils are encouraged to use calculators and other electronic devices, gaining confidence throughout their school experience.

PSHE

* Health education is taught as part of the science unit about ourselves, which covers:

― Health and growing

― Teeth and eating

― Moving and growing

― Keeping healthy

― Life cycles

History

* Scientific discoveries and the contribution of individuals to science will be studied.

Spiritual development

* Pupils’ development will be focussed on the vastness of science and the natural world, encouraging a sense of awe.
* Pupils are encouraged to think about the effect of scientific discoveries on the modern world.
* Current scientific developments and issues will be discussed in the classroom, where appropriate.

**Assessment and reporting**

Pupils are assessed and their progression recorded in line with the school’s Primary Assessment Policy. Pupils are assessed continuously throughout the year, as well as undertaking a summative assessment at the end of each academic year.

Formative assessment, which is carried out informally throughout the year, enables teachers to identify pupils’ understanding of subjects and informs their immediate lesson planning.

Throughout the year, teachers will plan on-going creative assessment opportunities in order to gauge whether pupils have achieved the key learning objectives.

Assessment will be undertaken in various forms, including the following:

* Talking to pupils and asking questions
* Discussing pupils’ work with them
* Marking work against the learning objective
* Specific assignments for individual pupils
* Observing practical tasks and activities
* Pupils’ self-evaluation of their work
* Classroom tests and formal exams

In terms of summative assessments, the results of end of year assessments will be passed to relevant members of staff, such as the pupil’s future teacher.

Parents will be provided with a written report about their child’s progress during the summer term every year. These will include information on the pupil’s attitude towards science, progress in understanding scientific methods, ability to investigate, and the knowledge levels they have achieved. Verbal reports will be provided at parent-teacher interviews during the Autumn and Spring terms.

**Assessment in science is based upon scientific knowledge and understanding, rather than achievement in English or maths.**

**Equipment and resources**

* Science resources for each unit are stored in the Science / Computing Store. More valuable items, such as data loggers and a digital microscope, are located in the Year 6 class room and need to be signed in and out by a class teacher.
* The subject leader, in liaison with the facilities manager, is responsible for ensuring that all resources and equipment are sufficiently maintained.
* Equipment will be checked prior to each use and any damages or defects must be reported to the subject leader immediately.
* The subject leader is responsible for maintaining an inventory of resources.
* Staff members must inform the subject leader of any changes regarding science resources, such as broken items or when new resources are required.
* Any equipment or resources which are a cause of concern will be removed immediately.
* The subject leader will carry out an annual audit of the science resources, reordering any consumables when necessary.
* Class teachers can discuss the need for new resources with the subject leader.
* The subject leader is responsible for negotiating requests from staff members and ensuring resources are bought within the amount allocated in the annual budget.
* School equipment and resources will be loaned to individuals in line with the school’s Loaning School Equipment Policy.

**Health and safety**

* Staff members will act in accordance with the school’s Health and Safety Policy at all times.
* Accidents and near-misses will be reported following the procedure outlined in the school’s Accident Reporting Procedure Policy.
* A risk assessment will be carried out by teachers before conducting an experiment or undertaking practical activities.
* All staff members will be shown how to correctly use equipment as part of their induction training.
* All pupils will be shown how to correctly use equipment and will be monitored by staff members whilst using equipment.
* All pupils will be made aware of how they are expected to behave, ensuring that they show respect to other people and the environment.
* Pupils are made aware of the personal safety protocols and equipment needed when using different equipment or carrying out different tasks.
* Staff members will be made aware of the COSHH and RIDDOR regulations as part of their induction training and will act in accordance with these whilst undertaking activities.
* Any ‘new’ experiments or activities which a teacher has not used in the classroom before will be trialled prior to being performed with pupils.
* At the beginning of any experiment, the teacher will outline the purpose of the experiment to the class, and all hazards and safety precautions will be thoroughly outlined.

**Equal opportunities**

* All pupils will have equal access to the entire science curriculum, including practical experiments.
* Gender, learning ability, physical ability, ethnicity, linguistic ability and/or cultural circumstances will not impede pupils from accessing all science lessons.
* Where it is inappropriate for a pupil to participate in a lesson because of reasons related to any of the factors outlined above, the lessons will be adapted to meet the pupil’s needs and alternative arrangements involving extra support will be provided where necessary.
* All efforts will be made to ensure that cultural and gender differences will be positively reflected in all lessons and teaching materials used.
* Netherthorpe School aims to provide more academically able pupils with the opportunity to extend their scientific thinking through extension activities such as problem solving, investigative work and research of a scientific nature.

**Monitoring and review**

* This policy will be reviewed on an annual basis by the subject leader, in collaboration with the headteacher.
* The subject leader will monitor teaching and learning in science at Netherthorpe, ensuring that the content of the national curriculum is covered.
* Any changes made to this policy will be communicated to all teaching staff.

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| Signed by: |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Subject LeaderHeadteacher |  |
|  | Chair of governors |  |

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_