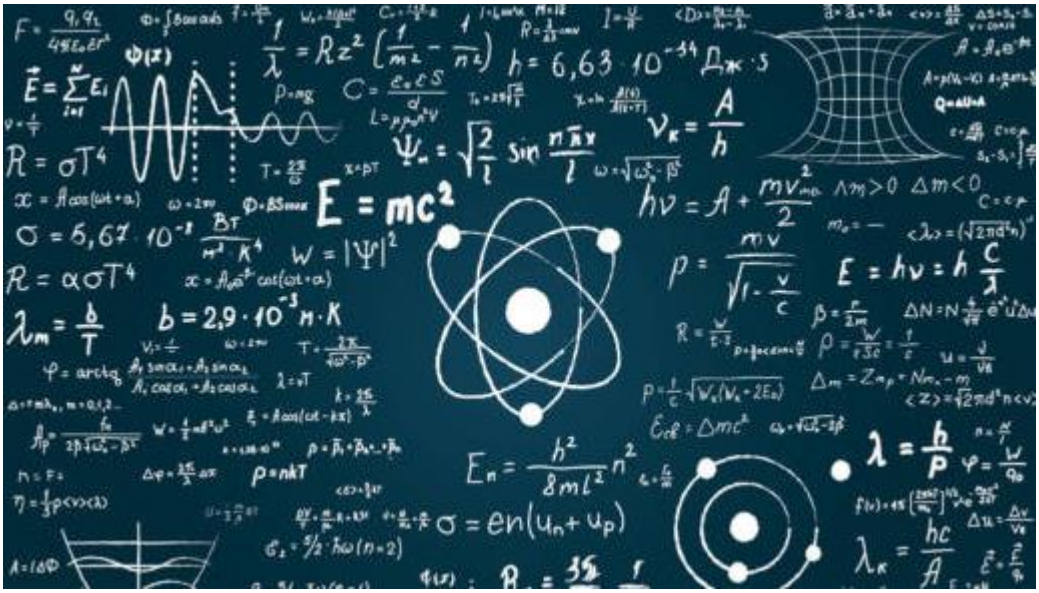
Science Policy



Introduction

Statement of philosophy

At Norbreck, we aim to ensure that each child has an experience in science as required by the National Curriculum. This experience enables them to work scientifically to explore the three strands of the subject and maintain curiosity. Science is a core subject, and we believe that all pupils of the school must have regular access to science appropriate to their age and stage of development. We also aim to improve Science Capital across the school to generate a love of the subject and change stereotypes around science careers.

Rationale

Science stimulates and excites pupils' curiosity about phenomena and events in the world around them. It also satisfies this curiosity with knowledge. Because science links direct practical experience with ideas, it can engage learners at many levels. Scientific method is about developing and evaluating explanations through experimental evidence and modelling. This is a spur to critical and creative thought. Through science, pupils understand how major scientific ideas contribute to technological change - influencing industry, business and medicine and improving quality of life. Pupils recognise the cultural significance of science and trace its worldwide development. They learn to question and discuss science-based issues that may affect their own lives, the direction of society and the future of the world.

National Curriculum Coverage

The subject consists of Programmes of Study, which sets out what pupils are taught. These areas are based around the National Curriculum and cross-curricular links are included where appropriate.

Inclusion

All children at Norbreck School are entitled to the same access to the National Curriculum in Science, regardless of gender, race, ethnicity or special educational needs. See Policy for Special Educational Needs.

Aims

Our aims within teaching science are to:

- Help children develop enquiring minds, to observe and to foster their natural curiosity about themselves and the world.
- Enable children to develop their Knowledge and Understanding of the World in which they live, through all six types of scientific investigation.
- Enable children to work scientifically in a range of contexts using a wide variety of materials and equipment by asking scientific questions; planning and setting up their own investigations; making predictions; observing and measuring changes; recording their results in a variety of ways; interpreting and communicating their results and evaluating their investigations.
- To engage all children using the Primary Science Capital Teaching approach. This will help students find more meaning and relevance in science to engage with the subject. Science Capital is a teaching mindset that links Science to what matters to students the most, their interest, aspirations, and daily lives. By personalising and eliciting students' interests and planning lessons that are relevant to their daily lives, students will improve understanding and interest in science. They will also recognise that learning science is useful for any career.

Methodology

Early Years Foundation Stage

Science in the foundation stage forms part of the 'Understanding the World' section of the Early Learning Goals. The science lead liaises with the EYFS lead to ensure appropriate areas are covered. The Plan Knowledge Matrices, Working Scientifically progression document and vocabulary progression documents are utilised to enhance learning alongside their termly topics. Science makes a significant contribution to the ELG objectives of developing a child's knowledge and understanding of the world. Pupils in EYFS are given opportunities to explore and use a variety of sources such as, models, pictures, books, live animals, plants, expert visitors, external trips, role play, construction, small world, and outdoor learning.

Key Stage 1 & 2

Science in Key Stage One and Two is taught discreetly and runs in line with the New National Curriculum for England and Wales. Children are taught both substantive knowledge (established facts) and disciplinary knowledge (the methods that establish facts – working scientifically).
At Norbreck, we understand the importance of teacher explanations in science that build from what pupils already know. These explicitly focus pupils' attention on the content being learned."
It is our role as teachers to help children make sense of the evidence, they gather during scientific enquiry activities and to highlight how these builds on their prior learning.
Explanations of both types of scientific knowledge include the careful introduction of key scientific vocabulary. This will support pupils to include the newly acquired substantive knowledge into their conclusions or predictions in further scientific enquiries.

A deeper understanding of metacognition and child learning has shaped teaching practices at Norbreck. Educators incorporate planning that focuses on reinforcing prior knowledge and skills to help children retain what they learn and gain a deeper understanding. This approach is integrated into the timetable through low-stakes quizzes, morning activities, and reviews before each Science lesson.

Teaching and learning

At Norbreck, we aim to deliver science activities that are purposeful and practical. Children of all ages are encouraged to set up and conduct enquiries by themselves or as part of a group after initial input from a teacher to explain the substantive knowledge needed to conduct the investigation. Teacher led investigations and demonstrations are sometimes conducted when the teacher considers the practical element of the enquiry too dangerous for children to handle.

Pupils are grouped in response to the learning objectives for a particular lesson and may include:

- mixed ability pairs or groups
- same ability pairs or groups
- Independent working

Knowledge organisers are used for each topic and, in KS2, are stuck into science books for children to refer to. In KS1 Knowledge organisers are on display and referred to by the class teacher throughout the topic. They include the key learning and vocabulary needed.

Children learn the six different types of enquiries (comparative testing, classifying, observing over time, pattern seeking, problem solving and researching) and the seven skills needed to conduct scientific enquiries (asking questions, making predictions, setting up tests, observing over time, recording results, interpreting & communicating results, and evaluating). The symbols for each enquiry type and skill are displayed in each classroom and referred to by the class teacher during science lessons.

Differentiation of work is planned to suit the needs of individuals within each class and challenge is encouraged in all lessons.
Science is recorded in science books, which are kept for two years (KS1, LKS2 and UKS2) or on Seesaw for photographic and video evidence where written enquiries are not required.
EYFS teachers record children's science work on Seesaw or in their cross curricular 'Look Books'.

Our approach to science uses:

- Practical scientific equipment for exploration and investigative work
- STEM Days and whole school science investigations
- Outdoor learning
- Topic/ reference books or websites e.g., Explorify
- Literacy links (fiction and non-fiction)
- Scientist studies (Standing on the Shoulders of Giants, Research Champions, A Scientist Just Like Me and Great Science People)
- Pictorial material
- TV programmes and video recordings
- Computer based material: Internet material, Data Logger, Intel Microscopes.
- 3D resources e.g., skeleton, heart models, internal organ tabards
- Origami Science models
- Plants and animals
- Visitors including STEM Ambassadors, local scientists, and science shows/assemblies.
- Trips
- STEM Clubs

Planning, Continuity and Progression

The National Curriculum for Science is currently used with teachers being responsible for short term planning. Units are adapted to suit the needs and requirements of our school. The PLAN Knowledge Matrices is used to inform teachers of key learning objectives, prior knowledge, future knowledge, common misconceptions, key vocabulary, activity suggestions and possible ways to evidence children's work.
To ensure continuity of skills when working scientifically, the PLAN Working Scientifically Matrices is followed alongside the Progression in Vocabulary document from EYFS through to Y6.

Key skills and cross-curricular links

English and Maths are closely linked with science. Scientific vocabulary is very important, and children use a wide range of reference books to research specific topics. Where appropriate, Science is taught through fictional stories e.g., 'The Pig Heart Boy' as part of the Circulatory System in Year 6. Sticky knowledge is revised through reading comprehensions and fun games/quizzes. This enables

children to have a detailed and connected knowledge of the curriculum and remember what they have been previously taught.
Investigative skills require pupils to use a variety of measurements introducing comparative measures at KS1, developing progressively towards reading scales for measuring capacity, mass, and forces by the end of KS2. Children need to be able to obtain and present evidence using a wide range of methods including diagrams and using simple species classification keys. They should be able to use simple tables, bar charts, line graphs and ICT to communicate data in an appropriate and systematic manner. These skills are mapped inline with the Maths curriculum to ensure that the Maths skills have been taught previously to ensure that children's cognitive capacities are not overloaded with new information.
Children are required to make use of computing hardware and software where appropriate for observing, measuring, recording, and presenting results when working Scientifically e.g., data loggers. They also use apps and the internet on iPads and laptops to research specific scientific information.

Assessment and Moderation

The TAPS Pyramid (Teacher Assessment in Primary Science) is followed to ensure a varied and thorough approach to the assessment of substantive knowledge. For disciplinary knowledge assessment, the TAPS Focused Assessments for Working Scientifically are used to assess the seven working scientifically skills in individual investigations throughout the year.
A plethora of moderation material for every unit in each year group is stored on the shared drive for teachers to refer to in order to understand what met expectations should look like in their year group. This can be found on: Staff Shared – Curriculum Subjects – Science – Moderation. The Science Lead also monitors progression and assessment through book and Seesaw scrutiny and moderation meetings with the Science team.
Science grades of either met or HNM (has not met) are recorded by each teacher every half term on to O Track and Parents are informed of their children's progress in science through parents' evenings (twice a year) and the annual school report.

Health and Safety

Refer to whole school Health and Safety Policy, also refer to 'Be Safe' and CLEAPSS. See the science lead for CLEAPSS login details.

Inset and Professional Development

Wherever possible, relevant courses will be attended by the Science Lead and ideas disseminated to colleagues. Teaching staff are also encouraged to attend both external and online CPD to develop their scientific knowledge and gather new ideas for teaching the working scientifically skills in a creative and meaningful way.

ReachOut CPD, a free online CPD resource, developed with the Imperial College London, is used by all teachers to refresh their scientific knowledge alongside Explorify and Oak Academy.
Inset days are arranged in consultation with the staff and the headteacher when appropriate.

Resources

Internal

At Norbreck, we have a Science Room where most resources (equipment & books) are kept and are easily accessible. It is the job of the teacher to collect and return any equipment. Children are **NOT** allowed in the science room, unless accompanied by a responsible adult.

Year group leaders keep some resources in their stock rooms; these are specific to a topic that only they use.

A variety of measuring equipment is also available from the mathematics cupboard.

Some resources for teaching science to pupils with special educational needs are available in the SEND area.

It is the role of the Science Lead to ensure that equipment is kept up to date. However, it is the responsibility of the staff to inform the Science Lead if specific things are required or if equipment gets damaged or needs replacing.

Many excellent online resources are available to all staff and links to these websites can be found in the Science Folder on the shared drive.

External

Educational Visits – We go on many scientific school trips to enhance learning. These trips include visits to UCLAN Science Lab, Sea Life Centre, Blackpool Zoo, the beach and Local farms. We also take advantage of local Science Festivals and events where/when possible.

'Mad Science' provide an after-school club for six weeks. This is available for Years 1-6. We also hatch chicken eggs once a year for our EYFS children to have hands on experience learning about lifecycles.

To add a further dimension to Science Capital, we invite STEM Ambassadors, speakers and science scholars from local businesses and colleges to host assemblies and run exciting workshops with the children.

Liaison with local High Schools can be a useful resource either for specialist equipment or for advice. There is a good working relationship between the Science Leads at Montgomery and Norbreck. Year 6 visit Montgomery to take part in a heart dissection as part of their Animals Including Humans topic

Funding

The Science budget is assessed annually, based upon the action plan submitted by the Science Lead this is approved by the Trustees. Resources are replaced and purchased by the Science Lead in accordance with the general school ordering procedures. Small amounts of consumables may be purchased through school fund; otherwise, an order needs to be raised through the normal channels. Science grants also supplement the Science budget when they become available for a specific project. E.g., The Edina Grant for resources and visitors.

Compiled by Mrs. Rachel Monks (Science Lead)
To be reviewed: September 2025