Aim High Never Give Up Follow Your Dream Lead By Example

SCIENCE POLICY

Ratified By	School Effectiveness Committee
Date	11/10/2021
Minute	9
Review Date	Autumn 2024
Policy Statement	
What is the policy for?	A framework for teaching of Science across the school
Who has devised and contributed to this policy?	The policy has been written by the subject leader and staff in school have been fully consulted
How will this policy be communicated?	Website and 365
How will this policy be monitored?	As outlined in the policy
Which other policies are linked to this policy?	EYFS policy Feedback and Assessment Policy SEN policy Acceptable Use

Contents

Science aims

Intent - What are we trying to achieve?

A high-quality Science education provides foundations for understanding the world. Science has changed our lives, and is vital to the world's future prosperity. Through building 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 key knowledge and concepts can be used to explain what is occurring, predict how things will behave, and analyse causes. This understanding should be consolidated through their appreciation of applications of Science in society and the economy. Through the STEM approach, children should be exposed to a wide variety of current and relevant questions and areas of interest within the Scientific community, and have the opportunity to research and learn about Scientists and how their work supports many other areas of modern enquiry.

As a staff, we have agreed that the following is our own vision for our Science curriculum and teaching at Norwood:

Our Science curriculum promotes awe and wonder, and engages our children through practical, visual, real-life investigations that capture their interests. These investigations always have a clear purpose and are based on children's enquiry and questioning about the world around them (largely from their observations about nature) and are fuelled by collaboration, discussion and challenge. Our children will gain an extensive vocabulary bank and will be given choices about how to invent their own experiments: to observe, share and ultimately record their findings, demonstrating a deep Scientific knowledge and understanding. We will always expect children to ask 'why?'

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.

Implementation – How is the curriculum being delivered?

School curriculum

The programmes of study for Science are set out year-by-year for Key Stages 1 and 2. Within each key stage, School has the flexibility to introduce content earlier or later than set out in the programme of study, and may introduce key stage content during an earlier key stage, but only if appropriate and deemed necessary as key pre-learning for conceptual understanding further up school. Teachers will base their planning on the programmes of study for their relevant year groups. This is mapped out annually using a curriculum document that shares links to other curriculum areas, any pre learning or vocabulary knowledge required to access content, as well as signposts to where this knowledge will be required later on in a key stage.

Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with,

and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of Science, including collecting, presenting and analysing data. There are support documents available to all staff that clearly show the progression of Scientific concepts through key 'Big Ideas' of Science, based on Wynne Harlan's research. This enables staff to effectively plan with progression in mind, up to and including key stage 3, in key areas rather than programmes of study. This adds another layer to the planning process, but results in solid conceptual understanding for children to enable them to access any future learning effectively.

The nature, processes and methods of science
'Working scientifically' specifies the understanding of the nature, processes and methods of Science for each year group. It should not be taught as a separate strand.

Attainment targets
By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Key Stage 1
The main focus of science teaching in Key Stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about Science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.
Pupils should read and spell scientific vocabulary at a level consistent with their reading and spelling knowledge at Key Stage 1.

Lower Key Stage 2 – Years 3 and 4
The main focus of Science teaching in Lower Key Stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.
'Working scientifically' must **always** be taught through and clearly related to substantive Science content in the programme of study.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing reading and spelling knowledge.

Upper Key Stage 2 – Years 5-6
The main focus of Science teaching in Upper Key Stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about

their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically.
At Upper Key Stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer Science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. Pupils should read, spell and pronounce scientific vocabulary correctly.
'Working and thinking scientifically' must **always** be taught through and clearly related to substantive Science content in the programme of study.

Teaching and Learning

- In teaching Science we are developing in our children:
    - a positive attitude towards Science and an awareness of its fascination;
    - an understanding of Science through a process of enquiry and investigation, as child and interest led as possible;
    - confidence and competence in scientific knowledge, concepts and skills;
    - an ability to reason, predict, think logically and to work systematically and accurately;
    - an ability to communicate scientifically;
    - the initiative to work both independently and in co-operation with others;
    - the ability and meaning to use and apply science across the curriculum and real life.

- Science is taught as a discreet subject on a weekly basis. The work is planned through a mixture of ideas from the 'Big Ideas' documents, STEM websites and other key visual and digital resources, support from a scheme of work Scholastic '100 Science Lessons', and through practitioners' knowledge of the children as to what area of Science is a focus, as well as areas that are of interest and awe to the children. The document 'How can you plan for the most effective Science lesson?' found on RM Unify (Documents – Curriculum – Science) exemplifies Norwood's tailored approach to Science planning, based on feedback and work carried out during previous Science masterclasses with the whole staff. The rationale for our Science beliefs and ideals also stems from this CPD.
- Science is also promoted in other curriculum areas for the purpose of independent research, data collection and understanding of the world around us (particularly Maths and Geography). There is a strong link between Computing and Science and the two can work together to support children's learning. Vocabulary acquisition, understanding and use is paramount, and this is evident through expectations laid out in not only the Science subject action plan, but the English action plan too.
- Norwood School continues to take part in an annual Science week as a focus for that week.

Resources

Resources are available to support all areas of the Science curriculum for the whole school. The 'Big Ideas' progression documents on RM Unify share several activity ideas linking to every programme of study for every year group, as well as cross curricular ideas. Every year group has Cornerstones 'Love to Investigate' resources to support Scientific enquiry, and also progression of experiments across school. The PiXL website also has a few Science documents that can support year groups with their planning, including a variety of cross curricular projects for individual year groups. The hard resource '100 Science Lessons' is stored in the year group classroom and an online copy can be downloaded onto the year group laptop where required. The subject leader assumes responsibility for managing the Science budget, and ordering resources based on new curriculum need annually, as well as supporting staff with perishable items. Specific items for EYFS are stored in their own storage area. These are checked and updated when required.

Assessment and Recording
By the end of each Key Stage, children are expected to understand and apply the knowledge and skills stated in the Science Programme of Study. Norwood School is working on using floor books and other recorded evidence, such as videos/podcasts/photographs to enable staff to make an accurate judgement regarding children's attainment, and to identify any gaps in their knowledge moving forward. This data is shared on a Non-Core subject attainment grid, and moderated by the Science subject leader termly, using floorbooks, conversations with children and other anecdotal evidence. The Rising Stars online assessment tool and progress tests to monitor the progress of the children in every area of study is still available should staff wish to use it to support these judgements, and PiXL Science papers are also available for mid-topic, or end of topic, checks on understanding.

Impact - What difference is the curriculum making?

Our Science curriculum should ensure that all children leave us with a solid understanding of fundamental science principals, that will prepare them for Secondary and beyond.

All children will have experienced first hand creative and inspiring experiments (understanding the different elements that make up conducting an experiment) which will give them the tools to explore the world around them themselves, with awe and wonder.

The Science curriculum should provide children with a wealth of vocabulary that has stemmed from enquiry and using reading skills within science learning.

Children will have the confidence to ask, and try to answer using known sources, questions.

The Science curriculum should give children an understanding of current events within Science research for example, allowing them to make links between previous Scientific knowledge and how this adapts all the time (linked to STEM).

All children will be able to group and classify, and organise their ideas which will support every curriculum area.

Legislation and guidance

This policy reflects the requirements of the National Curriculum programmes of study, which all Maintained schools in England must teach.

It also reflects requirements for inclusion and equality as set out in the Special Educational Needs and Disability Code of Practice 2014 and Equality Act 2010, and refers to curriculum-related expectations of governing boards set out in the Department for Education's Governance Handbook.

In addition, this policy acknowledges the requirements for promoting the learning and development of children set out in the Early Years Foundation Stage (EYFS) statutory framework.

Following COSHH guidance 'Be Safe'.
http://science.cleapss.org.uk/ - Relating specifically to Covid-19

Roles and responsibilities

The governing body

The governing body will monitor the effectiveness of this policy and hold the headteacher to account for its implementation.

The governing board will also ensure that:

- *A robust framework is in place for setting curriculum priorities and aspirational targets*
- *Enough teaching time is provided for pupils to cover the National Curriculum and other statutory requirements*
- *Provision is made for pupils with different abilities and needs, including children with special educational needs (SEN)*
- *The school implements the relevant statutory assessment arrangements*
- *It participates actively in decision-making about the breadth and balance of the curriculum*
- *It fulfils its role in processes to disapply pupils from all or part of the National Curriculum, where appropriate, and in any subsequent appeals*

Headteacher

The headteacher is responsible for ensuring that this policy is adhered to, and that:

- *All required elements of the curriculum, and those subjects which the school chooses to offer, have aims and objectives which reflect the aims of the school and indicate how the needs of individual pupils will be met*
- *The amount of time provided for teaching the required elements of the curriculum is adequate and is reviewed by the governing board*
- *Where appropriate, the individual needs of some pupils are met by permanent or temporary disapplication from all or part of the National Curriculum*
- *They manage requests to withdraw children from curriculum subjects, where appropriate The school's procedures for assessment meet all legal requirements*
- *The governing board is fully involved in decision-making processes that relate to the breadth and balance of the curriculum*
- *The governing board is advised on whole-school targets in order to make informed decisions Proper provision is in place for pupils with different abilities and needs, including children with SEN*

Subject Leader

The subject leader is responsible for leading and managing their subject. They will ensure that:

- *They create a Subject Leader Action Plan, which forms part of the School Improvement Plan. The Subject Leader Action Plan outlines the key actions and success criteria for each academic year.*
- *The Subject Leader Action Plan is shared with governors once a year so that they have the opportunity to scrutinise subject leaders.*
- *The attainment and progress of the pupils across the school is analysed at least three times a year and feedback to governors is given once a year.*
- *Staff are confident in teaching their subject across the school. They will offer support, guidance and arrange training when needed.*
- *Resources to support teaching, learning and assessment are in place for their subject. They will need to manage their allocated budget so that the actions set out the in Subject Leader Action Plan and School Improvement Plan can be met.*

Other staff

Other staff will ensure that the school curriculum is implemented in accordance with this policy.

Inclusion

Teachers set high expectations for all pupils. They will use appropriate assessment to set ambitious goals and plan challenging work for all groups, including:

- *More able pupils*
- *Pupils with low prior attainment*
- *Pupils from disadvantaged backgrounds*
- *Pupils with SEN*
- *Pupils with English as an additional language (EAL)*

Teachers will plan lessons so that pupils with SEN and/or disabilities can study every National Curriculum subject, wherever possible, and ensure that there are no barriers to every pupil achieving.

Teachers will also take account of the needs of pupils whose first language is not English. Lessons will be planned so that teaching opportunities help pupils to develop their English, and to support pupils to take part in all subjects.

Further information can be found in our statement of equality information and objectives, and in our SEN policy and information report.

Monitoring arrangements

Governors monitor coverage of National Curriculum subjects and compliance with other statutory requirements through:

- *Meeting with subject leaders*
- *Monitoring books*
- *Interviewing pupils*
- *Scrutinising parent, staff and pupil surveys*
- *Visiting the school to monitor the quality of teaching and audit the books*
- *Attending the School Improvement Evening were all subject leaders share their subject action plans*

Subject leaders monitor the way their subject is taught throughout the school by:

- *Scrutinising planning & books*
- *Conducting learning walks*
- *Observing lessons*
- *Professional dialogue with staff*
- *Interviewing the pupils*
- *Ensuring that staff are trained*

Subject leaders monitor the way their subject is taught throughout the school by also have responsibility for monitoring the way in which resources are stored and managed.