Hampton Primary School

Working Together, Achieving Together

SCIENCE POLICY

This Policy was approved at a meeting of the Full Governing Body on 21st November 2022

Chair of Governors: Mr L Shilling
Headteacher: Ms Y Nunn

Signed ..... Chair of Governors

Signed ..... Headteacher

Review Date: September 2024

HAMPTON PRIMARY SCHOOL SCIENCE POLICY

Our Whole School Intent Statement
This policy is written with consideration of Article 28 of the UNCRC 'Every child has the right to an education' as well as Article 29 'Education must develop every child's personality, talents and abilities to the full.'

Our Whole School Intent Statement
At the forefront of Hampton's curriculum is equity for every child with every curriculum experience underpinned by our core values: understanding that children are unique in their needs and circumstances. We value each child as an individual, each with a unique potential for learning. Our aim is to prepare every child for life beyond Hampton, providing them an exciting and empowering curriculum with the skills, knowledge and values that equip them for today and tomorrow.

When children leave us to move on, their curriculum experiences at Hampton will ensure they have:
A sureness in themselves as a young person and their attitudes to learning
A sound knowledge of basic skills
An understanding of the moral, spiritual, cultural, mental and physical virtues they all possess
Aspiration and resilience to aim high and challenge themselves to achieve great things in the future
A sense of belonging, moral purpose, respect and tolerance for others
A set of core values which are life skills, fostering responsibility for learning and future success allowing them to be happy and confident adults.

The National Curriculum provides a framework for Science but the school is aware of the need for flexibility and creativity in teaching and learning styles in response to the needs of individual children.

Intent
Science is a fundamental part of everyday life and developing understanding in this area is essential for the future of our world. At Hampton Primary school, we believe Science encourages children to ask questions and develop an understanding of the world around them. Science at our school promotes investigation, questioning and hands on experiencesled by children's curiosity. We believe that all pupils should be taught essential aspects of the knowledge, methods, processes and uses of Science.

Implementation

In ensuring high standards of teaching and learning in science, we implement a curriculum that is progressive throughout the whole school. As a school we follow the Engaging Science primary science scheme of work.

Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of, 'The National Curriculum programmes of study for Science 2015' and, 'Understanding of the World' in the Early Years Foundation Stage. Science is taught as discrete units and lessons to ensure coverage. Science units ensure progression between year groups and guarantees topics are covered.

The acquisition of key scientific knowledge is an integral part of our science lessons. The progression of skills for working scientifically are developed through the year groups and scientific enquiry skills are of key importance within lessons. At Hampton Primary School, teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following;

- We plan for problem solving and real life opportunities that enable children to find out for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebratedwithin the classroom using points to ponder or concept cartoons from the scheme. Planning involves teachers creating practical, engaging lessons with opportunities for regular, precise questioning in class to assess conceptual knowledge and skills, and to identify those children with gaps in learning.
- Our curriculum is progressive. We build upon the learning and skill development of the previous years. Teachers identify misconceptions that need addressing at the start of eachunit of work by using a KWL grid.
- Working scientifically skills are embedded into lessons to ensure these skills are being developed. New vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in keeping with the topics.
- Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops where appropriate.
- Through enrichment days, such as 'Science Week' we promote the profile of science and allow time for the children to freely explorescientific topics.
- Science resources are available in the Science cupboard and accessible to all staff. The cupboard is managed and monitored by the Science Leads.

Purpose of study

A high-quality science education provides the foundations for understanding the world. Science has changed ourlives 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 recognisethe power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how key foundational knowledge and concepts can be used to explain what is occurring, predict how things will behave, and analyse causes. This foundational understanding should be consolidated through their appreciation of the specific applications of science in society and the economy.

Aims:

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

- Develop **scientific knowledge and conceptual understanding** through the specificdisciplines 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 aboutthe world around them
- Are equipped with the scientific knowledge required to understand the **uses andimplications** of science, today and for the future.

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 a secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

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. The social and economic implications of science are importantbut, generally, they are taught most appropriately within the wider school curriculum: teacherswill wish to use different contexts to maximise their pupils' engagement with and motivation tostudy science.

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. The notes and guidance give examples of how 'working scientifically' might be embedded within the content, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying,classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.

Spoken language

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum –cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

Attainment targets

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

Science and the National CurriculumKey Stage 1

The principal 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. Theyshould 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. 'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive Science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

Lower Key Stage 2

The principal 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 likelyto 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 somescientific language, first, to talk about and, later, to write about what they have found out. 'Working scientifically' is described separately at the beginning of the programme of study, butmust always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read andspell scientific vocabulary correctly and with confidence, using their growing word reading andspelling knowledge.

Upper Key Stage 2

The principal 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 themost 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. 'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout thenotes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read, spell and pronounce scientific vocabulary correctly.

Organisation

Foundation Stage
The Foundation Stage Profile in Reception sets out the learning objectives for the six areas of learning:

Physical Development
Creative Development (Music, Art andDrama)
Personal, Social and EmotionalDevelopment
Knowledge and Understanding of theWorld (Science, History, I.C.T., Geography and Technology)
Communication, Language and Literacy
Problem Solving, Reasoning andNumeracy (PSRN)

The Foundation Stage Profile aims to give the children knowledge and skills so they canbegin the National Curriculum.

Key Stage 1 and Key Stage 2
At Hampton Primary we plan our topic coverage as a whole school. Each year group covers National Curriculum objectives specific to their classes during their Science teaching.
Science is taught as a discrete lesson once a week and as part of cross-curricular themes when appropriate. Science has links with other areas of the curriculum including Geography,English, Numeracy, Art and Design Technology.
Teachers in Key Stage 1 and 2 use the National Curriculum Guidelines to inform MediumTerm planning. Teachers also use a wide range of resources, including the school environment to enhance and enrich the children's learning.
Children work at their own level of understanding in Science. We aim to ensure that childrenare given the opportunity to achieve through their experience of Science tasks and activities,and always provide the opportunity for our children to work towards higher level tasks.
Assessment in Science is based upon scientific knowledge and understanding, rather than achievement in English or Mathematics. In the Foundation Stage we assess children's knowledge and understanding according to the Foundation Stage Early Learning Goals. In KS1 and KS2 we use a range of assessment materials to ensure that children are making appropriate progress including assessment grids linked to National Curriculum statements for each year group and topic.

Multi-Cultural links will be developed wherever possible in the teaching of this National Curriculum subject. We endeavour to include aspects of Science within our themed weeks in school so that our children begin to realise the global importance of Science. We have Healthy School Weeks based around PE and Science topics and themes.
Through the teaching of Science we are developing the schools Eco awareness and theglobal impact of this.

Assessment should:

- Be formative and summative
- Be used to inform the teacher for futureplanning
- Promote continuity and progression
- Form the basis for reporting to parents
- Be based on observation, participationand written outcomes

Recording

Children's recording will take many forms according to the nature of the activity:

- Verbal
- Pictorial
- Diagrammatic
- Graphical
- Written
- Symbolic
- I.C.T.
- Photographic

Classroom Organisation

Children will be grouped as appropriate for the task in order to encourage flexibility:

- Ability groups
- Mixed ability groups
- Mixed ability partners
- Ability partners
- Individuals
- Whole class groups

Science is a hands on experience and all the children are given the opportunity to use their senses. Children are encouraged to:

- Observe, discover and experiment
- Develop scientific language
- Question and report
- Sort and classify
- Look for similarities and differences

Assessment and Recording

Planning has been specifically adapted to build on prior knowledge of pupils. Each topic has been sequenced to follow prior learning and links will be made across different year groups. Teachers allow for assessment to be made during the course of a History lesson using discussion, question and answer techniques and in encouraging pupils to communicate findings to others. This will be recorded in lesson evaluations. Knowledge organisers will be used as an assessment tool throughout. This will provide formative assessment and inform future planning needs.

The Role of the Subject Lead

To take the lead in policy development and be responsible for schemes of work that ensures progression and continuity in Science throughout the school.

To support colleagues.

- Monitoring of subject area – climate walk, book looks and observations
- To suggest assessment and record keeping strategies.
- To maintain and update subject display board in a communal area.
- To maintain and update subject area on school website.
- To monitor progress in Science and advise the Head teacher on any action to take or areas to develop.
- To disseminate information to colleagues regarding up to date history curricular developments in accordance with national & local guidelines.
- To report back to staff and advise on INSET and other professional development opportunities.
- To oversee the resource needs of the subject and introduce teachers to new and appropriate materials & equipment as they become available.