Science Policy

Quinton Primary School

Intent

Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.

At Quinton Primary School, we encourage children to be inquisitive throughout their time at school. The Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently, and continue to ask questions and be curious about their surroundings.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards. Our whole school approach to the teaching and learning of science involves the following:

- Our curriculum is carefully structured and sequenced, ensuring that there is a clear progression for each year group. To ensure effective progression, our curriculum is thoughtfully organised across year groups, emphasising clarity and coherence. In ensuring high standards of teaching and learning in science, we implement a curriculum that is progressive and is deeply rooted in the National Curriculum. To deepen scientific understanding, we also make links between knowledge and skills in science with maths, physical education, PSHE, reading and writing.

● Science is taught through weekly science lessons by the class teacher. This allows children to build upon prior learning through planned for retrieval processes and carefully structured lessons. Additionally, teachers use precise questioning to systematically check for understanding in order to address misunderstandings as they arise. All work completed is in a specific science book unless there are links to a topic.

● Through our planning, we involve problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves. Children are encouraged to ask their own questions and are given opportunities to use their scientific skills and research to discover answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, often involving resources to aid understanding of conceptual knowledge. Teachers in class test conceptual knowledge

and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up.

● We build upon the knowledge and skill development of the previous years by initially finding out what the children already know at the start of a topic through a baseline assessment. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.

● Working Scientifically skills are embedded into lessons to ensure they are being developed throughout the children's school career, and new vocabulary and challenging concepts are introduced through the use of science knowledge organisers and direct teaching.

● Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills, in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.

● Science Week allows all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. This event involves the children's families through projects at home, which the children then share with their class and the school, and parent visitors coming into school to share information about how STEM subjects have an important role in their careers.

Impact

This approach at Quinton Primary School results in a fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world. The children develop a secure understanding of each key block of knowledge and concepts before they progress to the next topic. Pupils are able to describe associated processes and key characteristics using technical terminology accurately and precisely. The science curriculum also ensures that children are able to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

As you walk around our school you will see that our exceptional outcomes in science are showcased through:

Displays

Books

Trips and experiences

Worker of the Week assemblies

Teaching and learning

We feel that science is taught well when:

● Children apply their 'working scientifically skills' to solve problems, explore, observe and investigate

● Children ask questions and work together to discover the answers

● Science has a wow factor and promotes a sense of awe and wonder

● Learning is enhanced by outdoor teaching, specialist visitors and access to quality resources

● Children are involved in creating and carrying out investigations and can share and explain ideas and conclusions

● Children are encouraged to ask their own questions and are given opportunities to use their scientific skills and research to discover the answers (this curiosity is then celebrated within the classroom)

● Teachers ask a range of questions which enable all children to take part, listening carefully to answers and taking learning forward, using open and closed questions and allowing children time to think

● Planning involves teachers creating engaging lessons, often involving resources to aid understanding of conceptual knowledge

● Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up

● New vocabulary and challenging concepts are introduced through science knowledge organisers and direct teaching- this is developed through the years, in-keeping with the topics

● Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career; the key knowledge for each topic and across each year group is mapped across the school and checked at the end of each science topic

● Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding

● Teachers find opportunities to develop children's understanding by accessing outdoor learning

The nature, processes and methods of science

Working Scientifically specifies the understanding of the nature, processes and methods of science for each year group and this is embedded within lessons and focuses 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 include: observing over time; pattern seeking; identifying, classifying and grouping, comparative and fair testing (controlled investigations) and researching using secondary sources. Pupils are given opportunity to 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. At the start of each new science topic, we provide each child with a science knowledge organiser which includes all the vocabulary linked to that unit. Science lessons also provide a quality and variety of subject specific language to enable the development of children's confident and accurate use of scientific vocabulary and their ability to articulate scientific concepts clearly and precisely. They are encouraged and assisted in making their thinking clear, both to themselves and others, and teachers ensure that pupils build secure foundations by using discussion to address misconceptions.

Assessment

Children's progress is continually monitored throughout their time at Quinton Primary School and is used to inform future teaching and learning. 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 as set out in the National Curriculum.

In EYFS, we assess the children's Understanding of the World according to the Development Matters statements, Characteristics of Effective Learning and some aspects of Expressive Arts Design are also science based.

Long Term Plan

QUINTON PRIMARY SCHOOL Science Long Term Plan 2024-2025

YEAR		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
6		**Light**	**Evolution and Inheritance**	**Electricity**	**Animals including Humans**	**Living Things and their Habitats**	**Living Things and their Habitats**
	Investigations:	How can we prove that light travels in straight lines? **Comparative test**	How do species adapt over time in order to survive? **Research and Pattern Seeking**	How does the component change depending on the length of wire? **Fair test**	How does exercise impact on heart rate? **Fair test and Observing over time**	What is Taxonomy and who is Carl Linnaeus? **Research**	How are species sorted into distinct groups? **Identifying and Classifying**
5		**Earth and Space**	**Forces**	**Properties and changes of materials**	**Properties and changes of materials**	**Animals Including humans**	**Living things in their habitats**
	Investigations:	How does the position of a shadow change during the day? **Observing over time**	Which shape parachute takes the longest to fall? **Fair test**	How have chemists helped to change our everyday lives? **Research**	What affects the speed of evaporation for different sugar solutions? **Observing over time and Comparative test**	Is there a relationship between a mammal's size and its gestation period? **Pattern seeking**	Compare this collection of animals based on their lifecycle. **Identifying and Classifying**
4		**States of Matter**	**Living things and their habitats**	**Living things and their habitats**	**Animals including Humans**	**Sound**	**Electricity**
	Investigations:	How long will it take the chocolate to melt? **Observing over time**	How can I classify these animals? **Identifying and classifying**	How can changes in the environment affect things that live there? **Research**	Which drink is the most harmful to our teeth? **Comparative test**	What is the relationship between volume and distance? **Fair Test**	How can I make the bulb brighter? **Pattern seeking**
3		**Animals and Humans**	**Rocks**	**Rocks (Fossils and Soils)**	**Light**	**Plants**	**Forces and Magnets**
	Investigations:	Which food groups are important for keeping me healthy? **Research**	How can I compare and group these rocks? **Identifying and classifying**	Which soil is the most absorbent? **Comparative test**	How does a shadow change when a light source is moved away? **Pattern Seeking & Fair Test**	How is water transported in plants? **Observing over time**	Does the size of the magnet effect its strength? **Comparative Test**
2		**Animals Including Humans**	**Everyday Materials and their uses**	**Plants**	**Plants**	**Habitats**	**Habitats**
	Investigations:	What do animals need to survive? **Research**	Which material would be most suited for making a ____ ? **Comparative Test**	How do seeds and bulbs grow into plants? **Observing over time**	Crime Scene – What has happened to the plant? What does it need to be healthy? **Comparative Test**	Where on the field can we find the most minibeasts? Why? **Pattern spotting**	How can we classify things into living, dead or never alive? **Identifying and classifying**
1		**Animals and Humans**		**Everyday Materials**		**Plants**	
	Investigations:	How can we group these animals? **Identifying and classifying**	How can we take care of animals in our local environment? **Research**	Which materials have similar properties? **Identifying and classifying**	Which material is best for keeping teddy dry? **Comparative Test**	(see seasonal changes)	What is the same and different about these plants? **Identifying and classifying**
		SEASONAL CHANGES (to run across the year to investigate seasonal change) How do the plants in our environment change over the year? - **Pattern spotting and Observing over time**					

EYFS

The Foundation Stage deliver science content through the 'Understanding of the World' strand of the EYFS curriculum. This involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment. They are assessed according to the Development Matters attainment targets.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Equal Opportunities

At Quinton Primary School, we are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of race, gender, culture or class.

Inclusion and Diversity

The school's Science curriculum has been designed to reflect and celebrate diversity, ensuring that all pupils can see themselves represented within scientific learning and achievement.

Our long term plan is designed so that the children experience the contributions of scientists from a range of cultures, backgrounds and communities, including how scientific understanding has developed over time.

The curriculum and its visual representation are inclusive and representative of a diverse range of people working within science, helping to challenge stereotypes and broaden aspirations.

Within relevant units, opportunities are provided for pupils to make links between scientific learning and their own experiences, backgrounds and the world around them.

Resources, investigations and case studies are carefully selected to encourage pupils to consider the impact of science on society and the ways in which scientific developments influence people's lives.

The Science curriculum supports pupils in developing an appreciation of the role of science in everyday life, the diversity of people who contribute to scientific advancement, and the impact science has on individuals, communities and the wider world.

The Science lead will be responsible for:

• Maximising pupils' potential attainment and achievement and taking lead accountability for

pupil progress.

• Leading, managing and developing the school's Science provision.

• Preparing policy documents, curriculum plans and progression documents for Science.

• Reviewing changes to the national curriculum and advising on their implementation.

• Monitoring the learning and teaching of Science, providing support for staff where

necessary.

• Organising the deployment of resources and carrying out an annual audit of all science

resources.

• Leading staff meetings and providing staff members with the appropriate training.

• Advising on the contribution of science to other curriculum areas.

Science teachers will be responsible for:

• Acting in accordance with this policy.

• Liaising with the science lead about key topics, resources and supporting individual pupils.

• Ensuring that all relevant statutory content is covered within the school year.

• Monitoring the progress of pupils in their class.

• Reporting any concerns regarding the teaching of the subject to the science lead or a member of the SLT.

• Undertaking any training that is necessary to teach the subject effectively