

Barnacre Road Primary School



Science Curriculum Statement

At Barnacre Road Primary School, our vision is to provide for our children a broad and balanced curriculum which is ambitious for all learners. We aim to ensure that children leave our school equipped with the knowledge, skills, cultural capital and qualities to succeed in the next stage of their education and to make a positive contribution to their local community and society as a whole.

We believe that it is our duty to make learning fun, engaging, memorable, accessible and ambitious for all children, instilling in them a love of learning.

We take seriously our duty to teach children about the fundamental British Values of mutual respect and tolerance, democracy, the rule of law and individual liberty. These values are woven through our curriculum so that our learners leave us prepared for life in modern Britain.

Science at Barnacre Road: Our Intent

We aim to develop a sense of excitement and curiosity about natural phenomena and extend our pupils' understanding of how the scientific community contributes to our past, present and future. We want pupils to develop a complex knowledge of Biology, Chemistry and Physics, but also adopt a broad range of skills in working scientifically. Our curriculum is inclusive and meaningful, so all pupils may experience the joy of science and make associations between their science learning and their lives outside the classroom. Studying science allows children to appreciate how new knowledge and skills can be fundamental to solving arising global challenges. Our curriculum aims to encourage critical thinking and empower pupils to question the hows and whys of the world around them.

At Barnacre Road, we follow the Kapow scheme of work for Science. Kapow Primary's Science scheme of work enables pupils to meet the end of key stage attainment targets in the National curriculum. The aims also align with those in the National curriculum. For EYFS, the activities allow pupils to work towards the 'Understanding the world' Development matters statements and Early learning goals, while also covering foundational knowledge that will support them in their further Science learning in Key stage 1.

Using the Kapow Scheme of work, we encourage:

- A strong focus on developing knowledge alongside scientific skills across Biology, Chemistry and Physics.
- Curiosity and excitement about familiar and unknown observations.
- Challenging misconceptions and demystifying truths.
- Continuous progression by building on practical and investigative skills across all units.
- Critical thinking, with the ability to ask perceptive questions and explain and analyse evidence.
- Development of scientific literacy using wide-ranging, specialist vocabulary.

Knowledge in our Science Curriculum

In the Early Years Foundation Stage, Science is delivered to pupils within the 'Understanding the World' part of the EYFS Curriculum. By the end of reception, children will learn to:

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

From year one onwards, our Science Curriculum develops pupils' Scientific knowledge and understanding in seven key areas. The learning in each area is summarised below:

Animals, including humans



Identifying animals, their basic structure and their eating habits, as well as their basic needs for survival. Children learn about the life cycles of animals and their place in food chains.

Naming parts of the human body and recognising the function of skeletons, muscles, teeth and the digestive and circulatory systems. Learning about the importance of hygiene and of the right type and amount of nutrition. Children learn about the impact of diet, drugs and exercise on the body and study the life cycles of humans.

This key area covers the Year 1, Year 2, Year 3, Year 4, Year 5 and Year 6 subject content titled 'Animals, including humans' from the National curriculum.

Living things and their habitats



Identifying something as living and how it is grouped based on its characteristics, similarities and differences.

Naming different types of habitats, learning what they provide for life and the impact of habitats changing. Children learn about the life cycles and reproduction of animals and plants, and how this affects the variation of living things around us, past and present.

This key area covers the Year 2, Year 4, Year 5 and Year 6 subject content titled 'Living things and their habitats' and 'Evolution and inheritance' from the National curriculum.

Plants



Identifying different plants and their key structures, growing seeds and plants and understanding their requirements for growth. Recognising the function of different plant structures and understanding how plants reproduce.

This key area covers the Year 1, Year 2 and Year 3 subject content titled 'Plants' from the National curriculum.

Materials



Naming materials, describing their properties and understanding why materials have specific uses. Identifying how materials may change and the factors that may contribute to this, including changes of state within the water cycle. Children learn about different mixtures and how they can be separated based on their properties.

Identifying different types of rocks and their physical properties, and understanding how fossils and soil are formed.

This key area covers the Year 1, Year 2, Year 3, Year 4 and Year 5 subject content titled 'Everyday materials', 'Rocks', 'States of matter' and 'Properties and changes of materials' from the National curriculum.

Energy



Learning about light and its properties, how it enables us to see and how shadows are formed. Identifying the relationship between sounds, volume, pitch and vibrations, and how sound travels to the ear.

Recognising electrical appliances and the components that make up different circuits. Building electrical circuits and identifying factors that affect the output.

This key area covers the Year 3, Year 4 and Year 6 subject content titled 'Light', 'Electricity' and 'Sound' from the National curriculum.

Forces, Earth and space



Identifying changes across the seasons, and the weather and day length associated with each.

Recognising different types of forces and understanding their effect on objects, including the role of pulleys, levers and gears. Children learn about magnetic materials and that magnets attract and repel.

Learning about the movements of planets and moons within the solar system and how this relates to our day and night.

This key area covers the Year 1, Year 3 and Year 5 subject content titled 'Seasonal changes', 'Forces and magnets', 'Earth and space' and 'Forces' from the National curriculum.

Making connections



[Finding the optimum: the science subject report](#) (Ofsted, 2023) states that schools should ensure that teachers

'regularly connect new learning to what pupils have already learned. This includes showing pupils how knowledge from different areas of the curriculum connects.'

One of the ways in which we do this is through our Making connections units, which give pupils opportunities, beyond the National curriculum programme of study, to make connections between their science learning.

Our Science Curriculum Content from September 2025 -

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	<p style="text-align: center;">During the course of the year we will -</p> <ul style="list-style-type: none"> • Explore and talk about different forces they can feel. • Explore how things work. • Use all their senses in hands on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Begin to understand the need to respect and care for the natural environment and all living things. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Talk about differences between materials and changes they notice. 					
Reception	<ul style="list-style-type: none"> • Make careful observations and use relevant vocabulary. • Begin to notice and understand some important processes and changes in the natural world including seasons. 	<ul style="list-style-type: none"> • Describe and explore the world around them. • Begin to notice and understand some important processes and changes in the natural world including seasons and states of matter. • Can talk about changes from when they were a baby. • Understand some of the processes in the natural world – life cycles of people. 	<ul style="list-style-type: none"> • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Understand some of the processes in the natural world – life cycles plants and animals. 			
Year 1	Seasonal changes	Everyday materials	Sensitive bodies	Comparing animals	Introduction to plants	Making Connections
Year 2	Habitats	Micro habitats	Uses of everyday materials	Life cycles and health	Plant growth	Making Connections
Year 3	Movement and nutrition	Forces and magnets	Rocks and soil	Light and shadows	Plant reproduction	Making Connections
Year 4	Digestion and food	Electricity and circuits	States of matter	Sound and vibrations	Classification and changing habitats	Making Connections
Year 5	Mixtures and separation	Properties and changes	Earth and space	Life cycles and reproduction	Imbalanced forces	Human timeline / Making Connections
Year 6	Classifying big and small	Light and reflection	Evolution and inheritance	Circuits, batteries and switches	Circulation and exercise	Making Connections

Our progression document (appendix 1) details the precise knowledge taught in each unit of work.

The Kapow scheme of work follows the National Curriculum for Science. Therefore, at the end of each year, pupils are expected to understand the knowledge, skills and processes in their year group's strands for Science.

In addition to substantive knowledge (knowing about) within the seven key areas above, our curriculum aims to develop children's disciplinary knowledge (ways of knowing). Working scientifically specifies the understanding of the nature, processes, and methods of science for each year group and is covered alongside our Scientific knowledge and understanding strand in each and every unit, never in isolation. Pupils should be able to see the interplay between the two types of knowledge and our Science in action strand of working scientifically gives pupils this opportunity through seeing how scientists have worked in the past and continue to work in the present day. This furthers pupils' understanding of how some of the substantive knowledge they learn came to be established.

Working Scientifically

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways.
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions.
- gathering and recording data to help in answering questions.

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- identifying differences, similarities or changes related to simple scientific ideas and processes.
- using straightforward scientific evidence to answer questions or to support their findings.

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests.
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
- identifying scientific evidence that has been used to support or refute ideas or arguments.

Implementation

In the EYFS this is taught through a balance of adult directed input and group activities as well as time to explore materials and resources in continuous provision. Children will have opportunities in adult-led groups to develop skills and knowledge and then there will be an opportunity to revisit these through activities and continuous provision.

From year one onwards, Science is taught as a discrete subject discipline for approximately 90 minutes per week. Teachers follow the progression guidance from the Kapow Scheme of work to plan what will be taught in what order.

Our Science curriculum has been designed to be a spiral curriculum. This means that essential knowledge and skills are revisited in new contexts with a higher degree of complexity, allowing pupils to revise and add to their existing knowledge. The Science in action strand is interwoven throughout the scheme to make the concepts and skills relevant to pupils and inspiring for future application. Cross-curricular links are included throughout each unit, allowing children to make connections and apply their Science skills to other areas of learning. Teachers are familiar with the whole school progression document and revisit prior learning at the beginning of, and regularly throughout, units of work.

In key stage one and two, each unit is based upon one of the key science disciplines; Biology, Chemistry and Physics and to facilitate progression throughout the school we have grouped the National curriculum content into six key areas of science: Plants Animals, including humans Living things and habitats Materials Energy Forces, Earth and space.

Pupils explore knowledge and conceptual understanding through engaging activities and an introduction to relevant specialist vocabulary. As suggested in Ofsted's Science research review (April 2021), the 'working scientifically' skills are integrated with conceptual understanding rather than taught discretely. This provides frequent, but relevant, opportunities for developing scientific enquiry skills. The scheme utilises practical activities that aid in the progression of individual skills and also provides opportunities for full investigations.

Knowledge organisers are provided to children for each unit of work. These include key knowledge and vocabulary as well as links to prior learning. These are shared with parents via our school website.

Science lessons begin with a recap of prior learning, from prior year groups, terms or lessons. Key vocabulary is included in lesson starters, modelled by adults within lessons and displayed on classroom Science displays. Lessons incorporate various learning strategies, including independent work, paired or team work, practical tasks and tasks using ICT. Teachers adapt lessons to best meet the needs of their class.

Written work is completed in Science exercise books in line with our Presentation, Marking and Feedback Policy. Practical work is photographed and stored on children's SeeSaw profiles. Written work is marked prior to the next lesson following, although spelling and punctuation errors will be addressed the main focus of marking will be scientific, knowledge and vocabulary based.

Children with Special Educational Needs and Disabilities

Our Science curriculum is inclusive and ambitious for all learners and we expect that all children should be successful, regardless of any special educational need. All learners are given full access to the Science curriculum. Class teachers will adapt teaching inputs and provide additional support through scaffolding for any child who requires support. Strategies to support children with Special Educational Needs or Disabilities might include adaptation of resources, adult support, pre-teaching of vocabulary or content and alternative ways of recording understanding. Class teachers are supported by our SENDCo, Mrs Mellor, in meeting the needs of all learners.

More Able Children

Teachers may identify children as more able in Science, either through end of unit summative assessments or through questioning, discussion and formative assessments. We seek to plan for specific questioning opportunities which require higher order thinking skills. Children who are considered more able in Science may:

- Be interested in the world around them and learning more about themselves.

- Ask questions and are willing to hypothesise and ask “What if...?”
- Consider alternative strategies and suggestions for investigations.
- Analyse data and spot patterns easily.
- Make connections quickly between facts and concepts they have learned and use a wide variety of vocabulary.

Impact

The expected impact of our curriculum is that children will:

- Develop a body of foundational knowledge for the Biology topics in the National curriculum: Plants; Animals, Including Humans; Living Things and Their Habitats; Evolution and Inheritance.
- Develop a body of foundational knowledge for the Chemistry topics in the National curriculum: Everyday Materials; Uses of Everyday Materials; Properties and Changes of Materials; States of Matter; Rocks.
- Develop a body of foundational knowledge for the Physics topics in the National curriculum: Seasonal Changes; Forces and Magnets; Sound; Light; Electricity; Earth and Space.
- Be able to evaluate and identify the methods that ‘real world’ scientists use to develop and answer scientific questions.
- Identify and use equipment effectively to accurately gather, measure and record data.
- Be able to display and convey data in a variety of ways, including graphs.
- Analyse data in order to identify, classify, group, and find patterns.
- Use evidence to formulate explanations and conclusions.
- Demonstrate scientific literacy through presenting concepts and communicating ideas using scientific vocabulary.
- Understand the importance of resilience and a growth mindset, particularly in reference to scientific enquiry.
- Meet the ‘Understanding the World’ Early Learning Goals at the end of EYFS, and the end of key stage expectations outlined in the National curriculum for Science by the end of Year 2 and Year 6.

The impact of our curriculum is constantly monitored by class teachers through both formative and summative assessment opportunities. Our scheme of work includes guidance for teachers in assessing pupils against the learning objectives and any relevant scientific enquiry skills. Teachers use lesson starters (recaps) to identify gaps in children’s knowledge and subsequently plan opportunities to close any identified gaps.

At the end of each unit of work, assessment quizzes are undertaken and ‘knowledge catchers’ are completed in order for children to demonstrate what they have learned and remembered. At the end of each unit of work, children are assessed based on their performance in lessons and summative assessment quizzes and recorded on the school’s internal tracking system as working below the expected standard, working at the expected

standard or exceeding the expected standard. Assessments are moderated in staff teams annually.

Standards of teaching and learning in Science are monitored by the subject leader, curriculum leader (deputy headteacher) and the headteacher, as well as the SENDCo who will monitor Science provision for children with Special Educational Needs and Disabilities. Monitoring may include: pupil interviews, work scrutiny and lesson observations.

Appendix 1 -

<https://8885203.sharepoint.com/sites/Teachers2/Shared%20Documents/General/Subject%20Leadership/Science/science%20progression.docx>