



NO OUTSIDERS
EVERYONE IS WELCOME.

**'Aspire to be
Amazing'**

Ashton Hayes Primary School – Science Curriculum Overview

Vision for Science

At Ashton Hayes Primary School, our vision is to nurture curiosity, foster a sense of wonder about the world, and inspire all children to become confident and reflective scientific thinkers. Set within our rural Cheshire community, our science curriculum encourages children to connect their local environment — its woodlands, wildlife, weather, and materials — to the wider world, developing both practical skills and deep conceptual understanding. In Science, we have high expectations for all pupils, including those who are disadvantaged and those with SEND. Teaching is adapted to meet pupils' needs so that all learners can access the Science National Curriculum and make progress. Staff use clear explanations, appropriate support and resources to remove barriers to learning while maintaining ambition. Ongoing assessment is used to identify gaps in understanding and provide timely support, ensuring all pupils can develop secure scientific knowledge and skills.

We aim for all pupils to:

- Develop secure knowledge and understanding of key scientific concepts.
- Learn to work scientifically through a range of enquiry types, developing curiosity, questioning, and resilience.
- See science as relevant to their lives, fostering an awareness of sustainability and care for the natural world.
- Build the foundations for future scientific learning and critical thinking.

Implementation

Science at Ashton Hayes Primary School is taught through a carefully sequenced curriculum that ensures full coverage of the National Curriculum and clear progression of both scientific knowledge and working scientifically skills across the school.

The curriculum is organised into a two-year rolling programme in mixed-age classes, ensuring that all pupils receive their full entitlement to the science curriculum without repetition or gaps in learning. Units are structured so that pupils revisit key concepts over time, deepening their understanding and making links between different areas of science.

Pupils study a balance of biology, chemistry and physics units across each key stage. In Key Stage 1, pupils focus on developing their understanding of everyday materials, plants, animals and seasonal change through observation and simple investigations. As pupils move into Key Stage 2, they build on this knowledge by studying more complex concepts such as forces, electricity, states of matter, Earth and space, and evolution.

Working scientifically is embedded throughout all units. Pupils are taught to ask questions, make predictions, carry out investigations, observe and measure, record data, and draw conclusions. These skills are carefully developed so that pupils move from simple exploration in the early years to planning and carrying out more independent enquiries in upper Key Stage 2.



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Practical enquiry is at the heart of science teaching at Ashton Hayes Primary School. Lessons are designed to be hands-on and engaging, allowing pupils to investigate scientific questions and develop their understanding through first-hand experiences.

Our local context is used wherever possible to make learning meaningful. The village of Ashton Hayes provides rich opportunities for environmental and ecological study, particularly through its work as a carbon-neutral community. Pupils explore local habitats, seasonal changes and environmental issues, helping them to understand how science is relevant to their everyday lives.

Teachers adapt learning to ensure that all pupils can access the curriculum. This includes the use of visual resources, structured support, practical activities and collaborative learning. Scientific vocabulary is explicitly taught and revisited to support pupils in developing their understanding and communication.

Enrichment opportunities, such as local fieldwork, environmental projects and links with the wider community, further enhance pupils' engagement with science and deepen their understanding of scientific concepts.

Impact

Through the science curriculum at Ashton Hayes Primary School, pupils develop a secure and coherent understanding of key scientific concepts across biology, chemistry and physics. They build knowledge progressively over time, enabling them to make connections between different areas of science.

Pupils leave the school with a strong foundation in working scientifically. They are able to ask questions, plan and carry out investigations, use equipment appropriately, record and interpret data, and draw conclusions based on evidence. They develop the ability to think scientifically and approach problems with curiosity and confidence.

By engaging in a wide range of practical enquiries, pupils develop independence and resilience as learners. They understand that science is a process of investigation and discovery, and that results can be tested, questioned and refined.

Through studying science in both local and global contexts, pupils gain an understanding of how scientific knowledge is applied in the real world. They develop an awareness of environmental issues and sustainability, particularly through their understanding of the work taking place in Ashton Hayes and beyond.

Pupils leave Ashton Hayes Primary School with a curiosity about the natural world, a secure understanding of scientific concepts, and the skills needed to continue their scientific learning in secondary education. They are equipped to think critically, ask questions and understand the role that science plays in shaping the world around them.



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EYFS (Kestrel class)

Science Topic/Term	Understanding the World (Ongoing through the year)
Core knowledge	<ul style="list-style-type: none">- Explore natural materials and living things.- Notice seasonal changes and weather patterns.- Understand growth, decay, and care for living things.- Recognise similarities and differences in the natural world.
Scientific skills	<ul style="list-style-type: none">Asking questions – What can you see outside?Making predictions – Why do leaves fall off trees?Setting up tests – What can you build with these materials?Observing and measuring – What happens when we mix things together?Recording data – How has your seed changed?Interpreting and communicating results – What did we discover about water?Evaluating – What did you find out?
Key vocabulary	Seasons, grow, change, living, materials, weather, observe, care
Adaptations	



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Year 1 (Sparrowhawk class)

Science Topic/Term	Autumn: Materials	Spring: Animals including humans	Summer: Plants
Core knowledge	<ul style="list-style-type: none"> - Distinguish between an object and the material from which it is made. - Identify and name a variety of everyday materials. - Describe simple physical properties of a variety of everyday materials. - Compare and group together a variety of everyday materials on the basis of their physical properties. 	<ul style="list-style-type: none"> - Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. - identify and name a variety of common animals that are carnivores, herbivores and omnivores. - Describe and compare the structure of a variety of common animals. - Identify, name, draw and label the basic parts of the human body (including senses). 	<ul style="list-style-type: none"> - Identify and name common wild and garden plants including deciduous and evergreen trees. - identify and describe the basic structure of a variety of common flowering plants including trees. - Understand what plants need to grow. - Observe growth and change over time/across the seasons.
Scientific skills	<p>Asking questions – Why are spoons made from different materials?</p> <p>Making predictions – Which material will be waterproof?</p> <p>Observing and measuring – How does it feel before and after testing?</p>	<p>Recording data – Record your pulse rates before and after exercise.</p> <p>Interpretating and communicating results – Why do you think your heart beat faster?</p>	<p>Setting up tests – Plant seeds and place them in different conditions.</p> <p>Evaluating – Were your results what you expected?</p>
Key vocabulary	Material, property, hard, soft, rough, smooth, waterproof, absorbent	Animal, human, body, senses, survival, predator, prey, amphibians, carnivores, structure.	Root, stem, leaf, flower, grow, sunlight, water, soil, deciduous, evergreen
Adaptations			



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Year 2/3 Cycle A (Owl class)

Science Topic/Term	Autumn: Plants (Year 2 and 3)	Spring: Rocks (Year 3)	Summer: Light (Year 3)
Core knowledge	<ul style="list-style-type: none"> - Observe and describe how seeds and bulbs grow into mature plants. - Describe how plants need water, light and a suitable temperature to grow. - Identify and describe the functions of different parts of flowering plants. - Explore the requirements of plants for life and growth. - Investigate the way in which water is transported within plants. - Explore the part that flowers play in the life cycle of flowering plants. 	<ul style="list-style-type: none"> - Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties (e.g. hardness, texture). - Describe how fossils are formed when things that have lived are trapped within a rock. - Recognise that soils are made from rocks and organic matter. 	<ul style="list-style-type: none"> - Recognise that light travels from a light source Recognise that they need light in order to see things and that dark is the absence of light. - Notice that light is reflected from surfaces. - Recognise that light from the sun can be dangerous. - Recognise that shadows are formed when the light from a light source is blocked by an opaque object. - Find patterns in the way that the size of shadows change.
Scientific skills	<p>Asking questions – What do plants need to grow well?</p> <p>Observing and measuring – What changes do we notice during plant growth over time?</p> <p>Evaluating – What went well with the test?</p>	<p>Making predictions – Which rocks will be the hardest or smoothest?</p> <p>Setting up tests – How can we compare the properties of different rocks?</p>	<p>Recording data – How can we record our data clearly?</p> <p>Interpreting and communicating results – How can we explain that we need light to see things?</p>
Key vocabulary	Plant, Roots, Stem, Leaves, Flower, Water, Light, Grow	Rock, Soil, Fossil, Hard, Soft, Smooth, Rough, Texture.	Light, Dark, Light source, Shadow, Reflect, Block, Bright, Dull
Adaptations			



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Year 2/3 Cycle B (Owl class)

Science Topic/Term	Autumn: Uses of Everyday Materials (Year 2)	Spring: Animals including Humans (Year 2)	Summer:
Core knowledge	<p>Different materials are suitable for different uses.</p> <p>Materials can be changed by bending, stretching, twisting and squashing.</p> <p>Some materials are better suited for particular uses because of their properties.</p> <p>Objects can be made from more than one material.</p> <p>Materials can be compared based on their properties, such as flexibility, strength and absorbency.</p>		
Scientific skills	<p>Asking questions - Ask simple scientific questions about how materials are used Why are some materials better for certain jobs than others?</p> <p>Make predictions based on prior knowledge Which material will be waterproof or strongest?</p> <p>Perform simple comparative tests How can we test which material is the most absorbent?</p> <p>Observe closely and compare materials What happens to each material when we test it?</p>	<p>Making predictions – Which rocks will be the hardest or smoothest?</p> <p>Setting up tests – How can we compare the properties of different rocks?</p>	<p>Recording data – How can we record our data clearly?</p> <p>Interpreting and communicating results – How can we explain that we need light to see things?</p>



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	<p>Record findings using simple tables or charts How can we organise our results so we can compare them?</p> <p>Use observations to answer questions Which material worked best?</p>		
Key vocabulary	material, property, flexible, rigid, waterproof, absorbent, stretch, twist, bend	Rock, Soil, Fossil, Hard, Soft, Smooth, Rough, Texture.	Light, Dark, Light source, Shadow, Reflect, Block, Bright, Dull
Adaptations	<p>Use real-life objects for sorting and testing.</p> <p>Provide sorting mats for material properties</p> <p>Use visual prompts and word banks</p> <p>Allow pupils to record using drawings or tables</p> <p>Provide structured investigation steps</p>		

Year 4/5 (Peregrine class)

Science Topic/Term	Autumn: Sound (Year 4)	Spring: Properties and changes of materials (Year 5)	Summer: Earth and Space (Year 5)
Core knowledge	<ul style="list-style-type: none"> - Identify how sounds are made, associating some of them with vibrating. - Recognise that vibrations from sounds travel through a medium to the ear. - Find patterns between the pitch and volume of a sound. - Recognise that sounds get fainter as the distance 	<ul style="list-style-type: none"> - Compare and group materials based on properties such as hardness, solubility, transparency and conductivity. - Know that some materials will dissolve in liquid to form a solution. - Use knowledge of solids, liquids and gases to decide how mixtures might be separated. 	<ul style="list-style-type: none"> - Describe the movement of the Earth and other planets relative to the sun in the solar system. - Describe the movement of the moon relative to the Earth. - Describe the sun, Earth and moon as approximately spherical bodies. - Use the idea of the Earth's rotation to explain



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	from the sound source increases.	<ul style="list-style-type: none"> - Give reasons for the particular uses of everyday materials. - Demonstrate that dissolving, mixing and changes of state are reversible. - Explain that some changes result in the formation of new materials. 	<p>night and day and the movement of the sun across the sky.</p> <p>-Recognise that the Sun is a star at the centre of the solar system</p>
Scientific skills	<p>Making predictions – How does changing the size or tension of an object affect the sound?</p> <p>Recording data – How can we record our results clearly?</p> <p>Evaluating – Was our test fair and accurate?</p>	<p>Asking questions – What properties make materials suitable for different uses?</p> <p>Setting up tests – How can we compare different materials?</p>	<p>Observing and measuring – What changes do we notice in shadows over time?</p> <p>Interpreting and communicating results – What patterns can we see such as day/night and seasons?</p>
Key vocabulary	Sound, Vibration, Pitch, Volume, Source, Faint, Loud, Insulation	Material, Property, Hardness, Solubility, Transparency, Reversible, Irreversible, Change.	Earth, Sun, Moon, Orbit, Rotation, Axis, Day, Night
Adaptations			

Year 5/6 (Buzzard class)

Science Topic/Term	Autumn: Animals including Humans	Spring: Evolution and Inheritance	Summer: Light
Core knowledge	<ul style="list-style-type: none"> - Identify and name the main parts of the human circulatory system - Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. - Describe the ways in which nutrients and water are transported within animals, including humans. 	<ul style="list-style-type: none"> - Recognise that living things have changed over time and that fossils provide information about living things. - Recognise living things produce offspring of the same kind but normally offspring vary. <p>Identify how animals and plants are adapted to suit their environment</p>	<ul style="list-style-type: none"> - Recognise that light appear to travel in straight lines. - Explain that objects are seen because they give out or reflect light into the eye. - Explain that we see things because light travels from light sources to our eyes. - Explain why shadows have the same shape as



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		- "Recognise that variation exists within species.	the objects that catch them. - Recognise that light can be refracted (bent) when passing through different materials
Scientific skills	Asking questions – How does blood move around the body? Interpreting and communicating results – What effects does exercise have on your body?	Making predictions – What traits might help an organism to survive in a particular environment? Observing and measuring – What are the differences/ similarities between fossils and living organisms?	Setting up tests – How do shadows change shape and size? Recording data – How can we record results clearly? Evaluating – How reliable were our tests?
Key vocabulary	Circulatory system, Heart, Blood vessels, Nutrients, Oxygen, Pulse, Exercise, Lifestyle	Evolution, Inheritance, Variation, Adaption, Offspring, Environment, Fossil, Characteristics	Light source, Reflection, Refraction, Spectrum, Transparent, Translucent, Opaque, Shadow
Adaptations			

Local and Environmental Links

Ashton Hayes as a Learning Landscape

- **Rural Setting & Farm Landscapes:**

Use the surrounding farmland, hedgerows and woodland around Ashton Hayes as real-world examples for topics like **plant life cycles, habitats, food chains and seasonal changes**. The village is set within a rural corridor of agricultural land with varied habitats that children can explore on field walks.

Ashton Hayes Carbon Neutral Initiative

- **Village Carbon Neutral Journey:**

Ashton Hayes is a nationally-recognised **carbon-neutral village project**, involving local residents and the primary school in renewable energy and sustainability efforts. Children can study this long-running project as a *case study* in human impact, climate change, energy sources and community action.

- **School Solar & Energy Links:**

Discuss how solar panels and energy-saving actions (including the EV charging point at the school) reduce carbon emissions — great for **electricity and energy topics** in KS2.

RECORD – Cheshire Biological Records Centre

- **Local wildlife data:**

Use the Cheshire LRC's biodiversity database to explore patterns of species presence in the region — useful for units like **living things & habitats** and **classification**. Children could compare local species lists with their own observations.