

Science Curriculum Intent, Implementation, and Impact at The Vines Primary Schools

Intent

At The Vines Primary Schools, we are committed to delivering a science curriculum that ignites curiosity and fosters a lifelong love of learning. Our intention is to equip students with the knowledge, skills, and understanding needed to engage confidently with the world around them and to inspire a desire for scientific exploration. Our curriculum is underpinned by the White Rose Science scheme, ensuring a comprehensive approach to teaching that meets the diverse needs of all learners. Through our teaching of science, we aim to develop students who are critical thinkers, problem-solvers, and active participants in scientific discussions and investigations.

Our science curriculum has the following key objectives:

- 1.Fostering Curiosity and Engagement:** We aim to inspire wonder and excitement in our students, encouraging them to ask questions, explore the natural world, and develop a deep appreciation for the mysteries of science.
- 2.Developing Scientific Skills:** Our curriculum places a strong emphasis on the development of key scientific skills, including observation, investigation, reasoning, and drawing evidence-based conclusions. We want our students to feel confident in using scientific tools and methods to explore concepts both in and out of the classroom.
- 3.Promoting Cross-Curricular Learning:** We recognise the importance of linking science with other areas of learning. Our science teaching integrates opportunities to apply knowledge from subjects such as mathematics, geography, and technology, ensuring that students see the interconnectedness of their learning and understand how science relates to the wider world.
- 4.Cultivating Environmental and Global Awareness:** With the growing challenges facing our environment, it is vital that students are equipped with the knowledge and understanding of global issues. Through our curriculum, we encourage students to consider their role in the world and understand the impact of human actions on the planet.
- 5.Encouraging Ethical Considerations:** We aim to foster an understanding of the ethical implications of scientific advancements and encourage students to explore cultural and ethical perspectives related to scientific research and its application.
- 6.Hands-On, Practical Learning:** Science is best understood through practical experiences. Our curriculum offers students regular opportunities for hands-on learning, where they can conduct experiments, make observations, and engage with real-world scientific issues.
- 7.Fostering Collaborative Learning:** Science is often a collaborative endeavour. Our curriculum encourages students to work together, share ideas, and communicate effectively, promoting teamwork and the development of social skills in a scientific context.

Implementation

At The Vines Primary Schools, we structure our science curriculum across four key phases: Early Years, Key Stage 1 (Year 1 and 2), Lower Key Stage 2 (Year 3 and 4), and Upper Key Stage 2 (Year 5 and 6). In each phase, we adapt the White Rose Science small steps to meet the age-related expectations and specific learning needs of the children in each year group.

- 1. Early Years:** In the Early Years, science is integrated across all areas of learning. Children begin by exploring the world around them through play-based and hands-on experiences, focusing on developing their understanding of the world, natural phenomena, and their own observations.

2. **Key Stage 1:** In Year 1 and 2, science is introduced through a structured curriculum that encourages active learning. Children are guided through scientific concepts using concrete, practical activities. They develop basic skills in observation, classification, and simple experiments, with a focus on making connections between science and everyday life.
3. **Lower Key Stage 2:** As students move into Year 3 and 4, the science curriculum becomes more structured, with a focus on deepening scientific knowledge and inquiry. At this stage, children begin to plan and carry out their own investigations, developing skills in recording and analysing results, and building their understanding of key scientific concepts.
4. **Upper Key Stage 2:** In Year 5 and 6, science teaching encourages independent enquiry, critical thinking, and an understanding of more complex scientific principles. Students build upon their previous learning by investigating in greater depth, linking scientific concepts with real-world applications and global issues.

The White Rose Science Scheme provides a structured framework for our teaching, ensuring that students progress steadily from one year to the next. We teach science through a combination of teacher-led and student-led activities, with a strong emphasis on practical, hands-on learning. We ensure that all science topics are delivered in a manner that is accessible to all learners, including those with SEND, through differentiated tasks and support. In addition to the core content, we encourage students to engage with supplementary materials, such as interactive resources, videos, and visits from experts, to broaden their scientific understanding.

Impact

The impact of our science curriculum is reflected in the development of confident, inquisitive, and thoughtful young scientists. We measure the success of our curriculum through the following outcomes:

1. **Knowledge and Understanding:** Students will demonstrate a strong grasp of scientific concepts, with the ability to recall and apply their knowledge to solve problems and answer questions. They will be able to explain key scientific ideas and their real-world applications.
2. **Scientific Skills:** Students will develop and refine their skills in scientific enquiry, including the ability to plan investigations, make observations, and analyse results. They will also become proficient in using scientific tools and equipment, and develop an understanding of how to approach scientific problems with critical thinking.
3. **Attitudes to Science:** Students will develop a positive attitude towards science, showing curiosity, resilience, and a willingness to take risks in their learning. They will be confident in asking questions, investigating solutions, and sharing their ideas with others.
4. **Cross-Curricular Links:** Students will make connections between science and other subjects, recognising how science is integral to their understanding of the world. They will apply their learning from science to other areas of the curriculum, developing their broader problem-solving and critical thinking skills.
5. **Environmental and Ethical Awareness:** Through our science curriculum, students will gain a deeper understanding of environmental issues and the importance of sustainability. They will also appreciate the cultural and ethical dimensions of scientific advancements and be prepared to engage with these topics in their future learning and lives.
6. **Long-Term Scientific Curiosity:** Above all, the greatest impact of our science curriculum will be a lifelong love of learning and a commitment to understanding the world through science. Our students will leave The Vines Primary Schools with a deep sense of wonder and curiosity, equipped with the knowledge and skills to continue exploring science throughout their lives.

By the end of their time at The Vines Primary Schools, students will have developed a strong scientific foundation, preparing them for further education and life beyond school. Our curriculum will have nurtured their scientific curiosity, critical thinking, and problem-solving abilities, ensuring that they are ready to face the challenges of an increasingly scientific and technologically advanced world.

Key Stage 1 2024/25

Phase	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
KS1	Humans	Materials	Seasons and Weather	Plants	Animals	Living and non-living Sustainability
Year 1	<ul style="list-style-type: none"> • Know how to name the parts of the human body that I can see • To know how to link the correct part of the human body to each sense • Distinguish between an object and know the material it is made from. • Identify and name a variety of everyday materials. I know the difference between wood, plastic, glass, metal, water and rock • Describe simple physical properties of variety of everyday materials • Compare and group materials based on physical properties 		<ul style="list-style-type: none"> • To know and observe changes across the seasons • To know and name variety of common wild and garden plants including evergreen and deciduous • To know and name the petals, stem, leaves and root of a plant. • To describe weather associated with the seasons and how day length varies 		<ul style="list-style-type: none"> • To know and name and compare the structure of a variety of common animals including fish, amphibians, reptiles, birds and mammals and know how to sort these into categories. • To Know and classify animals by what they eat (carnivores, herbivores and omnivores) • To know how to sort living and non-living things 	
Year 2	<ul style="list-style-type: none"> • To know why exercise, a balanced diet and good hygiene are important for humans • To know the basic stages in a life cycle in humans • To know what humans need to survive • identify and name a range of materials including wood, metal, plastic, glass, brick, rock, paper and cardboard • to know why a material might or might not be used for a specific job • to know how materials can be changed by squashing, bending, twisting and stretching 		<ul style="list-style-type: none"> • To know how seeds and bulbs grow into plants • to know what plants need in order to grow and stay healthy • identify plants in a specific habitat 		<ul style="list-style-type: none"> • To know how a specific habitat provides for the basic needs of things living there • Identify animals in a range of habitats and know how animals find their food • name some different sources of food for animals • know and can explain a simple food chain • To identify things that are living, dead and never lived 	
Working Scientifically	<ul style="list-style-type: none"> • know how to ask simple scientific questions • know how to use simple equipment to make observations • know how to carry out simple tests • know how to identify and classify things • know how to explain to others what I have found out • know how to use simple data to answer questions 					

2024 – 2025 / 2026 - 2027	Autumn A	1	2	3	4	5	6	7	8	9	10	11	12
	3 and 4	Group and classify living things (Y4)			data collection A (Y4)	States of matter (Y4)							
	5 and 6	Living Things and Their habitats (Y6)						Electricity (Y6)					Renewable energy (Y6)
	Spring A												
	3 and 4	light (Y3)					data collection B (Y4)	Electricity (Y4)				energy (Y4)	
	5 and 6	light (Y6)				light pollution (Y6)	animals including humans (Y5)				life cycles (Y5)		
	Summer A												
	3 and 4	plants A (Y3)						data collection C (Y4)	food chains (Y4)		plants B (Y3)	biodiversity (Y3)	
	5 and 6	variation (Y6)			adaptations (Y6)			fossils (Y6)		optional themed projects (year 7 ready)			

2023 – 2024 / 2025 - 2026	Autumn B	1	2	3	4	5	6	7	8	9	10	11	12
	3 and 4	skeletons (Y3) 5 steps How can we sort and group animals based on their skeleton?			movement (Y3)	nutrition and diet (Y3)			food waste (Y3)	rocks (Y3)			
	5 and 6	forces (Y5) 9 steps Does the surface area of a parachute affect how long it takes to fall to the ground?				space (Y5)					global warming (Y5)		
	Spring B												
	3 and 4	fossils (Y3)		soils (Y3)			sound (Y4)						
	5 and 6	properties of materials (Y5)				the circulatory system (Y6)				diet, drugs and lifestyle (Y6)			
	Summer B												
	3 and 4	habitats (Y4)		deforestation (Y4)	forces (Y3)		magnets (Y3)		the digestive system (Y4)				
	5 and 6	reproduction A (Y5)			reversible and irreversible changes (Y5)				plastic pollution (Y5)	reproduction B (Y5)		themed projects (year 7 ready)	