

Science Curriculum Statement

Intent

The 2014 national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines 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 about the world around them
- are equipped with the scientific skills required to understand the uses and implications of science, today and for the future. We understand that it is important for lessons to have a skills-based focus, and that the knowledge can be taught through this.

At Cummersdale School, we encourage children to be inquisitive throughout their time here and beyond. 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 will acquire and develop the key knowledge that has been identified within each unit and across each year group. The key knowledge identified by each year group is informed by the national curriculum and builds towards identified phase 'end points' in accordance with NC expectations. Key skills are also mapped for each year group and are progressive throughout the school. These too ensure systematic progression to

identified skills end points which are in accordance with the Working Scientifically skills expectations of the national curriculum. The curriculum is designed to ensure that children are able to acquire key scientific knowledge through practical experiences; using equipment, conducting experiments, building arguments and explaining concepts confidently. The school's approach to science takes account of the school's own context, ensuring access to people with specialist expertise and places of scientific interest as part of the school's commitment to learning outside the classroom (Forest Schools Year3/4, EYFS). Cross curricular opportunities are also identified, mapped and planned to ensure contextual relevance (Testing astronaut suit materials in Year 1 and 2, Troutankhamun Year 3 and 4, Programming a Mars Rover in Year 5 and 6). Children are encouraged to ask questions and be curious about their surroundings and a love of science is nurtured through a whole school ethos and a varied science curriculum.

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 in science. Our whole school approach to the teaching and learning of science involves the following;

- Science will be taught in planned and arranged topic blocks by the class teacher. We use the CUSP (Curriculum with Unity Schools Partnership) curriculum scheme of work to support our planning. Our learning sequences for Science have been carefully planned, ensuring children are building on prior learning and that Tier 2 and 3 vocabulary appropriate to the study is taught explicitly. Knowledge notes are used to clarify all children, which incorporate key vocabulary, information, and images to support learning. Regular practice ensures that the knowledge becomes 'sticky' and encourages productivity.
- Existing knowledge is checked at the beginning of each topic, as part of the KWL strategy (What I know, What I would like to Know and What I have Learned). This ensures that teaching is informed by the children's starting points and that it takes account of pupil voice, incorporating children's interests.

- 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 be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom and throughout the school. Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Close links with the local secondary school allows us to borrow more sophisticated scientific apparatus (such as light boxes and dissection kits). 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. Tasks are selected and designed to provide appropriate challenge to all learners, in line with the school's commitment to inclusion.
- We build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases, 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 that skills are systematically developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.
- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. In Year 5 and 6 the children used dissection tools confidently and safely to study the anatomy of a cow's eye. They have also had the opportunity to dissect a fish. Observing organs and understanding how they work within a single animal strengthens children's comprehension of biological systems and creates a lasting impression on their minds. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning (Desert Island Week) and workshops with experts.

- Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class. Year 5 and 6 visit the Life Centre as part of their topic on Space and experience how it feels to be an astronaut. Year 1 and 2 visit the aquarium as part of their seaside animals topic. Children have the opportunity to attend after school 'Weird Science Club' and in the past a CSI Club. Visitors into school have included the dentist who spoke to all the children.
- Regular events, such as Science Week, project weeks or activity days, allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. During these events, the children have been able to observe the effects of dry ice making potions and rockets whilst gaining an understanding of changes of state.
- At the end of each topic, key knowledge is reviewed by the children and rigorously checked by the teacher and consolidated as necessary.

Impact

The successful approach at Cummersdale results in a fun, engaging, high-quality science education that provides children with the foundations and knowledge for understanding the world. Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. Frequent, continuous and progressive learning outside the classroom is embedded throughout the science curriculum. Through various workshops, trips and interactions with experts, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children at Cummersdale overwhelmingly enjoy science and this results in motivated learners with sound scientific understanding.

Curriculum Map

<u>Cycle A</u>	<u>Autumn</u>	<u>Spring</u>	<u>Summer</u>
<u>Reception</u>	The human body Seasons of change	Plants	Animals and their habitats
<u>Year 1 and 2</u>	Everyday materials and their use	Weather and seasonal changes Daily Weather	Plants Living things and their habitats
<u>Year 3 and 4</u>	Forces and Magnets Light	Plants	Sound
<u>Year 5 and 6</u>	Earth and Space Forces	Advanced Circuits	The Human Body The Circulatory System

<u>Cycle B</u>	<u>Autumn</u>	<u>Spring</u>	<u>Summer</u>
<u>Reception</u>	The human body Seasons of change	Plants	Animals and their habitats
<u>Year 1 and 2</u>	Living things – Animals and Humans	Materials (revisit)	The human body Animals including humans (revisit)
<u>Year 3 and 4</u>	Rocks and Fossils States of Matter	Habitats Animals and Humans (Human digestion / teeth and functions)	Water Cycles
<u>Year 5 and 6</u>	Properties of Materials Changing States	Great British Scientists	Light and Dark Living Things and their Habitats