Science at Headcorn Primary School

INTENT

At Headcorn, we place great emphasis on nurturing curiosity in our students, with science playing a pivotal role in shaping their understanding of the past, present, and future. Our science curriculum, based on the Cornerstones scheme, focuses on developing both knowledge and skills, ensuring a clear progression as students move through different year groups. Through exploring biology, chemistry, physics, and more, students gain an understanding of the fundamental principles governing our universe, fostering critical thinking and problem-solving abilities along the way. This equips them to question, analyse, and experiment, becoming active participants in their learning journey. In today's rapidly evolving world, scientific literacy is essential for navigating complexities and contributing to advancements and innovations.

Aspiration:

We aspire to cultivate future scientists and innovators who dream big and believe in their capacity to make a positive impact on the world. Our science curriculum inspires pupils to aim high and pursue their passions, showcasing examples like Marie Curie, whose relentless pursuit of knowledge led to groundbreaking discoveries. We encourage our pupils to dream of careers in science and technology, where they can contribute to advancements that benefit all of humanity.

Inclusion:

Inclusion is central to our science curriculum at Headcorn Primary School, based on the Cornerstones framework. We believe that every child should feel welcomed and valued in their scientific journey, regardless of their background or abilities. To achieve this, we provide support tailored to individual needs, foster a supportive classroom environment, and ensure that our resources and activities reflect the diversity of our student body. Diversity is at the heart of our science curriculum. We celebrate the diverse range of scientists, thinkers, and inventors who have contributed to our understanding of the world. Our lessons include a wide variety of scientific perspectives and encourage pupils to embrace the unique contributions of individuals from different backgrounds.

Resilience:

Resilience is a vital skill we foster in our students as they explore the wonders of science, following the Cornerstones curriculum. We encourage them to persevere through challenges, learn from mistakes, and develop a growth mindset. By celebrating effort and resilience, we empower our students to overcome obstacles and embrace the journey of scientific discovery with confidence and determination.

Implementation

Key Stage 1

In Year 1, children start the autumn term with *Everyday Materials*, linking this learning to the design and technology project *Shade and Shelter*. In the *Human Senses* project, they learn about parts of the human body and those associated with the senses. In the spring project *Seasonal Changes*, they learn broadly about seasonal changes linked to weather, living things and day length. They revisit some of this learning in the following summer term project *Plant Parts*. They finish with the project *Animal Parts*, linking back to their knowledge about body parts and senses and identifying commonalities.

In Year 2, children begin the autumn term with the project *Human Survival*, learning about the survival needs of humans, before expanding to study animals within their habitats in the project

Habitats. Building on learning from Year 1, children learn about the uses of materials in the spring project *Uses of Materials* and begin to understand changes of materials through simple physical manipulation, such as bending and twisting. The spring *Plant Survival* project also explores survival, with children observing what plants need to grow and stay healthy. Finally, in the project *Animal Survival,* children bring together learning from the autumn term, thinking about what animals need to survive.

Key Stage 2

Having learned about human body parts, the senses and survival in Key Stage 1, children now focus on specific body systems and nutrition in Key Stage 2. In the autumn term of Year 3, they learn about the skeletal and muscular system in the project *Skeletal and Muscular Systems*. This learning again links to other animals, with children identifying similarities and differences. Children also learn about healthy diets alongside the autumn term design and technology project *Cook Well, Eatwell*. In the spring term, properties of materials are revisited in the project *Forces and Magnets*, with children identifying magnetic materials and learning about the non-contact force of magnetism. They also begin to learn about contact forces, investigating how things move over surfaces. Science learning about rocks and soils is delivered through the geography project *Rocks, Relics and Rumbles*. Children begin to link structure to function in the summer *Plant Nutrition and Reproduction* project, identifying the plant parts associated with reproduction and water transport. Children finish the year with the project *Light and Shadows*, where they are explicitly introduced to the subject of light, with children learning about shadows and reflections, revisiting language from Key Stage 1, including opaque and transparent. In the autumn term of Year 4, children learn about the digestive system, again making comparisons to other animals, in the project *Digestive System*. The second autumn term project *Sound* introduces the concept of sound, with children identifying how sounds are made and travel. They learn and use new vocabulary, such as pitch and volume, and identify properties of materials associated with these concepts. In the spring term project *States of Matter*, children learn about solids, liquids and gases and their characteristics. They understand how temperature drives change of state and link this learning to the project *Misty Mountain, Winding River*, in which children learn about the water cycle. Up to this point, children have had many opportunities for grouping and sorting living things. In the spring project *Grouping and Classifying*, children recognise this as 'classification' and explore classification keys. Finally, in the summer term, children study electricity by creating and recording simple circuits in the project *Electrical Circuits and Conductors*. They also build on their knowledge of the properties of materials, identifying electrical conductors and insulators.

Upper Key Stage 2

In the autumn term of Year 5, children broaden their knowledge of forces, including gravity and air and water resistance, in the project *Forces and Mechanisms*. They revisit learning from design and technology projects, including *Making It Move* and *Moving Mechanisms*, to explore various mechanisms and their uses. Their knowledge of gravity supports the autumn term project *Earth and Space*, so they can understand the forces that shape planets and our solar system. They also develop their understanding of day and night, first explored in the Year 1 project *Seasonal Changes*. Having learned that animals and plants produce offspring in earlier projects and studied plant and animal life cycles in *Sow, Grow and Farm*, children now focus on the human life cycle and sexual reproduction in the spring term project *Human Reproduction and Ageing*. In the summer term project *Properties and Changes of Materials*, children revisit much of their prior learning about materials' properties and learn new properties, including thermal conductivity and solubility. To this point, children have learned much about reversible changes, such as melting and freezing, but now extend their learning to irreversible changes, including chemical changes. In Year 6, the final body system children learn about is the circulatory system and its roles in transporting water, nutrients and gases in the autumn term project *Circulatory System*. Science learning about classification is

delivered through the spring term geography project *Frozen Kingdoms*. In the spring term, children also build on their knowledge about electrical circuits from Year 4, now learning and recording standard symbols for circuit components and investigating the function of components and the effects of voltage on a circuit in the project *Electrical Circuits and Components*. In the summer project *Light Theory*, children recognise that light travels in straight lines from a source or reflector to the eye and explain the shape of shadows. Finally, in the project *Evolution and Inheritance*, children learn about inheritance and understand why offspring are not identical to their parents. They also learn about natural selection and how this can lead to the evolution of a species.