

INTENT

Science Curriculum Year A: Planning, Progress and Long-Term Knowledge Growth

| YEAR 3/4 | Substantive scientific content What you are going to teach | Recurring substantive themes, ideas and language (Key Concepts) Why you are going to teach it | Subject rationale: Supporting pupils' wider science curriculum journey How it links through the school | Basic disciplinary training in science |
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| <p>Autumn Term</p> <p>Rocks, (Soils and Fossils)</p> | <p>Chemistry and Biology:</p> <p>Observe and group different types of rocks based on their appearance</p> <p>Test and compare rocks and soils for simple physical properties.</p> <p>Recognise that soils are made from rocks and organic matter.</p> <p>Describe how fossils are formed when things that are lived are trapped within rock.</p> <p>Explore rocks and soil found in the local area.</p> | <p>This study of 'Rocks, Soils and Fossils' helps to build upon the children's understanding of the key concepts of States of Matter and Evolution and Adaptation. They will develop their skills in Scientific Method through: asking relevant questions, setting up simple tests, recording findings using simple scientific language, drawings and labelled diagrams and use straightforward scientific evidence to answer questions or to support their findings.</p> <p>During this unit, pupils will embed their understanding of key words, such as: <i>rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, peat, sandy/chalk/clay, permeable, impermeable, sedimentary, metamorphic, igneous.</i></p> | <p>This unit is taught alongside the History unit '<u>Stone Age – Iron Age</u>'. Through the study of fossils and how rocks are formed, pupils will develop their understanding of the natural world around them and its passage through time. It builds upon their KS1 knowledge of 'everyday materials', the skills of sorting and grouping and vocabulary such as 'hard', 'soft', 'natural', 'solid', 'soak' and 'waterproof'. Through asking questions, observation and setting up tests, pupils will develop the scientific skills essential for investigations in UKS2. This unit also makes links with geographical studies of the local area, thinking about soil use and local building stone.</p> | <p>Asking questions Such as why are different rocks used for different purposes? Why do some soils dry out more quickly?</p> <p>Observing Identifying, classifying and grouping rocks, looking for similarities and differences.</p> <p>Setting up tests Comparative and fair testing of rocks and different soils</p> |
| <p>Autumn Term</p> <p>Animals Including Humans</p> | <p>Biology</p> <p>Recognise that living things can be grouped in a variety of ways.</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> | <p>This study of Animals Including Humans builds on the key concepts Key concept of Living things and their Habitats and Our world – environmental issues / conservation. It will develop their skills in the scientific method of Identifying, classifying and grouping. It will also raise their awareness of the ever-changing world and the impact of environmental changes on habitats.</p> | <p>This unit builds from pupil's understanding of fossils previously taught this term and also build on KS1 learning of animals including humans and Living Things in their habitats. It paves the way to deepen their learning within UKS2 when gaining knowledge of life processes, life cycles, organisms and classification according to common observable characteristics.</p> | <p>Research using secondary sources Looking at animal pictures, classification keys</p> <p>Observing Identifying, classifying and grouping animals, looking for similarities and differences.</p> |

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| | <p>Recognise that environments can change and that this can sometimes pose dangers to living things. Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> | <p>During this unit, pupils will embed their understanding of key words, such as: <i>Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate herbivore, carnivore, omnivore, producer, predator, prey, food chain</i></p> | <p>This unit supports our school's value of 'Care' and our Eco-School status.</p> | |
| <p>Spring Term</p> <p>Forces and Magnets (Physical processes)</p> | <p>Physics Compare how things move on different surfaces.</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>Observe how magnets attract or repel each other and attract some materials and not others.</p> <p>Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.</p> <p>Describe magnets as having two poles.</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> | <p>The study of 'Magnets and Forces' helps to give the children a greater understanding of movement and the physics involved to control the speed, movement and direction of everything on Earth. It will develop their skills in scientific method of setting up fair tests and comparing data.</p> <p>During this unit, pupils will embed their understanding of key words, such as: <i>Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole</i></p> | <p>This unit builds upon learning from EYFS where the children learn about pushes, pulls, magnetism, floating and sinking. It also links to learning in KS1 around materials and their properties. The knowledge and understanding learnt in this unit is then built upon in UKS2 as they further their learning around forces.</p> | <p>Setting up tests Comparative and fair tests on forces applied to a range of objects.</p> <p>Observing and measuring Careful observations will lead to measuring skills being used</p> <p>Recording data Children will record their accurate observations in a variety of charts.</p> <p>Interpreting and communicating results Children will then be able to talk about their results</p> <p>Evaluating Finally, children will be able to explain and justify reasons for their results.</p> |
| <p>Electricity</p> | <p>Physics Identify common appliances that run on electricity.</p> | <p>This study of 'Electricity' teaches children about understanding the dangers of it and how to use it in a safe way. Children also learn about what a big impact it has on our</p> | <p>This is the first time children learn about electricity in primary school, although it does have links to prior learning in KS1 of 'Everyday Materials' and also LKS2 unit on 'Forces'.</p> | <p>Asking questions Children will be encouraged to think about what it would be like without electricity</p> |

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| | <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p> | <p>lives. They gain a knowledge and understanding of how a simple circuit works and what materials conduct and insulate electricity. It will develop their skills in scientific method of prediction and reasoning about their findings.</p> <p>During this unit, pupils will embed their understanding of key words, such as: <i>Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, components, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol</i></p> | <p>The knowledge and understanding that the children acquire in this unit is then expanded in UKS2 as they continue to explore electricity.</p> <p>This unit also links into 'Eco Schools' as children learn about energy and renewable energy.</p> | <p>and what materials are good to allow electricity to travel through.</p> <p>Making predictions Children will make predictions about how and why a circuit will or will not work. They will also predict which materials allow electricity to travel through them.</p> <p>Setting up tests Having made their predictions, the children will then get to test them out and see whether their predictions were correct and if not, why not.</p> |
| <p>Summer Term Light</p> | <p>Physics Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Recognise that shadows are formed when the light from a light source is blocked by a solid object.</p> <p>Find patterns in the way that the size of shadows change.</p> | <p>This unit is an important unit of study as it looks at how all life depends on the energy provided from the sun. Children make enquiries to find out how light travels and they learn how the eye works. It also makes children aware of the safety aspects of looking after their eyes.</p> <p>During this unit, pupils will embed their understanding of key words, such as: <i>Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous</i></p> | <p>This is the first time children have learnt about light in Primary School. It links to 'Eco Schools' and the growing of plants and the changing climate. Plus there are links to electricity taught in LKS2 comparing natural light to a light source from alternative energies such as electricity.</p> <p>In UKS2 children further develop their understanding of light.</p> | <p>Observation over time Children will set up an activity to see how shadows are formed and how the distance of the light source from the object changes the shadow.</p> <p>Pattern seeking Children will look to identify patterns in their shadow observations.</p> |

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| <p>Sound</p> | <p>Biology and Physics: Identify how sounds are made, associating some of them with something vibrating.</p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p> | <p>This unit gives children an understanding about one of their senses. They learn about how the ear works and explore how sound travels. Throughout the unit children will explore and identify the way sound is made through vibration and find out how the pitch and volume of sounds can be changed in a variety of ways. It also allows them to compare how sound travels in relation to light. They can identify similarities and differences.</p> <p>During this unit, pupils will embed their understanding of key words, such as: <i>Sound, source, vibrate, vibration, travel, pitch(high/low), volume, faint, loud, insulation</i></p> | <p>This unit follows on well from learning about light in LKS2 as it is linked to another one of the senses. This is the first time children will encounter sound in Primary School. There are many links to music and children will explore sound through instruments.</p> | <p>Setting up tests Children will have the chance to experiment with a variety of instruments. They will be able to watch and feel vibrations and sound travelling.</p> <p>Research using secondary resources Children will be able to investigate further by reading information books about sound.</p> |
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