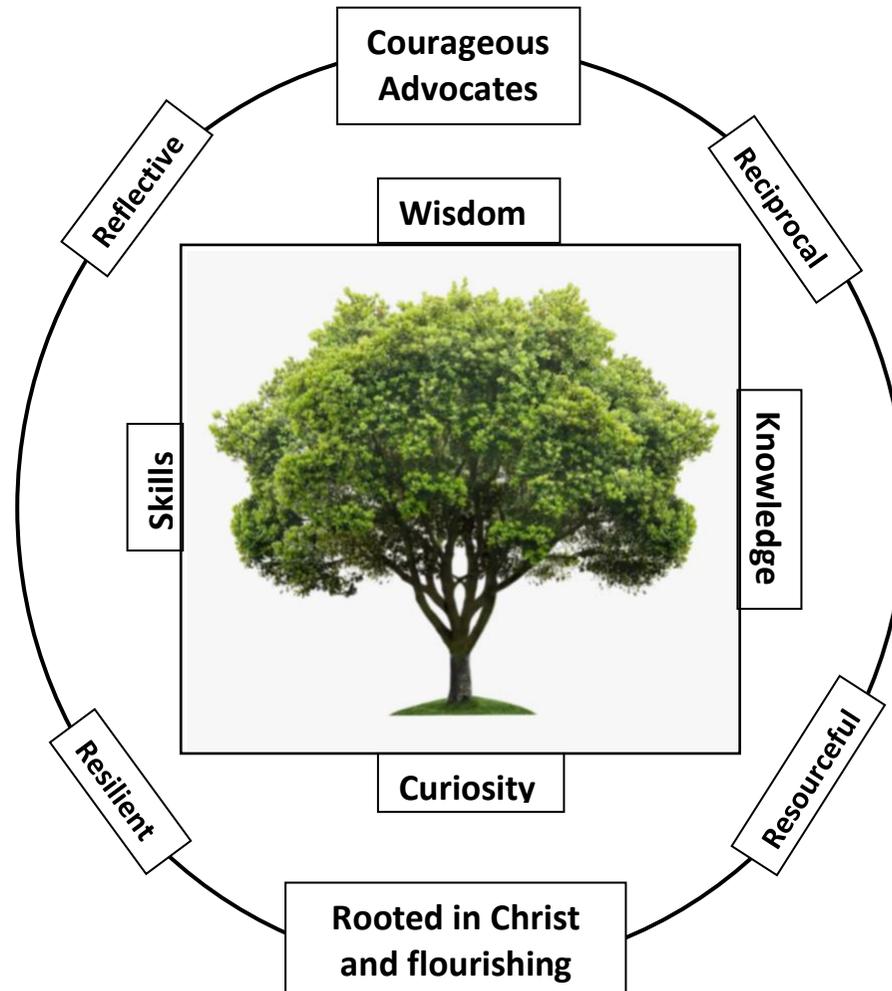


The Whittle-le-Woods Curriculum

I have come so they may have life and have it to the full. John 10:10

Science



Science IntentOur Science curriculum at Whittle-le-Woods aims to:

The science curriculum at Whittle-le-Woods CE Primary School aims to assist children in acquiring and developing the skills and knowledge they need to become scientists and engineers.

In line with the 2014 National Curriculum, our science curriculum provides opportunities for children to:

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;

become equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. We aim to help children understand the relevance and real-life significance of science by teaching pupils about relevant scientists and scientific concepts from past and present. We foster curiosity that leads children to ask questions about the world around them and equip them with the skills to investigate and find answers to their questions.

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
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| Nursery | Humans | Materials, including changing materials | -Electricity -Light | -Forces -Sound | Plants | Animals, excluding humans |
| Reception | -Humans -Seasonal changes <i>revisited and explored throughout the year</i> | -Light -Sound | -Forces -Earth and Space | Living things and their habitats | Animals, excluding humans | Materials, including changing materials |
| Year 1 | Everyday materials | Seasonal Change | Everyday Materials (plastics focus) | Animals including humans | -Plants -Seasonal Change | -Plants -Seasonal Change |
| Year 2 | Everyday materials | Everyday materials | Animals including humans | Animals including humans | Living things and their habitats | Plants |
| Year 3 | Forces and magnets | Animals Health/ Movement and Growth | Rocks and fossils | Rocks and fossils | Plants | Light |

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| Year 4 | Animals including humans | Electricity | Sound | States of matter | Living things and their habitats | Living things and their habitats |
| Year 5 | Materials | Earth and space | Forces | Forces | Animals and humans | Living Things and their Habitats |
| Year 6 | Electricity and light | Electricity and light | Evolution | Evolution | Living Things & their habitats | Animals including humans |
| Working scientifically runs throughout each unit in each year group | | | | | | |

| <u>Nursery</u> | | | | | |
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| Term | Unit Name | Curriculum Content Skills and knowledge | Prior Learning | Future Learning | Key Vocabulary |
| Autumn 1 | <i>All About Me!</i> Humans | <p>Humans</p> <ul style="list-style-type: none"> -Learn about the life cycles of humans -Learn about how to take care of themselves - Learn about their senses <p>Understanding the World</p> <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Begin to make sense of their own life-story and family's history. • Understand the key features of the life cycle of a plant and an animal. <p>Personal, Social and Emotional Development</p> <ul style="list-style-type: none"> • Be increasingly independent in meeting their own care needs, e.g. brushing teeth, using the toilet, washing and drying their hands thoroughly. • Make healthy choices about food, drink, activity and toothbrushing. <p>Expressive Arts and Design</p> | <ul style="list-style-type: none"> • Explore natural materials, indoors and outside. (Birth to three) • Make connections between the features of their family and other families. • (Birth to three) • Notice differences between people. (Birth to three) | <ul style="list-style-type: none"> • Talk about members of their immediate family and community. (Reception) • Name and describe people who are familiar to them. (Reception) • Describe what they see, hear and feel whilst outside. (Reception) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 – Animals, including humans) | grow, change, baby, toddler, child, adult, old person, smell, taste, touch, feel, hear, see, blind, deaf |

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| | | <ul style="list-style-type: none"> • Create closed shapes with continuous lines and begin to use these shapes to represent objects. • Draw with increasing complexity and detail, such as representing a face with a circle and including details. <p>Encouraging scientific enquiry <i>Classification</i> Sort images of humans according to their age. Sort using different senses. Which do you like/not like? <i>Observing over time</i> How does a baby change over time? <i>Research using secondary sources</i> Find out about the human life cycle from an expectant mother, a parent with a baby and an elderly person.</p> | | | |
| Autumn 2 | <i>Marvellous Us!</i> Materials, including changing materials | <p><u>Materials, including changing materials</u> -Explore a range of materials -Shape and join materials -Combine and mix ingredients -Change materials by heating and cooling, including cooking</p> <p>Understanding the World</p> <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about the differences between materials and changes they notice. <p>Expressive Arts and Design</p> <ul style="list-style-type: none"> • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Join different materials and explore different textures. | <ul style="list-style-type: none"> • Explore materials with different properties. (Birth to three) • Explore natural materials, indoors and outside. (Birth to three) | <ul style="list-style-type: none"> • Explore the natural world around them. (Reception) • Describe what they see, hear and feel whilst outside. (Reception) • Distinguish between an object and the material from which it is made. (Y1– Everyday materials) • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 – Everyday materials) • Describe the simple physical properties of a variety of everyday materials. | mix, stir, cook, hot, oven, microwave, change, burn, melt, hard, runny, set, freeze, freezer, cold, blended, hard, soft, bendy, stiff, wobbly, wood, plastic, paper, card, fabric |

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| | | <p>Encouraging scientific enquiry <i>Classification</i> Sort materials using simple properties. <i>Observing over time</i> How does the cake mixture change? How does chocolate change when heated? How does fruit juice change when put in the freezer? How does fruit change when blended?</p> | | <p>(Y1 – Everyday materials)</p> <ul style="list-style-type: none"> Compare and group together a variety of everyday materials based on their simple physical properties. (Y1 – Everyday materials) | |
| <p>Spring 1</p> | <p>Cycle A <i>Keeping Safe</i> Cycle B <i>Pets/Jungle animals</i></p> <p>Electricity</p> <p>Light</p> | <p>Electricity -Identify electrical devices - Use battery-powered devices</p> <p>Understanding the World • Explore how things work</p> <p>Encouraging scientific enquiry <i>Classification</i> Identify objects that use electricity to work. Identify devices that use batteries and/or mains electricity.</p> | <ul style="list-style-type: none"> Repeat actions that have an effect. (Birth to three) | <ul style="list-style-type: none"> Describe what they see, hear and feel whilst outside. (Reception) Identify common appliances that run on electricity. (Y4 - Electricity) | <p>battery, plug, socket, electricity, wire, sound, light, move</p> |
| | | <p>Light - Explore light sources - Shine light on or through different materials</p> <p>Understanding the World <ul style="list-style-type: none"> Explore how things work. Talk about the differences in materials and changes they notice. </p> <p>Encouraging scientific enquiry Compare how bright different light sources are. Compare how reflective different materials are. <i>Classification</i> Which materials are reflective to use for an outside mobile? Which fabrics are reflective to help us be seen at night? Which materials block light to help us protect ourselves from the Sun</p> | <ul style="list-style-type: none"> Repeat actions that have an effect. (Birth to three) | <ul style="list-style-type: none"> Recognise that they need light in order to see things and that dark is the absence of light. (Y3 – Light) Notice that light is reflected from surfaces. (Y3 – Light) Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 – Light) Recognise that shadows are formed when the light from a light source is blocked by an | <p>light, torch, bulb, lamp, spotlight, shiny, bright, brighter, brightest, Sun, shine, glow, mirror</p> |

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| | | | | <p>opaque object. (Y3 – Light)</p> <ul style="list-style-type: none"> Find patterns in the way that the size of shadows change. (Y3 – Light) | |
| <p>Spring 2</p> | <p>Cycle A <i>On the Farm</i></p> <p>Cycle B <i>Transport/Journeys</i></p> <p>Forces</p> <p>Sound</p> | <p>Forces</p> <p>-Feel forces -Explore how things work -Explore how objects/materials are affected by forces</p> <p>Understanding the World</p> <ul style="list-style-type: none"> Explore how things work. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice. <p>Expressive Arts and Design</p> <ul style="list-style-type: none"> Join different materials and explore different textures. <p>Encouraging scientific enquiry</p> <p>Compare the path of different wind-up toys. Compare how far different wind-up toys move. Compare the speed and direction of gears. Compare how easy or hard it is to lift an object with or without a pulley. Compare how easy it is to ride a scooter or bike on different surfaces. <i>Classification</i> Sort objects according to whether they float or sink.</p> | <ul style="list-style-type: none"> Repeat actions that have an effect. (Birth to three) | <ul style="list-style-type: none"> Explore the natural world around them. (Reception) Describe what they see, hear and feel whilst outside. (Reception) | <p>object, float, sink, water, up, down, top, bottom, push, pull, magnet, spring, squash, bend, twist, stretch, turn, spin, smooth, rough, fast, slow</p> |

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| | | Sort objects/materials according to whether their shape can be changed. | | | |
| | | <p>Sound -Listen to sounds -Make sounds</p> <p>Understanding the World</p> <ul style="list-style-type: none"> • Explore how things work. <p>Expressive Arts and Design</p> <ul style="list-style-type: none"> • Use drawing to represent ideas like movement or loud noises. • Listen with increased attention to sounds. • Respond to what they have heard, expressing their thoughts and feelings. • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Join different materials and explore different textures. <p>Encouraging scientific enquiry</p> <ul style="list-style-type: none"> • Compare the sound produced by shakers made with different materials. • Compare the sound produced by different drums. • Compare the sound produced by different elastic bands on their 'guitar'. | <ul style="list-style-type: none"> • Repeat actions that have an effect. (Birth to three) | <ul style="list-style-type: none"> • Explore the natural world around them. (Reception) • Describe what they see, hear and feel whilst outside. (Reception) • Identify how sounds are made, associating some of them with something vibrating. (Y4 – Sound) • Recognise that vibrations from sounds travel through a medium to the ear. (Y4 – Sound) • Find patterns between the pitch of a sound and the features of the object that produced it. (Y4 – Sound) • Find patterns between the volume of a sound and the strength of the vibrations that produced it. (Y4 – Sound) • Recognise that sounds get fainter as the distance from the sound source increases. (Y4 – Sound) | <p>sound, noise, loud, quiet, high, low, music, bang, blow, pluck, soft, hard, fast, slow, names of instruments</p> |

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| <p>Summer 1</p> | <p>Cycle A <i>Growing and Lifecycles</i></p> <p>Cycle B <i>Dinosaurs</i></p> <p>Plants</p> | <p>Plants -Grow plants</p> <p>Understanding the World</p> <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. <p>Mathematics</p> <ul style="list-style-type: none"> • Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs' etc. <p>Expressive Arts and Design</p> <ul style="list-style-type: none"> • Create closed shapes with continuous lines and begin to use these shapes to represent objects. • Draw with increasing complexity and detail, such as representing a face with a circle and including details. <p>Encouraging scientific enquiry <i>Comparative testing</i> Compare how quickly different seeds/bulbs germinate. Compare how different vegetable tops grow. <i>Observing over time</i> How does a plant change as it grows? What happens to fruit, vegetables and flowers when left over time? <i>Researching using secondary sources</i> Look at seed and bulb packets to learn how to plant and care for them.</p> | <ul style="list-style-type: none"> • Explore natural materials, indoors and outside. (Birth to three) | <ul style="list-style-type: none"> • Observe and describe how seeds and bulbs grow into mature plants. (Y2 – Plants) • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Y2 – Plants) • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 – Plants) | <p>plant, leaf, stem, branch, root, bark, flower, petal, seed, berry, fruit, vegetable, bulb, plant, hole, dig, water, weed, grow, shoot, die, dead, soil, names of plants they grow</p> |
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| Summer 2 | <p>Cycle A <i>Minibeasts</i></p> <p>Cycle B <i>Pirates and Under the Sea</i></p> <p>Animals, excluding humans</p> | <p>Animals, excluding humans</p> <p>-Learn about the life cycles of animals -Compare adult animals to their babies -Observe how baby animals change over time</p> <p>Understanding the World</p> <ul style="list-style-type: none"> • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. <p>Mathematics</p> <ul style="list-style-type: none"> • Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs' etc. <p>Expressive Arts and Design</p> <ul style="list-style-type: none"> • Create closed shapes with continuous lines and begin to use these shapes to represent objects. • Draw with increasing complexity and detail, such as representing a face with a circle and including details. <p>Encouraging scientific enquiry <i>Observing over time</i> How does the ... change over time? Researching using secondary sources Find out more about the life cycles of the animals observed. <i>Classification</i> <i>Match animals and their young.</i></p> | <ul style="list-style-type: none"> • Explore natural materials, indoors and outside. (Birth to three) | <ul style="list-style-type: none"> • Recognise some environments that are different to the one in which they live. (Reception) • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 – Animals, including humans) • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 – Animals, including humans) • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans) | <p>egg, chick, bird, caterpillar, cocoon, chrysalis, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young, fur, feathers, scales, tail, wings, beak, claws, paws, hooves, swim, walk, run, jump, jump, fly, patterns, spots, stripes</p> |
| | Reception – EYFS | | | | |
| Term | Unit Name | Curriculum Content Skills and knowledge | Prior Learning | Future learning | Key Vocabulary |

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| <p>Autumn 1</p> | <p>All About Me!</p> <p>Humans</p> <p>Seasonal changes – revisited throughout the year</p> | <p>Humans</p> <p>-Talk about members of their immediate family and community.</p> <p>-Learn about how to take care of themselves</p> <p>Understanding the World</p> <ul style="list-style-type: none"> • Talk about members of their immediate family and community. • Name and describe people who are familiar to them. <p>Personal, Social and Emotional Development</p> <ul style="list-style-type: none"> • See themselves as a valuable individual. • Manage their own needs. <p>Physical Development</p> <ul style="list-style-type: none"> • Know and talk about the different factors that support their overall health and wellbeing: regular physical activity; healthy eating; • toothbrushing; sensible amounts of ‘screen time’; having a good sleep routine; being a safe pedestrian. • Further develop the skills they need to manage the school day successfully: lining up and queuing; mealtimes; personal hygiene. <p>Mathematics</p> <ul style="list-style-type: none"> • Compare length, weight and capacity. <p>Encouraging scientific enquiry</p> <p><i>Classification</i></p> <p>Sort images of people according to their characteristics. <i>Researching using secondary sources</i></p> <p><i>Find out information from visitors (dentist, nurse etc.).</i></p> <p><i>Pattern seeking</i></p> <p><i>Are taller children faster?</i></p> <p><i>Are taller children stronger?</i></p> | <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. (Nursery) • Begin to make sense of their own life-story and family’s history. (Nursery) | <ul style="list-style-type: none"> • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 – Animals, including humans) | <p>hair (black, brown, dark, light, blonde, ginger, grey, white, long, short, straight, curly), eyes (blue, brown, green, grey), skin (black, brown, white), big/tall, small/short, bigger/smaller, baby, toddler, child, adult, old person, old, young, brother, sister, mother, father, aunt, uncle, grandmother, grandfather, cousin, friend, family, boy, girl, man, woman</p> |
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| | | <p>Seasonal Changes Revisited and explored throughout the year - Play and explore outside in all seasons and in different weather - Observe living things throughout the year</p> <p>Understanding the World</p> <ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Understand the effect of changing seasons on the natural world around them. <p>Encouraging scientific enquiry Which clothes are suitable for each season? <i>Observing over time</i> How does a puddle change over time? How does a snowman change as it melts? How does the natural world change with the seasons? <i>Researching using secondary sources</i> Find out about how animals behave in different seasons. Find out about the weather and seasons.</p> | <ul style="list-style-type: none"> • Understand the key features of the life cycle of a plant and an animal. (Nursery) • Begin to understand the need to respect and care for the natural environment and all living things. (Nursery) • Understand the key features of the life cycle of a plant and an animal. (Nursery – Plants & Animals, excluding humans) | <ul style="list-style-type: none"> • Observe changes across the four seasons. (Y1 – Seasonal changes) • Observe and describe weather associated with the seasons and how day length varies. (Y1 – Seasonal changes) | spring, summer, autumn, winter, seasons, sunny, cloudy, hot, warm, cold, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, animals, young, plants, flowers |
| Autumn 2 | Let's Celebrate! Light Sound | <p>Light -Explore shadows -Explore rainbows</p> <p>Understanding the World</p> <ul style="list-style-type: none"> • Describe what they see, hear and feel whilst outside. <p>Personal, Social and Emotional Development</p> <ul style="list-style-type: none"> • Manage their own needs. <p>Encouraging scientific enquiry <i>Comparative testing</i> Compare the shape of shadows made by different objects. <i>Classification</i> <i>Which objects/materials make dark shadows?</i> <i>Observing over time</i></p> | <ul style="list-style-type: none"> • Explore how things work. (Nursery) • Talk about the differences in materials and changes they notice. (Nursery) | <ul style="list-style-type: none"> • Recognise that they need light in order to see things and that dark is the absence of light. (Y3 – Light) • Notice that light is reflected from surfaces. (Y3 – Light) • Recognise that light from the Sun can be dangerous and that there are ways to protect their eyes. (Y3 – Light) • Recognise that shadows are formed when the light from | Sun, sunny, light, shadow, clouds, torch, see-through, non-see- through |

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| | <p>How do the Sun and shade change during the day? How does a toy's shadow change during the day? <i>Researching using secondary sources</i> Find out about shadows. Find out about rainbows.</p> | | <p>a light source is blocked by an opaque object. (Y3 – Light)</p> <ul style="list-style-type: none"> Find patterns in the way that the size of shadows change. (Y3 – Light) | |
| | <p>Sound -Listen to sounds outside and identify the source -Make sounds</p> <p>Understanding the World</p> <ul style="list-style-type: none"> Describe what they see, hear and feel whilst outside. <p>Encouraging scientific enquiry <i>Comparative testing</i> How does rain sound different when it lands in different containers? <i>Observing over time</i> Listen to the siren of an emergency vehicle as it approaches and moves away.</p> | <ul style="list-style-type: none"> Explore how things work. (Nursery) Talk about the differences in materials and changes they notice. (Nursery) | <ul style="list-style-type: none"> Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 – Animals, including humans) Identify how sounds are made, associating some of them with something vibrating. (Y4 – Sound) Recognise that vibrations from sounds travel through a medium to the ear. (Y4 – Sound) Find patterns between the pitch of a sound and features of the object that produced it. (Y4 – Sound) Find patterns between the volume of a sound and the strength of the vibrations that produced it. (Y4 – Sound) Recognise that sounds get fainter as | <p>sound, noise, listen, hear, music, voices, bird song, traffic, sirens, thunder, high, low, loud, quiet, soft, volume, crackle, thunder, hum, buzz, roar</p> |

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| | | | | the distance from the sound source increases. (Y4 – Sound) | |
| Spring 1 | <p>People who Help Us – The Real Superheroes!</p> <p>Forces</p> <p>Earth and Space</p> | <p>Forces -Explore how to change how things work - Explore how the wind can move objects - Explore how objects move in water</p> <p>Understanding the World • Explore the natural world around them. • Describe what they see, hear and feel whilst outside.</p> <p>Encouraging scientific enquiry <i>Comparative testing</i> How many cubes/small plastic animals can fit in different boats? Compare how cars move down ramps/gutters. Compare how wheels turn when sand or water is poured through. Compare how objects fall. Compare how objects fall with and without parachutes. Compare how different balls bounce. Compare how things move when blown. Compare how a marble moves through different liquids. Compare how different paper aeroplanes fly.</p> | <ul style="list-style-type: none"> • Explore how things work. (Nursery) • Explore and talk about different forces they can feel. (Nursery) • Talk about the differences between materials and changes they notice (Nursery) | <ul style="list-style-type: none"> • Compare how things move on different surfaces. (Y3 – Forces and magnets) • Observe how magnets attract or repel each other and attract some materials and not others. (Y3 – Forces and magnets) • Compare and group together a variety of everyday materials based on whether they are attracted to a magnet and identify some magnetic materials. (Y3 – Forces and magnets) • Describe magnets as having two poles. (Y3 – Forces and magnets) • Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3 – Forces and magnets) • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the | <p>float, sink, up, down, top, bottom, surface, move, roll, drop, fly, turn, spin, fall, fast, slow, faster, slower, fastest, slowest, further, furthest, wind, air, water, blow, bounce</p> |

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| | | | | <p>Earth and the falling object. (Y5 –Forces)</p> <ul style="list-style-type: none"> Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. (Y5 – Forces) | |
| | | <p><u>Earth and Space</u> -Learn about the Earth, Sun, Moon, planets and stars - Learn about space travel</p> <p>Understanding the World</p> <ul style="list-style-type: none"> Explore the natural world around them. Describe what they see, hear and feel whilst outside. <p>Encouraging scientific enquiry <i>Comparative testing</i> Make and testing air-propelled rockets to find out which is the ‘best’. <i>Pattern seeking</i> <i>Find simple patterns in how light levels and temperature change with the movement, or obscuring of, the Sun.</i> <i>Research using secondary sources</i> Find out about the Solar System, stars and space travel.</p> | <ul style="list-style-type: none"> Explore how things work. (Nursery) Explore and talk about different forces they can feel. (Nursery) Talk about the differences between materials and changes they notice (Nursery) Explore and respond to different natural phenomena in their setting and on trips. (Birth to three) | <ul style="list-style-type: none"> Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. (Y5 – Earth and space) Describe the movement of the Moon relative to the Earth. (Y5 – Earth and space) Describe the Sun, Earth and Moon as approximately spherical bodies. (Y5 – Earth and space) Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the Sun across the sky. (Y5 – Earth and space) | <p>Sun, Moon, Earth, star, planet, sky, day, night, space, round, bounce, float</p> |

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| <p>Spring 2</p> | <p>Growing and changing!</p> <p>Living things and their habitats</p> | <p><u>Living things and their habitats</u> -Explore the plants in the surrounding natural environment -Explore the animals in the surrounding natural environment -Explore plants and animals in a contrasting natural environment</p> <p>Understanding the World</p> <ul style="list-style-type: none"> • Draw information from a simple map. • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Recognise some environments that are different to the one in which they live. <p>Encouraging scientific enquiry <i>Classification</i> Name and describe plants and animals they find in the school grounds. <i>Pattern seeking</i> Look for minibeasts in different areas of the school grounds. Look for plants in different areas of the school grounds.</p> | <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Begin to understand the need to respect and care for the natural environment and all living things. | <ul style="list-style-type: none"> • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 – Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 – Plants) • Explore and compare the differences between things that are living, dead, and things that have never been alive. (Y2 – Living things in their habitat) • Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 – Living things in their habitat) | <p>plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment e.g. beach, forest</p> |
| <p>Summer 1</p> | <p>Amazing Animals!</p> <p>Animals, excluding humans</p> | <p><u>Animals, excluding humans</u> -Name and describe animals that live in different habitats. -Describe different habitats</p> <p>Understanding the World</p> <ul style="list-style-type: none"> • Recognise some environments that are different to the one in which they live. <p>Physical Development</p> <ul style="list-style-type: none"> • Revise and refine the fundamental movement skills they have already acquired: rolling; | <ul style="list-style-type: none"> • Understand the key features of the life cycle of a plant and an animal. (Nursery) • Begin to understand the need to respect and care for the natural environment and | <ul style="list-style-type: none"> • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 – Animals, including humans) • Identify and name a variety of common animals that are | <p>names of animals, live, on land, in water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice</p> |

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| | | <p>crawling; walking; jumping; running; hopping; skipping; climbing.</p> <p>Encouraging scientific enquiry</p> <p><i>Classification</i> Sort animals according to where they live.</p> <p><i>Researching using secondary sources</i> Learn how animals from a different habitat are cared for.</p> <p>Learn about animals in a different habitat.</p> | <p>all living things. (Nursery)</p> | <p>carnivores, herbivores and omnivores. (Y1 – Animals, including humans)</p> <ul style="list-style-type: none"> Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans) | |
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| Summer 2 | Fantasy! | <p>Materials, including changing materials</p> <p>-Explore a range of materials, including natural materials</p> <p>-Make objects from different materials, including natural materials</p> <p>-Observe, measure and record how materials change when heated and cooled</p> <p>-Compare how materials change over time and in different conditions</p> <p>Understanding the World</p> <ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. <p>Encouraging scientific enquiry</p> <p><i>Comparative testing</i></p> <p>How does popcorn made in a microwave compare to popcorn made on a fire?</p> <p>How quickly do ice cubes melt in different areas of the playground?</p> <p>How are pizza bases different when made with different flours?</p> <p>How does a loaf cook differently in different tins?</p> <p>How do cupcakes cook if they have different amounts of mixture? <i>Observing over time</i></p> <p>How does the block of ice change over time?</p> <p>How does cake mixture/bread dough change as it is cooked?</p> | <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. (Nursery) • Explore collections of materials with similar and/or different properties. (Nursery) • Talk about the differences between materials and changes they notice. (Nursery) | <ul style="list-style-type: none"> • Distinguish between an object and the material from which it is made. (Y1 – Everyday materials) • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 – Everyday materials) • Describe the simple physical properties of a variety of everyday materials. (Y1 – Everyday materials) • Compare and group together a variety of everyday materials based on their simple physical properties. (Y1 – Everyday materials) | <p>ice, water, frozen, icicle, snow, melt, wet, cold, slippery, smooth, big, bigger, biggest, smaller, smaller, smallest, hard, soft, bendy, rigid, wood, plastic, paper, card, metal, strong, weak, hot, apply heat, waterproof, soggy, not waterproof, best, change, change back</p> <p>Supplementary vocabulary</p> <p>solid, liquid, gas, most suited</p> |
| | Materials, including changing materials | | | | |

Year 1

| Term | Unit Name | Skills | Knowledge | Key Vocabulary to be taught | Visitor/trips links to other Year groups |
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| <p>Autumn 1</p> | <p>Everyday Materials</p> | <p>Ask simple questions and recognise that they can be answered in different ways.</p> <p>Observe closely, using simple equipment.</p> <p>Perform simple tests</p> <p>Investigate why ice melts.</p> <p>Investigate materials that are waterproof using their observations and ideas to suggest answers to questions.</p> | <p>Understand that objects need to be distinguished from their materials.</p> <p>Describe materials using scientific vocabulary.</p> <p>Understand that objects are made from materials with properties and begin to describe those properties.</p> <p>Identify, name & classify a variety of everyday materials.</p> <p>Compare and group together a variety of everyday materials on the basis of their properties.</p> <p>Sort objects into categories</p> <p>Understand that water is a material and ice is water</p> | <p>Compare, observe, changes over time, explore, patterns, relationships, classify.</p> <p>Measurements, describe, data, record, tables, charts.</p> <p>Material, wood, glass, plastic, metal, water, rock, brick, paper, fabric, physical properties.</p> | <p>Links to Lego Workshop</p> <p>Link to materials EYFS.</p> |
| <p>Autumn 2</p> | <p>Seasonal Change</p> | <p>Ask simple questions and recognise that they can be answered in different ways.</p> <p>Observe changes across the four seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies.</p> | <p>Describe weather associated with the seasons and how day length varies.</p> <p>Understand how the observed weather is typical (or not) of the weather for the season.</p> <p>Understand that day length varies according to the season.</p> <p>Understand it is not safe to look directly at the sun, even when wearing dark glasses.</p> | <p>Weather, seasons, day length</p> | <p>The opportunity to use the school grounds and investigate seasonal changes (e.g. to trees, plants that grow, etc).</p> <p>Create artwork based on seasonal observations.</p> <p>Link to EYFS Spring 2.</p> |

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| | | Gather and record data to help in answering questions | | | |
| Spring 1 | Everyday Materials (plastics focus) | <p>Ask simple questions and recognise that they can be answered in different ways.</p> <p>Observe closely, using simple equipment.</p> <p>Perform simple tests</p> <p>Gather and record data to help in answering questions.</p> <p>Investigate which wooden and plastic objects float or sink</p> <p>Investigate if all plastics are waterproof.</p> | <p>Search for and find different wooden and plastic objects around school.</p> <p>Sort objects into plastic and not.</p> <p>Identify and classify using observations and ideas to suggest answers to questions.</p> <p>Distinguish between an object and the material from which it is made.</p> <p>Describe the simple physical properties of a variety of everyday materials.</p> | <p>Compare, observe changes over time, explore, patterns, relationships, classify.</p> <p>Measurements, describe, data, record, tables, charts.</p> <p>Material, wood, glass, plastic, metal, water, rock, brick, paper, fabric, physical properties.</p> | <p>Museum trip to investigate the materials used to make toys (old and new).</p> <p>Create a fact sheet about plastics.</p> <p>Link to EYFS and Autumn 1, Y1</p> |
| Spring 2 | Animals Including Humans | <p>Ask simple questions and recognise that they can be answered in different ways.</p> <p>Use their observations and ideas to suggest answers to questions.</p> <p>Collect measurements about their hands and</p> | <p>Recognise how we have changed since we were a baby.</p> <p>Make comparisons between their own and their partner's features.</p> <p>Understand our senses.</p> <p>Understand that we use our senses to classify things into groups.</p> | <p>A variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>Carnivore, herbivores, omnivores.</p> <p>Pets. Senses.</p> | <p>Create a sensory board/ book.</p> |

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| | | <p>feet and record the information clearly.</p> <p>Investigate our sense of hearing.</p> | <p>Understand that we have different ways of exploring the world and that often our senses work together to help us do that.</p> <p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p> | <p>Main body parts, including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth</p> | |
| <p>Summer 1 & Summer 2</p> | <p>Plants and Seasonal Change</p> | <p>Ask simple questions and recognise that they can be answered in different ways</p> <p>Predict the outcomes of the bean and seeds and set up a diary to observe the growth over time.</p> <p>Observe closely, using simple equipment.</p> <p>Keep records of how plants change over time (including buds growing</p> | <p>Become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem).</p> <p>Understand the basic structure of a flower and the basic function of the main parts.</p> <p>Identify a variety of trees and discuss their similarities and differences. Take bark and leaf rubbings using paper and wax crayons.</p> <p>Identify and name a variety of 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 (seasonal changes).</p> | <p>Names of common wild and garden plants, including evergreen and deciduous trees. leaves, flowers (blossom), petals, fruit, roots, bud, bulb, seed, trunk, branches, stem. Identify, group,</p> | <p>Field trip (E.g. garden centre or Bring Your Wellies)</p> <p>Use of extensive school grounds.</p> <p>Development of bedding boxes in school grounds.</p> <p>Provide children with the opportunity to plant beans and seeds.</p> |

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| | | and leaves falling off trees). Observe and examine fruits. (Brief introduction ready for Y2) explore and compare the differences between things that are living, dead, and things that have never been alive. | | describe, diagrams, observe. Names of equipment, such as 'magnifying glass'. | Take bark and leaf rubbings using paper and wax crayons. |
| Vocabulary to be learnt by end Y1 | Compare, observe, changes over time, explore, patterns, relationships, classify, measurements, describe, data, record, tables, charts, materials, properties, weather, seasons, carnivore, herbivores, omnivores, senses, deciduous, evergreen, leaves, flowers (blossom), petals, fruit, roots, bud, bulb, seed, trunk, branches, stem. | | | | |

Year 2

| Term | Unit Name | Skills | Knowledge | Key Vocabulary | Visitor/trips links to other Year groups |
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| Autumn 1 | Everyday materials | Explore the properties of different kitchen paper and disposable cloths. Make predictions about which would be best at mopping up a spillage of water. | Understand the different reasons why people may need to use absorbent materials. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses | materials suitability properties squash bend twist stretch | Link to materials Y1 |

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| | | <p>Investigate which papers are the most absorbent by choosing a method and working in a group.</p> <p>Investigate and discover how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p>Devise an investigation to test a variety of materials for their absorbent property.</p> <p>Make predictions and to observe and record results.</p> | <p>Consider what buildings are made of, and why.</p> <p>Discuss waterproof materials and their uses. Discuss findings and suggest explanations. Identify and discuss the difference between natural and manmade objects.</p> <p>Learn about what happens when a material is heated up and why it changes shape.</p> <p>Identify uses of different everyday materials.</p> <p>Compare the suitability of different everyday materials.</p> <p>Explain how the shapes of objects made from some materials can be changed.</p> | | |
| <p>Spring 1 and Spring 2</p> | <p>Animals including humans</p> | <p>Pupils should be taught to: notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> | <p>To notice that animals have offspring which grow into adults.</p> <p>To learn how humans grow and change. To investigate whether children get faster as they get older.</p> <p>To find out about and describe the basic needs of animals for survival. To describe the importance of eating the right amounts of different types of food for humans.</p> <p>To describe the importance of exercise for humans.</p> | <p>adult develop life cycle offspring reproduce young live young dehydrate diet disease energy exercise germs heart rate hygiene</p> | <p>Opportunity to invite pregnant visitor/ recently given birth.</p> <p>Link to animals including humans Y1 Spring 2.</p> |

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| | | | To describe the importance of hygiene for humans. | nutrition pulse | |
| Summer 1 | Living things and their habitats | <p>Explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p> <p>Ask simple questions and recognise that they can be answered in different ways.</p> <p>Observe closely, using simple equipment.</p> <p>Identify and classify.</p> <p>Use observations and ideas to suggest answers to questions.</p> | <p>Compare the differences between things that are living, dead and have never been alive.</p> <p>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>Identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>Map a habitat and identify what is in it.</p> <p>Identify animals in their habitats.</p> <p>Describe a habitat and identify animals that live in it.</p> <p>Identify how an animal is suited to its habitat.</p> <p>Explain how living things in a habitat depend on each other.</p> <p>Use a food chain to show how animals get their food.</p> | <p>life processes</p> <p>living</p> <p>dead</p> <p>never living</p> <p>food chain</p> <p>food sources</p> <p>habitat</p> <p>microhabitat</p> <p>depend</p> <p>survive</p> | <p>Explore the school grounds/ local area.</p> <p>Link to Summer Y1 – plants.</p> |

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| Summer 2 | Plants | <p>Plants seeds and bulbs and suggest how to care for them.</p> <p>Use observations to explain what plants need.</p> <p>Observe and describe the growth of different plants.</p> <p>Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p> | <p>Understand how plants disperse their seeds.</p> <p>Look closely at plants and trees and record what can be seen.</p> <p>Explain the life cycle of the plants.</p> <p>Suggest a way we can tell plants are living things.</p> <p>Describe what plants need to grow and stay healthy.</p> | <p>germination</p> <p>sprout</p> <p>shoot</p> <p>seed dispersal</p> <p>sunlight</p> <p>water</p> <p>temperature</p> <p>nutrition</p> | <p>Link to Bring your Wellies trip.</p> <p>Links with geography unit – plants in extreme environments.</p> <p>Link to Summer Y1.</p> |
| Vocabulary to be learnt by end Y2 | Materials, suitability, properties, squash, bend, twist, stretch, adult, develop, life cycle, offspring, reproduce, young, live young, dehydrate, diet, disease, energy, exercise, germs, heart rate, hygiene, nutrition, pulse, life processes, living, dead, never living, food chain, food sources, habitat, microhabitat, depend, survive, germination, sprout, shoot, seed dispersal, sunlight, water, temperature, nutrition | | | | |

Year 3

| Term | Unit Name | Skills | Knowledge | Key vocabulary to be taught | Visitor/trips links to other Year groups |
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| Autumn 1 | Forces and magnets | Ask questions and answer them by planning and carrying out a fair test. | <p>Understand that forces are pushes and pulls which can make things move, stop or change shape.</p> <p>Set up and conduct a comparative fair test, record measurements and discuss results.</p> | <p>Magnetic forces, attract, repel, magnetic materials, poles, direct contact, (Types</p> | Link to Y2 everyday materials. |

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| | | <p>Explore forces and discover that gravity and magnetism can act without contact.</p> <p>Explore how magnets behave towards each other and form theories to explain it.</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> | <p>Understand that magnets have 2 poles and that opposite poles attract and like poles repel.</p> <p>compare how things move on different surfaces</p> <p>Understand that some forces need contact between two objects, but magnetic forces can act at a distance.</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>of magnet, e.g. bar, ring, button, horseshoe), strength</p> | |
| <p>Autumn 2</p> | <p>Animals Health/ Movement and Growth</p> | <p>Investigate whether people who do more sport have stronger muscles.</p> <p>Gather, record, classify and present data in a variety of ways to help answer questions.</p> <p>Record findings using simple scientific language, bar charts, and tables.</p> | <p>Understand the 5 food groups and the proportions of each needed to create a healthy, balanced diet.</p> <p>Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>Know the nutritional properties of carbohydrates, fruit and vegetables, proteins and dairy foods as well as importance of limiting fat and sugar intake.</p> | <p>Humans, animals, nutrition, skeleton, muscles, function, grouping, observe, compare, research</p> | <p>Link to Y2 Spring (animals including humans).</p> |

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| | | Use straightforward scientific evidence to answer questions or to support findings - pattern seeking enquiry. | Understand that not all animals have an internal skeleton and that the presence of this is an important feature in classifying them. Know that a skeleton is needed for support, protection and movement. Understand how muscles work in pairs to allow movement and maintain posture. | | |
| Spring 1 & Spring 2 | Rocks & fossils | Devise comparative tests for rocks, record and evaluate observations and results. Collect evidence of the local bedrock and other rocks in the local area by doing a rock survey. Gather evidence on how different soils can vary and suggest reasons for this. | Understand that rocks are formed in 3 different ways. Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Use knowledge of the properties of rocks to determine why particular rocks were selected for different tasks. Describe in simple terms how fossils are formed when things that have lived are trapped within rock Understand the process of fossil formation and be able to describe it in simple terms. Investigate, discover and classify the different components of soil. Recognise that soils are made from rocks and organic matter. | Appearance, physical properties, food, organic matter, soils, fossils, crystals, sedimentary | Discover the contribution to science of the great 19th century fossil hunter Mary Anning. |
| Summer 1 | Plants | Explain how to make a test fair. Dissect a flower and name the parts | Name the main parts of a plant. Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers Describe the functions of the roots of plants. | Roots, stem/trunk, leaves and flowers, requirements for growth, air, | Link to Y2, Summer 2 - plants |

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| | | <p>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.</p> <p>Investigate the way in which water is transported within plants</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> | <p>Name the life processes common to all living things.</p> <p>Understand that plants make their own food in their leaves.</p> <p>Understand that there are nutrients in the soil that plants use for healthy growth.</p> <p>Explain how fertilisers can replace or add to the nutrients in the soil.</p> <p>List the functions of plant stems.</p> <p>Explain what seeds need to germinate and grow.</p> <p>Describe the life cycle of a flowering plant.</p> <p>Describe the different ways in which seeds can be dispersed.</p> <p>Explain why it is important for seeds to be dispersed.</p> | <p>light, water, nutrients from soil, and room to grow, transported, life cycle, pollination, seed formation and seed dispersal, nutrition, reproduction, compare, factors</p> | |
| <p>Summer 2</p> | <p>Light</p> | <p>Discover through active investigation that without light you cannot see.</p> <p>Actively investigate the nature of white light through a number of practical activities.</p> | <p>Learn through investigation that light travels in straight lines.</p> <p>Recognise we need light in order to see things and that dark is the absence of light</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 an opaque object</p> | <p>Dark, absence of light, reflected, surfaces, reflective, dangerous, protect, blocked, opaque, shadows, light source, object,</p> | <p>Link to EYFS Autumn 2.</p> |

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| | | <p>Observe that light is reflected from surfaces</p> <p>Find patterns in the way that the size of shadows change.</p> <p>Predict and then investigate which colours show up best and least in the dark.</p> <p>Investigate the effect of shining a torch on various objects including reflective materials.</p> <p>Investigate how light is reflected by different surfaces, looking for similarities and differences and noting observations.</p> <p>Investigate the nature of reflections in mirrors through a variety of practical tasks including mirror writing, navigating mirror mazes and multiple mirror reflections.</p> <p>Investigate how objects made from different materials cast shadows.</p> | <p>Know what a light source is and that the sun is a light source which is so powerful that it will damage your eyes if you look at it (even with sunglasses).</p> <p>Understand how a shadow changes depending on the object's orientation.</p> | | |
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| Vocabulary to be learnt by end Y3 | Magnetic forces, attract, repel, magnetic materials, poles, direct contact, (Types of magnet, e.g. bar, ring, button, horseshoe), strength, nutrition, skeleton, muscles, function, grouping, observe, compare, research, appearance, physical properties, organic matter, soils, fossils, crystals, sedimentary, roots, stem/trunk, leaves and flowers, requirements for growth, air, light, water, nutrients from soil, and room to grow, transported, pollination, seed formation and seed dispersal, nutrition, reproduction, compare, factors, dark, absence of light, reflected, surfaces, reflective, dangerous, protect, blocked, opaque, shadows, light source, object. |
| Other Opportunities | Visit from a nutritionist/ health professional. |

Year 4

| Term | Unit Name | Skills | Knowledge | Key vocabulary to be taught | Visitor/trips links to other Year groups |
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| Autumn 1 (& part of Autumn 2) | Animals including humans | <p>Name the different types of teeth and identify their function.</p> <p>To name the key parts of the digestive system and describe their simple functions.</p> <p>Identify and name the key feature of a food chain.</p> <p>Ask relevant questions and using different types of scientific enquiries to answer them</p> | <p>Identify the different types of teeth in humans and their simple functions.</p> <p>Describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> | <p>Herbivore, carnivores, digestive system, functions, food chains, producers, predators and prey mouth, tongue, teeth, oesophagus, stomach, and small and large intestine</p> | <p>Link to Y3, Autumn 2.</p> <p>Visit from a dental expert.</p> <p>Discuss changes in the development of teeth and diet in humans over time – link to prehistory unit.</p> |

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| <p>Autumn 2</p> | <p>Electricity</p> | <p>Construct simple circuits.</p> <p>Explore and 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>Investigate some common conductors and insulators, and associate metals with being good conductors.</p> | <p>Understand that some appliances run from mains electricity, while others run off batteries.</p> <p>Identify common appliances that run on electricity.</p> <p>construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>Identify problems within a faulty circuit (e.g. missing bulb, etc).</p> <p>Recognise some common conductors and insulators.</p> <p>Associate metals with being good conductors.</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>insulators, conductors, components, pictorial representations.</p> | <p>Link to Y2 everyday materials.</p> |
| <p>Spring 1</p> | <p>Sound</p> | <p>Explore the effect of distance on sound.</p> <p>Work scientifically by: finding patterns in the sounds that are made by different objects.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Investigate patterns between pitch of sound and object that produced it, and volume and</p> | <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Identify how sounds are made, associating some of them with something vibrating.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p> <p>Understand how we hear sounds, and how we can alter the volume of the sounds we hear.</p> | <p>Travel, vibrations, pitch, sound, produce, distance, volume, fainter, names of instruments.</p> | <p>Links to music units.</p> |

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| | | <p>strength of vibrations that produced the sound.</p> <p>Set up simple practical enquiries, comparative and fair tests.</p> <p>Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> | | | |
| <p>Spring 2</p> | <p>States of Matter</p> | <p>Investigate the differences between solids and liquids</p> <p>Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries,</p> | <p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>To learn about the water cycle and begin to understand the terms.</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> | <p>Solids, liquids, gases, materials, change state, heated, cooled, temperature, degrees Celsius, evaporation, condensation, water cycle.</p> | <p>Geography link – erupt a volcano.</p> <p>Link to Y2 Everyday materials.</p> <p>Also draw on knowledge from Y1 everyday materials</p> |

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| | | including oral and written explanations. | | | (e.g. freeze, melt). |
| Summer 1 & Summer 2 | Living things and their habitats | recognise that living things can be grouped in a variety of ways ☑ explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment ☑ recognise that environments can change and that this can sometimes pose dangers. | <p>To know the 7 characteristics of a living thing. Sort living things in a variety of ways. within the local environment, observe habitats and record the different living things found.</p> <p>Make a branching database to sort and identify the local invertebrates.</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> | Living things, local, wider environment, human impact, positive, negative, nature reserve, population, litter, deforestation, plants, animals, habitat, vertebrate, invertebrate, fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, | Link to Y2, Summer 1 – living things and their habitats. |

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| | | | | spiders, and insects, flowering, non-flowering, | |
| Vocabulary to be learnt by end Y4 | Herbivore, carnivores, omnivores, consumers, producers, predators and prey mouth, tongue, teeth, oesophagus, stomach, and small and large intestine, digestive system, insulators, conductors, components, pictorial representations, travel, vibrations, pitch, distance, volume, fainter, Solids, liquids, gases, change state, heated, cooled, temperature, degrees Celsius, evaporation, condensation, water cycle, Practical enquiries, comparative and fair tests, systematic and careful observations, accurate measurements , standard units, gathering, recording, classifying and presenting data , drawings, labelled diagrams, keys, bar charts, and tables enquiries, | | | | |
| Other opportunities | Lego Workshop – link to electricity unit. Build on learning in DT electrical systems unit – spring 2. Develop the skills of working scientifically throughout each unit. Study relevant current and historical scientists who have helped shape/ change the world. | | | | |

| <u>Year 5</u> | | | | | |
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| Term | Unit Name | Skills | Knowledge | Key vocabulary | Visitor/trips links to other Year groups |
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| <p>Autumn 1</p> | <p>Materials</p> | <p>Explore and compare the properties of a broad range of materials.</p> <p>Explore reversible changes, including evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes.</p> <p>Explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda.</p> <p>Work scientifically by: carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?'</p> <p>Observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes.</p> | <p>Relate learning to what they learnt about magnetism in year 3 and about electricity in year 4</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p> | <p>Material, magnetism, filter, sieve, melt, dissolve, reaction, explore, compare, observe, fair test, reversible, irreversible</p> | <p>Find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton.</p> <p>Link to Y4 states of matter.</p> |
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| | | Research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials. | | | |
| Autumn 2 | Earth and Space | <p>Describe the movement of the Earth and other planets relative to the sun in the solar system.</p> <p>Describe the movement of the moon relative to the Earth.</p> <p>Describe the sun, Earth and moon as approximately spherical bodies.</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p>Investigate the way that ideas about the solar system have developed.</p> <p>Work scientifically by: comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system;</p> | <p>Use a model of the sun and Earth that enables them to explain day and night.</p> <p>Understand that the sun is a star at the centre of our solar system and that it has 8 planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006).</p> <p>Understand that a moon is a celestial body that orbits a planet (Earth has 1 moon; Jupiter has 4 large moons and numerous smaller ones).</p> <p>Understand how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus.</p> <p>Understand that some people think that structures such as Stonehenge might have been used as astronomical clocks. (relate to learning in Y4 - prehistory).</p> | <p>Rotate, axis, celestial, solar system, sundial, solar system</p> | <p>Esero space programme resources/ STEM club.</p> <p>Link to Y3 Summer 2 – Light.</p> |

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| | | <p>constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day.</p> | | | |
| <p>Spring 1 & Spring 2</p> | <p>Forces</p> | <p>Explore falling objects and raise questions about the effects of air resistance.</p> <p>Explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall.</p> <p>Pupils explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel.</p> <p>Explore the effects of levers, pulleys and simple machines on movement.</p> <p>Work scientifically by: exploring falling paper cones or cupcake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective.</p> <p>Explore resistance in water by making and testing boats of different shapes.</p> | <p>Learn how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</p> <p>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</p> <p>Experience forces that make things begin to move, get faster or slow down.</p> | <p>Resistance, friction, gravity</p> | <p>Link to Y3 Autumn 1 - Forces and magnets.</p> |

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| | | Design and make products that use levers, pulleys, gears and/or springs and explore their effects. | | | |
| Summer 1 | Animals and Humans | <p>Explore the keys stages of human development (including foetal development).</p> <p>Work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.</p> <p>Work scientifically by recording data using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Explore the physical and mental changes to the human body as it ages.</p> | <p>Describe the changes as humans develop to old age.</p> <p>Learn about the changes experienced in puberty.</p> <p>Understand the six key areas of human development.</p> <p>To understand the physical and mental effects as humans and animals age.</p> <p>Apply knowledge to draw a timeline to indicate stages in the growth and development of humans.</p> | Gestation, puberty, foetus, baby, child, adolescent, adult, old age | Link to Y4 Summer - Living things and their habitats. |
| Summer 2 | Living Things and their Habitats | <p>Observe life-cycle changes in a variety of living things, for example plants in the vegetable garden or flower border, and animals in the local environment.</p> <p>Work scientifically by: observing and comparing the life cycles of plants and animals in their local environment with other plants</p> | <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>Describe the life process of reproduction in some plants and animals.</p> <p>Learn out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals.</p> | life cycle, sexual, asexual, reproduction, | <p>Link to Y3, Summer 1 – plants.</p> <p>Study and raise questions about their local environment throughout the year.</p> |

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| | and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. Observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow. | Try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. | | Research the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall. |
| Vocabulary to be learnt by end Y5 | Material, magnetism, filter, sieve, melt, dissolve, reaction, explore, compare, observe, fair test, reversible, irreversible, rotate, axis, celestial, solar system, sundial, solar system, resistance, friction, gravity, gestation, puberty, life cycle, sexual, asexual, reproduction, foetus, baby, child, adolescent, adult, old age | | | |
| Other opportunities | Invite a parent with a new baby in to class. Science Fair (UCLAN). Science Ambassadors (St. Michael's High school). Possibility of a visit to a farm/ farmer in school/ hatching chicks in school. | | | |

Year 6

| Term | Unit Name | Skills | Knowledge | Key vocabulary | Visitor/trips links to other Year groups |
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| Autumn 1 | Electricity | | Build on knowledge from Y3 light unit. | Lens | |

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| <p>Autumn 2</p> | <p>& Light</p> | <p>Carry out an investigation to explain how shadows are formed.</p> <p>Investigate why rainbows appear in the sky.</p> <p>Explore refraction.</p> <p>Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</p> <p>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p> | <p>Know that light has to travel from a source.</p> <p>Gain a basic understanding of how pictures are seen and interpreted by the brain.</p> <p>Understand that light travels in straight lines.</p> <p>Know how to show the direction of light travelling.</p> <p>Know that shadows are created when an object blocks light.</p> <p>Know and understand how light allows us to see colour.</p> <p>Recognise that light appears to travel in straight lines</p> | <p>Iris Blind spot Sclera Cornea Retina</p> <p>Angle of incidence</p> <p>Transparent Translucent Opaque</p> <p>Refraction</p> | <p>Case study of Thomas Edison</p> <p>Specialist from Electricity North West</p> <p>Link to Y3 – Light and Y4 – electricity.</p> |
| <p>Spring 1 Spring 2</p> | <p>Evolution</p> | <p>Research a leading scientist.</p> <p>Introduce the changes in the complexity of life over vast periods of time using a time line.</p> <p>Write an explanation text about their creature.</p> | <p>Understand that inheritance of features comes from parents.</p> <p>Understand reasons for extinction.</p> <p>Understand how fossils provide evidence of changes over time.</p> <p>Understand the meaning of survival of the fittest.</p> <p>Recognise how the human skeleton has evolved.</p> | <p>Evolve Theory Observations Homosapien Selection Survival of the fittest Skelton Adaptation</p> | <p>Link to Y3 rocks and fossils.</p> <p>Case study of Charles Darwin.</p> |

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| | | Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. | Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. | Characteristics Differences Environment Evolution Generations Genes Inherit Inheritance Parents Similarities Variation | |
| Summer 1 | Living Things & their habitats | Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals Give reasons for classifying plants and animals based on specific characteristics Analyse the advantages of certain plant features. Apply scientific knowledge to discuss a statement. | Understand the process of photosynthesis. Revise and understand the seven life processes. Understand a classification key Create a branching database to classify animals. Understand how animals have adapted for the environment that they live in. Create a habitat and animal protection Understand that micro-organisms can cause useful decay. | Micro-organisms Circulation Nutrients Invertebrates Vertebrates Classifications Characteristics Algae | Link to Y4 - Living things and their habitats |
| Summer 2 | Animals including humans | Investigate how the heart works to pump blood around the body. Find out about blood composition, types, vessels and functions. | Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. | Virus Blood vessels Artery Veins | Link to Y4 Animals including humans. |

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| | | Investigate the effect of exercise and rest on pulse rate. | <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Understand how the gas exchange takes place in the lungs.</p> <p>To understand why exercise is good for our health.</p> <p>Revise and understand what happens to food in our bodies.</p> <p>Understand how nutrients are transported within animals.</p> <p>Understand that tobacco, alcohol and other drugs can have a negative effect on the body.</p> | | Case study of Carl Linnaeus; a pioneer of classification. |
| Vocabulary to be learnt by end Y6 | Lens, Iris, Blind spot, Sclera, Cornea, Retina, Angle of incidence, Transparent, Translucent, Opaque, Refraction, Evolve Theory, Homosapien, Selection, Survival of the fittest, Skeleton, Adaptation, Characteristics, Evolution, Generations, Genes, Inherit, Inheritance, Variation, Invertebrates, Vertebrates, Algae, Virus, Blood vessels, Artery, Veins, Micro-organisms, Circulation. | | | | |
| Other opportunities | Specialist from Electricity North West | | | | |

Impact

An engaging, high-quality science education, provides children with the foundations for understanding the world around them. Opportunities to study well-known scientists guides children in understanding the impact science has on changing our world. Children learn the possibilities for careers in science as a result of links with industry and connection with national agencies such as the STEM association and Ogden Trust.

Standards in science are monitored in a variety of ways to ensure maximum impact. These include book looks, professional dialogue, pupil voice questionnaires and interviews, staff questionnaires, lesson observations and learning walks. Pupil voice is used to further develop the Science curriculum, through questioning of pupil's views and attitudes to Science to support the children's enjoyment of science and to motivate learners.

