# Science Curriculum
# Knowledge and Skills Progression

**Intent**

It is our aim to develop scientific experts. Our children experience what it is like to be a scientist, through exposure to experimental science so that they can transition to secondary school with the skills, knowledge and understanding to have a sense of awe and wonder about the world around them, exploring with inquisitive minds. Pupils will retain what they know and recall what they have learnt in subsequent year groups; becoming more knowledgeable and independent learners as they move through key stages.

Through a wide range of purposeful learning opportunities, children will acquire specific skills and subject knowledge to gain an understanding of scientific processes. Our pupils will understand the implications of biology, chemistry and physics in every aspect of their daily life.

Science in our school will harness the natural curiosity of children, promoting respect for living organisms and the natural environment. This is enhanced through close links to the Slimbridge Wetlands Centre. Enrichment opportunities will ensure all our children have experiences to make links between their learning and the world in which we live.

## Reception

| Year | Knowledge | Skills |
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| **EYFS Autumn** | Know that some physical features make humans different<br>Say what features of themselves make them different to their peers.<br>Name the body parts - head, shoulder, knees, toes, legs, feet, ears, mouth, nose, eyes, arms.<br>Know where we live. Know we live on planet Earth and that there are other planets in space.<br>Describe features of Earth – land, sea, moon, turns/spins.<br>Know there are other planets in the solar system.<br>Know that humans have been into space.<br>Know the impact that humans have on the planet.<br>Know ways in which we can help to make the planet a better place – reduce, reuse, recycle.<br>Know that each season presents different features<br>Know that some trees lose their leaves, and some keep them all year round.<br>Describe the weather and temperature differences between seasons. | Observe closely<br>Shows curiosity about objects, events and people.<br>Questions why things happen.<br>Closely observes what people and animals do.<br>Performing tests<br>Finds new ways to do things.<br>Finds ways to test their ideas.<br>Identifying and classifying:<br>Know about similarities and differences in relation to places, objects materials and living things. |

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| | Name some British animals that hibernate – hedgehogs, bumble bees.<br>Know basic and understand basic hygiene routines.<br>Wash hands using advised procedure – 20 seconds, covering all areas of the hand.<br>Know that germs can be harmful.<br>Know that germs can be transferred.<br>Describe good oral hygiene. | |
| **EYFS Spring** | Know what animals can fly and what they need to fly?<br>Carry out an investigation into flight and make predictions using different sized and shaped paper.<br>Name bird families, understand habitats for birds and what they need to survive. (forest school - making bird nests, bird feeders and digging for worms)<br>Trip to Slimbridge WWT.<br><br>Know that each season presents different features.<br>Know that some trees lose their leaves and some keep them all year round.<br>Describe the weather and temperature differences between seasons.<br>Name animals born in Springtime – lambs, chicks. Look at a life cycle of a chick. | Observe closely<br>Uses senses to look closely at the natural world.<br>Comments and asks questions about the natural world.<br>Performing tests<br>Finds new ways to do things.<br>Finds ways to test their ideas.<br>Identifying and classifying<br>Develop ideas of grouping, sequencing and cause and effect. |
| **EYFS Summer** | Know what animals and humans need to survive.<br>Name the animals – whale, turtle, giraffe, bear.<br>Name the minibeasts – worm, slug, snail.<br>Know the preferred habitats for these animals.<br>Know that they need food, water and air to survive.<br>Describe a healthy balanced diet for a human– sort and classify food into healthy and less healthy.<br>Know that some animals have gone, or are close to going extinct – dinosaurs, bees.<br><br>Know what plants need to survive<br>Know that plants need light, soil, water, air and space to survive.<br>Know that plants start as seeds.<br>Know that some plants produce flowers, some fruits and other vegetables. | Observe closely<br>Uses senses to look closely at the natural world.<br>Comments and asks questions about the natural world.<br>Performing tests<br>Finds new ways to do things.<br>Finds ways to test their ideas.<br>Identifying and classifying<br>Develop ideas of grouping, sequencing and cause and effect. |

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| | Know basic and understand basic hygiene routines.<br>Wash hands using advised procedure – 20 seconds, covering all areas of the hand.<br>Know that germs can be harmful.<br>Know that germs can be transferred.<br>Describe good oral hygiene.<br><br>Know that each season presents different features<br>Know that some trees lose their leaves and some keep them all year round<br>Describe the weather and temperature differences between seasons. | |
| | Continuous provision: Magnifying glass, pipettes, tweezers, water, sand, mud kitchen, Globe, Atlas, indoor plants (real),<br>Possible investigations through continuous provision: Floating and sinking investigations, building structures and bridges. Materials for different purposes/investigations, Investigations into flight and changing materials, for example how do we melt ice? What are germs and how can we protect ourselves? What should we wash our hands? Cooking: Gingerbread men, making porridge, making a jam sandwich. Where would a worm live? (Forest School Activity) Visits to the wild garden. Butterfly life cycles and observations of tadpoles which are released in the school pond. | |

# Class 2 Year 1/2

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| **Y1/2 Autumn term 1** | Animals including humans (Year 1)<br>Scientific Enquiry: Research Pattern seeking<br>The children should recognise these animals:<br>Fish: gold fish, tuna, shark, eel<br>Amphibians: frog, toad, newt<br>Reptiles: snake, tortoise, lizard, alligator<br>Birds: penguin, robin, seagulls, chicken<br>Mammals: human, horse, dog, cat, mouse, pig, cow, sheep, rabbit, lion, tiger, giraffe, elephants, rhino and gorilla<br>-Know that carnivores mostly eat other animals (meat), herbivores eat only plants and omnivores eat both plants and other animals. Identify from list above. | Skills - Autumn·<br>Observe closely<br>Children can:<br>Talk about what they see, hear, smell, taste and touch.<br>Use simple equipment (e.g. magnifying glasses) to help them make observations.<br>Performing tests<br>Children can:<br>Perform a simple test (with support)<br>Tell someone else about what they have done. |

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| | -Children should recognise the characteristics of fish, amphibians, reptiles, birds and mammals including pets. See list above.<br>-Children can name and label; head, arm, shoulder, wrist, knees, toes, legs, feet, neck, back, stomach, ears, mouth, nose, eyes, fingers, elbow, hair.<br>-Children will recognise that eyes provide us with sight, ears with hearing, nose with smell, skin with touch and mouth with taste.<br><br>**Animals including humans (Year 2)**<br><br>Scientific Enquiry: Observe over time, Research<br>Children know that human adults develop from babies, horses from foals, dogs from puppies, cats from kittens, hedgehogs from hoglets, ducks from ducklings, hens from chicks, cows from calves etc.<br>Some animals produce live offspring (mammals), some produce eggs (birds and reptiles) and some produce offspring which do not look like the adults e.g. fish, amphibians and butterflies.<br>Children know that all animals have 3 basic needs, water food and air.<br>Children know that to grow into healthy adults we must eat the right types of food using a Healthy Eating Plate in the right amount and exercise regularly.<br>Children know the importance of personal hygiene to stop the spread of illness and germs. | Identifying and classifying<br>Children can:<br>Identify objects they observe.<br>Classify the objects using their simple physical properties<br>Begin to give simple reasons for their ideas and answers<br>Talk about similarities and differences.<br>Explain what they have found out.<br>Record findings<br>Children can:<br>Display work using pictures and labels<br>Put information in a chart or table. |
| **Y1/2 Autumn term 2** | **Everyday Materials (Year 1)**<br>Scientific Enquiry: Identify and Classify<br>Children to know that plastic, glass, metal, and some stones are waterproof.<br>Children to know that fabric, some rocks and some wood are absorbent.<br>Children to know that some plastics and glasses are transparent.<br>Children to know that wood, some plastics, metal, rock and fabric are opaque.<br>Children to know that the property of a material (e.g. waterproof, transparent etc) dictates its usage. | Skills- Autumn<br>Observe closely<br>Children can:<br>Use sight and touch to observe objects closely.<br>Describe what they have seen and measured.<br>Compare more than two items they have observed.<br>Performing tests<br>Children can: |

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| | Children to identify and name the following every day materials: plastic, wood, water, metal, glass, brick, rock/stone, paper, fabric.<br>Children can group everyday materials (wood, plastic, glass, metal, water, and rock) according to the properties of hard, soft, stretchy, shiny, dull, rough, smooth, bendy, waterproof, absorbent, transparent and opaque.<br><br>**Everyday Materials (Year 2)**<br>Scientific Enquiry: Identify and Classify<br>Pupil should be taught:<br>: to *identify* the suitability of a variety of everyday materials (wood, metal, plastic, glass, brick, rock, paper, cardboard and rubber) for particular uses<br>: to *compare* the suitability of a variety of everyday materials, (wood, metal, plastic, glass, brick, rock, paper, cardboard and rubber) for particular uses<br>: to know that some everyday materials (wood, metal, plastic, glass, brick, rock, paper, cardboard and rubber) can be changed by squashing, bending, twisting and stretching<br>:perform tests to explore questions about materials e.g. Which material is most suited for a purpose?<br><br>Seasonal Changes (Year 1)<br>Scientific Enquiry: Identify and Classify, Observe over time<br>Name the four seasons and the order in which they happen.<br>Children observe a specific site in school for the changes throughout the year e.g. leaves, frost<br>Know that in Autumn the weather gets colder and the days get shorter.<br>Know that in Autumn leaves begin turning brown and fall off trees. | Suggest how to find things out using their senses.<br>Begin to use prompts to find things out.<br>Say whether things happened as they expected e.g. investigate the best material for a rain jacket<br>Identifying and classifying<br>Children can:<br>Organise things into groups.<br>Find simple patterns or make links.<br>Use specific criteria to identify animals and plants.<br>Suggest more than one way to group animals and plants, explaining reasons<br>Record findings:<br>Children can:<br>Use diagrams, pictures and tables to record observations.<br>Measure using simple equipment (rulers, magnifying glasses)<br><br>Observe closely<br>Children can:<br>Identify and describe changes across the four seasons.<br>Describe the weather associated with the seasons and notice how day length varies depending on the month of the year.<br>Record findings:<br>Children can: |

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| | Know that in winter the weather is cold and the days are shorter and the nights are longer. Know that in winter trees are bare and flowers aren't blooming.<br>Discuss climate changes and how this has affected plants, crops and animals. | Make tables and charts about the weather, make displays about what happens in the world around them including day length and seasonal change.<br>Understand climate change and how this may affect our future lives. |
| **Y1/2 Spring term 3** | **Living things and their habitats** (Year 1/2)<br>Scientific Enquiry: Research, Identify and Classify<br>Know that things that are living have all the life processes. (Movement, breathing, sensitivity, growth, reproduction, excretion and absorb nutrients).<br>Know that things that are dead were once living and had all the life processes.<br>Know that things that have never lived have none of the life processes e.g. metal, rock and plastic.<br>Know a habitat is the natural place where something lives.<br>Know a habitat provides everything that living things need to survive (food, shelter and water).<br>Know that living things have adapted to suit their natural habitat e.g. polar bear having fur, camels having a hump to water in the desert.<br>Identify and name at least two animals and plants that live in temperate, equatorial and arctic habitats.<br>Know that a microhabitat is a very small habitat e.g. under a rock, under leaves or on a branch.<br>Know that mini-beasts live in microhabitats e.g. bees, woodlice, caterpillars, ants, worms and ladybirds.<br>Know that a food chain shows how each animal gets its food.<br>Know that a food chain is one of the ways living things depend on each other to stay alive.<br>Draw a diagram to show that a food source is the place a living things' food comes from. | Skills- Spring<br>Observe closely<br>Children can:<br>Begin to use scientific vocabulary to describe what they have seen and observed e.g. use the local environment throughout the year to observe animals/birds.<br>Suggest ways of finding out through the use of their senses.<br>Performing tests<br>Children can:<br>Suggest how to find things out.<br>Use prompts to find things out.<br>Identifying and classifying<br>Children can:<br>Organise things into groups.<br>Find simple patterns or make link.<br>Use specific criteria to identify animals and plants.<br>Suggest more than one way to group animals, explaining reasons.<br>Record findings<br>Children can: |

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| | | Use text, diagrams, pictures, and tables to record observations.<br>Use information books and online information to find out scientific information. |
| **Year 1/2 Spring term 4** | **Animals including humans (Year 1)**<br>Scientific Enquiry: Research Pattern seeking<br>The children should recognise these animals:<br>Fish: gold fish, tuna, shark, eel<br>Amphibians: frog, toad, newt<br>Reptiles: snake, tortoise, lizard, alligator<br>Birds: penguin, robin, seagulls, chicken<br>Mammals: human, horse, dog, cat, mouse, pig, cow, sheep, rabbit, lion, tiger, giraffe, elephant, rhino and gorilla.<br>-Know that carnivores mostly eat other animals (meat), herbivores eat only plants and omnivores eat both plants and other animals. Identify from list above.<br>-Children should recognise the characteristics of fish, amphibians, reptiles, birds and mammals including pets. See list above.<br>-Children can name and label head, arm, shoulder, wrist, knees, toes, legs, feet, neck, back, stomach, ears, mouth, nose, eyes, fingers, elbow, hair.<br>-Children will recognise that eyes provide us with sight, ears with hearing, nose with smell, skin with touch and mouth with taste.<br>**Animals including humans (Year 2)**<br><br>Scientific Enquiry: Observe over time, Research<br>Children know that human adults develop from babies, horses from foals, dogs from puppies, cats from kittens, hedgehogs from hoglets, ducks from ducklings, hens from chicks, cows from calves etc. | Skills- Spring<br>Observe closely<br>Children can:<br>Begin to use scientific vocabulary to describe what they have seen and observed.<br>Suggest ways of finding out through the use of their senses.<br>Performing tests<br>Children can:<br>Suggest how to find things out.<br>Use prompts to find things out.<br>Identifying and classifying<br>Children can:<br>Organise things into groups.<br>Find simple patterns or make links-use specific criteria to identify animals and plants<br>Suggest more than one way to group animals, explaining reasons<br>Record findings<br>Children can:<br>Use text, diagrams, pictures, and tables to record observations.<br>Use information books and online information to find things out. |

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| | Some animals produce live offspring (mammals), some produce eggs (birds and reptiles) and some produce offspring which do not look like the adults e.g. fish, amphibians and butterflies.<br>Children know that all animals have 3 basic needs for survival: water food and air.<br>Children know that to grow into healthy adults we must eat the right types of food using a Healthy Eating Plate in the right amount and exercise regularly.<br>Children know the importance of personal hygiene to stop the spread of illness and germs.<br>Children should also be introduced to process of reproduction and growth in animals.<br><br>**Seasonal Changes (Year 1)**<br>Scientific Enquiry: Identify and Classify, Observe over time<br>Name the four seasons and the order in which they happen.<br>Children observe a specific site in school for the changes throughout the year e.g. leaves, frost<br>Know that in Spring the weather starts to get warmer and plants and trees begin to grow leaves and flowers.<br>Know that in Spring the days start to get longer – compare this to the other seasons. | |
| **Y1/2 Summer term 5** | **Plants** Y1 & Y2 – Vegetables and Salad.<br>Scientific Enquiry: Research, Pattern seeking<br>Know and recognise dandelions, daisy, buttercup, nettles, ivy, dog rose, clover, sunflowers, lavender, brambles and strawberries.<br>Children should know that deciduous trees lose their leaves every year.<br>Know and recognise deciduous trees hazel, willow, oak, silver birch.<br>Children know that evergreen trees keep their leaves all year round. | Skills – Summer<br>Observe closely<br>Children can:<br>Talk about what they see, hear, smell, taste and touch |

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| | Name and label parts of the above flowering plants and trees – roots, stem, leaves, petals, trunk, branch and fruit.<br>**Seasonal changes (Year 1 & Year 2)**<br>Scientific Enquiry: Identify and Classify, Observe over time<br>Name the four seasons and the order in which they happen.<br>Children observe a specific site in school for the changes throughout the year e.g. leaves, frost<br>Know that in Summer the weather is hotter.<br>Know that in Summer the days are long and the nights are short.<br>Know that in Summer the trees are full of leaves and there are lots of flowers, bees, butterflies and other insects.<br>Introduce the idea of climate change and how our world is currently changing temperature. | Use simple equipment (e.g. magnifying glasses, rulers, and measuring tapes, camera, tablet) to help them make observations.<br>Begin to use scientific vocabulary to describe what they have seen and observed e.g. use the local environment throughout the year to observe how plants grow (germination, growth, reproduction)<br>Suggest ways of finding out through the use of their senses.<br>Performing tests<br>Children can:<br>Perform a simple test (with support).<br>Tell someone else about what they have done.<br>Identifying and classifying<br>Children can:<br>Identify objects they observe.<br>Classify the objects using their simple physical properties.<br>Begin to answer scientific questions.<br>Begin to give simple reasons for their ideas and answers.<br>Talk about similarities and differences.<br>Explain what they have found out using some scientific vocabulary.<br>Record findings<br>Children can:<br>Display work using pictures, labels and captions.<br>Record findings using non-standard units of measure |

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| | | Put some information in a chart or table.<br>Begin to use ICT to display their working.<br>Begin to make accurate measurements using cm. |
| **Y 1/2 Summer term 6** | **Animals including humans (Year 1)**<br>Scientific Enquiry: Research Pattern seeking<br>The children should recognise these animals:<br>Fish: gold fish tuna shark eel<br>Amphibians: frog toad newt<br>Reptiles: snake tortoise lizard alligator<br>Birds: penguin robin seagulls chicken<br>Mammals: human horse dog cat mouse pig cow sheep rabbit lion tiger giraffe elephants rhino gorilla<br>-Know that carnivores mostly eat other animals (meat), herbivores eat only plants and omnivores eat both plants and other animals. Identify from list above.<br>-Children should recognise the characteristics of fish, amphibians, reptiles, birds and mammals including pets. See list above.<br>-Children can name and label head, arm, shoulder, wrist, knees, toes, legs, feet, neck, back, stomach, ears, mouth, nose, eyes, fingers, elbow, hair.<br>-Children will recognise that eyes provide us with sight, ears with hearing, nose with smell, skin with touch and mouth with taste.<br>**Animals including humans (Year 2)**<br><br>Scientific Enquiry: Observe over time, Research<br>Children know that human adults develop from babies, horses from foals, dogs from puppies, cats from kittens, hedgehogs from hoglets, ducks from ducklings, hens from chicks, cows from calves etc. | Skills – Summer<br>Observe closely<br>Children can:<br>Use scientific vocabulary to describe what they have seen and measured.<br>Performing tests<br>Children can:<br>Begin to understand the concept of fair testing.<br>Carry out a simple fair test with adult guidance.<br>Explain why it might not be fair to compare two things.<br>Say whether things happened as they expected and if not, why not.<br>Record findings<br>Children can:<br>Use text, diagrams, pictures, charts and tables to record observations.<br>Measure using simple equipment (rulers, measuring tapes, clocks, stop-watches)<br>Use information books and online information to find things out. |

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| | Some animals produce live offspring (mammals), some produce eggs (birds and reptiles) and some produce offspring which do not look like the adults e.g. fish, amphibians and butterflies.<br>Children know that all animals have 3 basic needs: water food and air.<br>Children know that to grow into healthy adults we must eat the right types of food using a Healthy Eating Plate in the right amount and exercise regularly.<br>Children know the importance of personal hygiene to stop the spread of illness and germs. | |

# Class 3 Year 2/3

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| **Y2/3 Autumn term 1** | **Animals including humans (Year 2)**<br><br>Scientific Enquiry: Observe over time, Research<br>Children know that human adults develop from babies, horses from foals, dogs from puppies, cats from kittens, hedgehogs from hoglets, ducks from ducklings, hens from chicks, cows from calves etc.<br>Some animals produce live offspring (mammals), some produce eggs (birds and reptiles) and some produce offspring which do not look like the adults e.g. fish, amphibians and butterflies.<br>Children know that all animals have 3 basic needs, water food and air.<br>Children know that to grow into healthy adults we must eat the right types of food using a Healthy Eating Plate in the right amount and exercise regularly.<br>Children know the importance of personal hygiene to stop the spread of illness and germs.<br><br>**Animals including humans (Year 3)**<br>Scientific Enquiry: Research, Pattern seeking<br>Children know the major bones that make up the human skeleton. They can label the following bones: skull, clavicle, scapula, ribcage, spine/vertebrae, pelvis, | Planning<br>Children can:<br>Use different ideas and suggest how to find something out.<br>Record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables<br>Obtaining and presenting evidence<br>Children can:<br>Record their observations in different ways.<br>Describe what they have found using scientific language.<br>Measure using different equipment and units of measure.<br>Make accurate measurements using standard units.<br>Use their findings to draw a simple conclusion.<br>Suggest improvements and predictions for further tests. |

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| | humorous, radius, ulna, phalanges, femur, fibula, tibia.<br>Children should know the 3 major functions of the human skeleton – support, protect and movement.<br>Children to know not all skeletons are internal (endo) some can be external (exoskeleton). Children should know that skeletal muscles work in pairs.<br>Children know that to grow into healthy adults we must eat a balanced diet taken from the following food groups: fruits and vegetables, protein, dairy, carbohydrates, fats and sugar. Understand that animals, including humans need the right types and amount of nutrition and understand that they cannot make their own food (unlike plants which make food using sunlight)– they gain nutrition from what they eat.<br>Children can give examples of food from each food group and know what that food provides for the body – e.g. carbs for energy.<br>Children can apply their knowledge of healthy eating to create a balanced meal. | Considering evidence and evaluating<br>Children can:<br>Explain what they have found out and use their measurements to say whether it helps to answer their question.<br>Use a range of equipment in a simple test<br>Suggest how to improve their work if they repeated the experiment. |
| **Y2/3 Autumn term 2** | **Everyday Materials (Year 2)**<br>Scientific Enquiry: Identify and Classify<br>Pupil should be taught:<br>: to *identify* the suitability of a variety of everyday materials (wood, metal, plastic, glass, brick, rock, paper, cardboard and rubber) for particular uses<br>: to *compare* the suitability of a variety of everyday materials, (wood, metal, plastic, glass, brick, rock, paper, cardboard and rubber) for particular uses<br>: to know that some everyday materials (wood, metal, plastic, glass, brick, rock, paper, cardboard and rubber) can be changed by squashing, bending, twisting and stretching<br><br>**Forces and magnets (Year 3)**<br>Scientific Enquiry: Identify and Classify, Pattern seeking | Planning<br>Children can:<br>Make and record a prediction before testing.<br>Plan a fair test with support e.g. how far an object moves due to the strength of a magnet<br>Set up a simple fair test with support.<br>Record and present what they have found using scientific language, labelled diagrams, and tables.<br>Obtaining and presenting evidence<br>Children can:<br>Measure with support using different equipment and units of measurement.<br>Describe what they have discovered. |

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| | Know that different surfaces create different amounts of friction.<br>Know that application of a force will change the motion of an object.<br>Know that a magnetic field is invisible so magnetic forces can act at a distance.<br>To know that magnetic materials need to contain iron, nickel or cobalt<br>Know that like poles repel.<br>Know that opposite poles attract. Know that magnets have two poles.<br>To predict whether an object will be attracted to a magnet or not or repel.<br>To group everyday material on the basis of whether they are magnetic or not.<br>To predict whether two magnets will attract or repel, based on which way the poles are facing. | Use with support, a range of equipment in a simple test<br>Considering evidence and evaluating<br>Children can:<br>Use their findings to draw a simple conclusion |
| **Year 2/3 Spring Term 3** | **Rocks and Soils (Year 3)**<br>Scientific Enquiry: Fair Test, Identify and Classify<br>Children should know that there are 3 types of naturally occurring rocks: sedimentary, igneous and metamorphic.<br>Children should be able to group rocks on the basis of: appearance, durability and permeability.<br>Children should know that fossilization is the process of an animal or plant becoming preserved in a hard, petrified form.<br>Children should know that fossilization often results in the impression of an organism being left in a rock.<br>Children should know that soil is the uppermost layer of the earth and is a mixture of different things: minerals, air, water and organic matter | Planning<br>Children can: -<br>Plan a fair test with support and explain why it was fair e.g. investigate rock permeability.<br>Set up a simple fair test with support to make comparisons.<br>Explain why they need to collect information to answer a question.<br>Obtaining and presenting Evidence<br>Children can:<br>Record and present what they have found using scientific language, drawings, and bar charts.<br>Make accurate measurements using standard units<br>Describe what they have found using scientific language.<br>Suggest improvements and predictions for further tests. |

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| | | Considering evidence and evaluating<br>Children can:<br>Suggest with support how to improve their work if they did it again. |
| **Year 2/3 Spring Term 4** | **Light (Year 3)**<br>Scientific Enquiry: Observe over time, Fair Test<br>Know that we need light to see things.<br>Know that dark is the absence of light.<br>Children should recognise that some materials do not let any through (opaque), some let some (translucent) and some let it through easily (translucent).<br>Children to know a shadow is caused when light is blocked by an opaque object.<br>The shadow is larger when the object is closer to the light source.<br>Know that light travels in straight lines.<br>Know that some surfaces and materials reflect light well e.g. mirror.<br>Know that reflective surfaces and materials can be useful e.g. high viz jackets<br>Know that when light hits an object it is reflected (bounces off)<br>If reflected light hits our eyes, we can see the object.<br>Know the parts of the eye (retina, pupil, sclera).<br>Know that that pupils control the amount of light entering the eye and if too much light enters, it can damage the eye. Therefore, protective glasses/hat should be worn. | Planning<br>Children can:<br>Plan a fair test with support and explain why it was fair.<br>Set up a simple fair test with support to make comparisons.<br>Explain why they need to collect information to answer a question.<br>Obtaining and presenting evidence<br>Children can:<br>Record and present what they have found using scientific language, drawings, and bar charts.<br>Make accurate measurements using standard units.<br>Describe what they have found using scientific language.<br>Suggest improvements and predictions for further tests.<br>Considering evidence and evaluating<br>Children can:<br>Suggest with support how to improve their work if they did it again |

SLIMBRIDGE primary school

# Science Curriculum
# Knowledge and Skills Progression

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| **Year 2/3 Summer term 5** | **Plants (Year 2/3)**<br>Scientific Enquiry: Research, Observation over Time<br>Know the functions of different parts of flowering plants - roots, stem/trunk, leaves and flowers.<br>Know what plants need to grow into a healthy, mature plant.<br>Know that some plants vary in how much of each requirement (water, light, nutrient, air and room to grow) e.g. cacti in a desert and waterlily in a pond.<br>Know how water is transported within plants.<br>Know the functions of stigma, stamen and carpal in the life cycle of a flowering plant. Understand the processes of pollination, fertilisation, germination and seed dispersal. Understand the role of pollinators in the life cycle of a plant. | Planning<br>Children can:<br>Plan a fair test with support and explain why it was fair.<br>Set up a simple fair test with support to make comparisons.<br>Explain why they need to collect information to answer a question.<br>Obtaining and presenting evidence<br>Children can<br>Record and present what they have found using scientific language, drawings, and bar charts.<br>Make accurate measurements using standard units.<br>Describe what they have found using scientific language.<br>Suggest improvements and predictions for further tests.<br>Considering evidence and evaluating<br>Children can:<br>Suggest with support how to improve their work if they did it again |
| **Year 2/3 Summer Term 6** | **Living things and their habitats (Y2)**<br>Scientific Enquiry: Research, Pattern seeking<br>Explore and compare the differences between things that are living, dead and things that have never been alive<br>Identify that most living things live in habitats to which they are suited (habitats and micro-habitats) | Planning<br>Children can:<br>Plan a fair test with support and explain why it was fair.<br>Set up a simple fair test with support to make comparisons. |

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| | Describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other<br>Identify and name a variety of plants and animals in their habitats, including micro-habitats<br>Describe how animals obtain their food from plants and other animals, using food chains and identify and name different sources of food. | Explain why they need to collect information to answer a question.<br>Obtaining and presenting evidence<br>Children can:<br>Record and present what they have found using scientific language, drawings, and bar charts.<br>Make accurate measurements using standard units.<br>Describe what they have found using scientific language.<br>Suggest improvements and predictions for further tests.<br>Considering evidence and evaluating<br>Children can:<br>Suggest with support how to improve their work if they did it again.<br>Raise and answer questions that help them to become familiar with life processes that are not common to all living things. |

# Class 4 Year 4/5

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| **Year 4/5 Autumn Term 1** | Living things and their habitats (Year 4)<br>Scientific Enquiry: Identify and Classify, Research<br><br>Pupils can group animals into vertebrates (fish, amphibians, reptiles, birds, mammals).<br>Pupils can group animals into invertebrates (snails, slugs, worms, spiders and insects). | Planning<br>Children can:<br>Decide which information needs to be collected.<br>Use their findings to draw a simple conclusion.<br>Obtaining and presenting Evidence<br>Children can: |

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| | Children can group plants into flowering and non-flowering plants.<br>Know how to create dichotomous keys to explore and identify local plants and animals e.g. hedgehog, fox, newts, frogs, crow, sparrow.<br>Know how to create dichotomous keys to explore and identify plants and animals which they have researched in the wider environment.<br>Explore the positive and negative impact on the environment e.g. nature reserves, garden ponds, deforestation, increase threat of flooding, pollution and litter.<br>Discuss climate change and how we could live more sustainably to preserve our future.<br><br>Make keys or guides to explore and identify local plants and animals.<br><br>**Living things and their habitats (Year 5)**<br>Scientific Enquiry: Research/Pattern seeking<br>Know that animals such as humans contain either of the sex cells.<br>Know that mammals, amphibians, insects and birds use sexual reproduction to produce their offspring.<br>Know the male sex cell is the sperm and fertilises the female sex cell.<br>Know the fertilised cell divides into different cells which will form a baby with a beating heart.<br>Know the baby will grow inside the female body until the end of the gestation period when the baby is born.<br>Know that amphibians are laid in eggs and then hatch and go through many changes until they become an adult.<br>Know some animals such as butterflies go through metamorphosis to become an adult. | Explain their findings in different ways e.g. presentation and writing.<br>Record data and results using scientific diagrams.<br>Observe local area and raise questions about the environment.<br><br>Considering evidence and evaluating<br>Children can:<br>Evaluate what they have found using drawings and labelled diagrams.<br>Use the local environment throughout the year to raise and answer questions that help them to study and identify plants and animals in their habitat |

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| | Know birds are hatched from eggs and are cared for by their parents until they are able to live independently.<br>Know that most plants contain both the male sex cell (pollen) and female sex cell (ovules) and depend on pollinators (wind and insects) to transfer pollen from the stamen of one plant to the stigma of another.<br>Know some plants use asexual reproduction e.g. strawberry, potatoes, spider plants and daffodils.<br>Describe the differences in life cycles of a mammal, amphibian, an insect and a bird<br>Find out about the work of naturalists such as David Attenborough. | |
| **Year 4/5 Autumn Term 2** | **Electricity (Year 4)**<br>Scientific Enquiry: Fair Test<br><br>Identify common electrical appliances and know that some use mains or battery power.<br><br>Children should know electricity can be produced using a variety of sources e.g. nuclear, fossil, hydro, wind, solar.<br>Children can differentiate between renewable and non-renewable sources.<br>Children are able to construct a simple electrical circuit in series using a buzzer and/or bulb.<br><br>Know that a circuit needs to be complete for the electricity to be able to flow through easily through a conductor.<br>Children are able to construct a simple electrical circuit in series using a switch and understand the switch will break the circuit turning off the bulb/buzzer.<br>Know a conductor allows electrons to pass easily through them e.g. metal, where as an insulator does not e.g. rubber, plastic, wood. | Planning<br>Children can:<br>Set up a simple fair test to make comparisons.<br>Plan and carry out an investigation by controlling variables fairly and accurately.<br>Explain why it was fair, and which variables have been isolated.<br>Use test results to make further predictions and set up further comparative tests.<br>Obtaining and presenting evidence<br>Children can:<br>Take measurements using different equipment and units of measure and record what they have found in a range of ways.<br>Make accurate measurements using standard units.<br>Explain their findings in different ways –display/ writing/record more complex data and results using |

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| | Recognise common conductors and insulators and associate metals with being good conductors.<br><br>Identify whether 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<br><br>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit | scientific diagrams and bar charts/line graphs<br>Considering evidence and evaluating<br>Children can:<br>Make a prediction based on something they have found out.<br>Use straightforward scientific evidence to answer questions or to support their findings.<br>Evaluate what they have found using scientific language, bar charts and tables. |
| **Year 4/5 Spring Term 3** | **Properties and changes of materials (Year 5)**<br>Scientific Enquiry: Identify and classify/Pattern seeking<br>Know that materials can be grouped and comparing according to their properties e.g. hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.<br>Know that properties dictate the use of everyday materials e.g. glass for windows.<br>Children know that some solids and liquids can be mixed or dissolved together to form a solution (soluble). Materials that cannot be mixed are insoluble.<br>Children know that some solutions can be reversed through filtering, evaporation or sieving. Children should be able to describe how to recover a substance from a solution e.g. salt or sugar granules<br>Know that some materials can be changed from one state of matter to another ice cube – water – water vapour.<br>Know that some materials undergo an irreversible change from one state of matter to another e.g. bicarbonate of soda and acid, chocolate when heated.<br>Understand that dissolving, mixing and changes of state are reversible changes. | Planning<br>Children can:<br>Set up a simple fair test to make comparisons.<br>Plan and carry out an investigation by controlling variables fairly and accurately.<br>Explain why it was fair and which variables have been isolated.<br>Use test results to make further predictions and set up further comparative tests.<br>Obtaining and presenting evidence<br>Children can:<br>Take measurements using different equipment and units of measure and record what they have found in a range of ways.<br>Make accurate measurements using standard units.<br>Explain their findings in different ways –display/ writing/record more complex data and results using scientific diagrams and bar charts/line graphs<br>Considering evidence and evaluating<br>Children can: |

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| | **States of matter (Year 4)**<br>Scientific Enquiry: Identify and Classify, Pattern Seeking<br><br>Children know there are 3 states of matter: solids, liquids and gases<br>Children to know that particles in a solid are close together and cannot move, only vibrate.<br><br>Children to know that particles in a liquid are close together but can move around each other easily.<br>To know that particles in a gas are spread out and can move around very quickly in all directions.<br>To know that water and other liquids can change into a solid or a gas when heated (boiling point)<br>To know that water and other liquids can change into a solid or a gas when cooled (freezing point)<br>To know that when a solid is heated to its melting point, it changes into a liquid.<br>To know that when a liquid is cooled to reach its freezing point, the particles in a liquid slow down and move more slowly so it becomes a solid<br>To know the boiling and freezing point of water and measure these temperatures in degrees Celsius(°C)<br><br>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. Discuss how temperatures are increasing due to climate change. | Make a prediction based on something they have found out.<br>Use straightforward scientific evidence to answer questions or to support their findings.<br>Evaluate what they have found using scientific language, bar charts and tables. |

SLIMBRIDGE primary school

# Science Curriculum
# Knowledge and Skills Progression

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| **Year 4/5 Spring Term 4** | **Animals, including humans** (Year 4 and Year 5)<br>Scientific Enquiry: Identify and Classify, Research<br><br>Children know and identify the parts of the digestive system: tongue, teeth, mouth, salivary gland, oesophagus, liver, stomach, large intestine, small intestine, rectum, anus.<br><br>Children know there are different teeth (incisor, canine, molar, premolar) for different functions.<br>Children to know that the teeth of an animal are designed to eat different foods depending on their diet. Compare teeth of carnivores and herbivores and suggest reasons for this difference.<br>Children to know that; an incisor bites and cuts, canines tear and rip, molars grind and premolars hold and crush.<br>Children know how to look after their teeth and prevent decay – understand what damages teeth and how important it is to take care of your teeth.<br>Children can define a producer, a predator and prey.<br>Children recognise the flow of energy within a food chain or web recognising consumers and producers, predators and prey.<br><br>Describe changes as humans develop to old age. (Y5)<br><br>Begin to discuss changes in puberty. (Y5) | Planning<br>Children can:<br>Set up a simple fair test to make comparisons e.g. find out the length and mass of a baby as it grows.<br>Plan and carry out an investigation by controlling variables fairly and accurately.<br>Explain why it was fair and which variables have been isolated.<br>Use test results to make further predictions and set up further comparative tests.<br>Obtaining and presenting evidence<br>Children can:<br>Take measurements using different equipment and units of measure and record what they have found in a range of ways.<br>Make accurate measurements using standard units.<br>Explain their findings in different ways: display/ writing/record more complex data and results using scientific diagrams and bar charts/line graphs<br>Considering evidence and evaluating<br>Children can: make a prediction based on something they have found out.<br>Use straightforward scientific evidence to answer questions or to support their findings.<br>Evaluate what they have found using scientific language, bar charts and tables. |
| **Year 4/5** | **Earth and space (Year 5)**<br>Scientific Enquiry: Observe over time /Research | Planning<br>Children can: |

SLIMBRIDGE primary school

# Science Curriculum
# Knowledge and Skills Progression

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| **Summer Term 5** | Children to know that the Earth rotates (spins) on its axis to complete a full rotation once in every 24 hours.<br>To know that the Earth whilst rotating orbits (revolves) around the sun which takes a little more than 365 days.<br>Children can name the planets of the solar system (Mercury, Venus, Earth, Mars, Saturn, Neptune, Uranus, Jupiter)<br>Children to know that Mercury, Venus, Mars and Earth are rocky planets, while Jupiter, Saturn and Neptune are made of gas.<br>Children to understand that the term 'Geocentric model' refers to the belief that the Earth was at the centre of the solar system.<br>Children to understand that the term 'Heliocentric model' (current) describes the Sun as being at the centre of the solar system.<br>Children to know that the Moon orbits the Earth in an ovoid while spinning on its axis. Children to know that the moon appears to be different shapes and sizes at different times of the month.<br>To know that the Sun, Earth, Moon and planets are roughly spherical in shape.<br>To know that the sun appears to move across the sky during the day but the sun does not move at all.<br>To know that daytime occurs when the side of Earth is facing towards the sun and night occurs when it is facing away from the sun.<br>To know that we should not look directly at the sun as it can cause eye damage. | Set up a simple fair test to make comparisons.<br>Plan and carry out an investigation by controlling variables fairly and accurately.<br>Explain why it was fair and which variables have been isolated.<br>Use test results to make further predictions and set up further comparative tests.<br>Obtaining and presenting evidence<br>Children can:<br>Take measurements using different equipment and units of measure and record what they have found in a range of ways.<br>Make accurate measurements using standard units.<br>Explain their findings in different ways –display/ writing/record more complex data and results using scientific diagrams and bar charts/line graphs<br>Considering evidence and evaluating<br>Children can:<br>Make a prediction based on something they have found out.<br>Use straightforward scientific evidence to answer questions or to support their findings e.g. compare time at different places in the world.<br>Evaluate what they have found using scientific language, bar charts and tables e.g. record phases of the moon over a month. |
| **Year 4/5** | Sound (Year 4)<br>Scientific Enquiry: Pattern seeking, Fair Test | Planning<br>Children can: |

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# Science Curriculum
# Knowledge and Skills Progression

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| **Summer Term 6** | Children to know that sound is a type of energy.<br>Children to know that sounds are created by vibrations.<br>Children to know that to create sound, vibrations are passed from particle to particle until the air particles closest to the ear vibrate, passing the vibrations into the ear drum. Children to know that sound energy travels more easily within a solid because their particles are closer together than in liquids or gases.<br>Children to know that sound travels as a wave vibrating the particles in the medium it is travelling.<br>Children to know that vibrations hit the ear drum and are then passed to the middle and inner ear.<br>Children to know that once the vibrations hit the inner ear, they are changed into electrical signals which the brain translates as different sounds.<br>Children to know that as there are no particles in a vacuum, sound waves cannot travel through it.<br>Children to know that pitch is the measure of how high or low a sound is.<br>Children to know that the pitch of a sound depends on the speed of the vibrations.<br>Children to know that slow vibrations will cause a lower pitch (e.g. thunder) and faster vibrations will cause a higher pitch (e.g. a whistle).<br>Children to know that the features of an object (e.g. size, material etc) will affect the pitch.<br>Children to know that the size of the vibration is called the amplitude.<br>Children to know that the louder the sound, the larger the amplitude.<br>Children to know that sound vibrations are quieter the further the source of the sound is from the ear.<br>Children to know that sound vibrations are louder the closer the source of the sound is from the ear. | Set up a simple fair test to make comparisons.<br>Plan and carry out an investigation by controlling variables fairly and accurately.<br>Explain why a test was fair and which variables have been isolated.<br>Use test results to make further predictions and set up further comparative tests.<br>Obtaining and presenting evidence<br>Children can:<br>Take measurements using different equipment and units of measure and record what they have found in a range of ways.<br>Make accurate measurements using standard units.<br>Explain their findings in different ways: –display/ writing/record more complex data and results using scientific diagrams and bar charts/line graphs<br>Considering evidence and evaluating<br>Children can make a prediction based on something they have found out.<br>Use straightforward scientific evidence to answer questions or to support their findings.<br>Evaluate what they have found using scientific language, bar charts and tables |

SLIMBRIDGE primary school

Science Curriculum
Knowledge and Skills Progression

# Class 5 Year 5/6

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| **Year 5/6 Autumn Term 1** | **Light (Year 6)**<br>Scientific Enquiry: Fair Test, Observe over time<br>Know that light travels as a wave but it appears to travel in a straight line.<br>Know that light rays bend when it moves from air to water and this is called refraction.<br>Know the visible spectrum is comprised of red, orange, yellow, green, indigo and violet.<br>Know that shining light through a transparent prism will separate the light into the colours of the rainbow.<br>Know that the law of reflection states that the angle of incidence is equal to the angle of reflection e.g. if the light ray hits a reflective surface at 45°, it will also bounce off at 45°.<br>Light travels in a straight line and hits an object.<br>Know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.<br>Light ray is reflected off the object, travels in a straight line to our eyes enabling us to see an object.<br>Know a shadow is always the same shape as the object that casts it.<br>Know that an opaque object in the path of light travelling from a light source will block the light rays that will hit it. | Planning<br>Children can:<br>Vary one factor whilst keeping the others the same in a fair test situation and give their reasons.<br>Use information to help make a prediction with reasons.<br>Identify the key factors when planning a fair test.<br>Present a report of their findings through writing/ display/graphs.<br>Obtaining and presenting evidence<br>Children can:<br>Explain why they have chosen specific equipment.<br>Decide which units of measurement they need to use.<br>Explain why a measurement needs to be repeated.<br>Take precise measurements.<br>Record their measurements and observations clearly.<br>Considering evidence and evaluating<br>Children can:<br>Suggest how to improve their work.<br>Record data and results using scientific diagrams, tables, bar charts/line graphs.<br>Report findings from investigations through written explanations.<br>Report findings from enquiries in oral and written forms. |

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| | | Draw conclusions from their work.<br>Explain and evaluate how they could improve their way of working. |
| **Year 5/6 Autumn Term 2** | **Forces (Year 5)**<br>Scientific Enquiry: Fair Test<br>Know that forces can act upon an object. They can make an object: start to move, stop moving, change direction, change its shape, move faster or move slower.<br>Understand that gravity is a pulling force exerted by the Earth which pulls objects towards the centre of the Earth (Earth's gravitational pull).<br>Know Isaac Newton is thought to have developed the theory of gravity and Galileo Galilei.<br>Know that mass is a measure of how much matter is inside an object.<br>Know weight is the amount of force gravity has on an object and can be measured in Newtons using a Newton meter.<br>Understand the bigger an object's mass, the more gravitational pull it will have.<br>Know simple machines and mechanisms include pulleys, gears and levers. These can be used to turn a small force into a larger force making it easier to carry out a task.<br>Children know pulleys can be used to lift heavy loads and that the more wheels in a pulley, the less force is needed to lift a weight.<br>Children know gears can be used to change the speed, force or direction of a motion.<br>Children know levers use a pivot point to increase a force such as providing additional pushing or pulling forces to lift greater weights.<br>Children understand friction is a force that acts between two surfaces or objects that are moving or trying to move across each other. | Planning<br>Children can:<br>Explore different ways to test an idea, choose the best way, and give reasons.<br>Plan and carry out an investigation by controlling variables fairly and accurately.<br>Use test results to make further predictions and set up further comparative tests.<br>Present a report of their findings through writing/ display and presentation.<br>Make a prediction which links with other scientific knowledge.<br>Explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough.<br>Obtaining and presenting evidence<br>Children can:<br>Explain why they have chosen specific equipment including ICT based equipment<br>Record their measurements in different ways: bar charts, tables and line graphs<br>Plan in advance which equipment they will need and use it well.<br>Record their measurements and observations systematically.<br>Explain qualitative and quantitative data<br>Considering evidence and evaluating |

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| | Children know air resistance is a type of friction force that pulls against an object travelling through the air. They know the larger the surface area an object has, the greater the air resistance acts upon it e.g. a large parachute will slow the fall of an object.<br>Children know water resistance is a friction force on objects floating or moving in water, and that the more streamlined an object is, the less water resistance there will be. | Children can:<br>Use a graph to answer scientific questions.<br>Link what they have found out to other science.<br>Record more complex data and results using scientific diagrams, classification keys, tables, bar charts/ line graphs.<br>Report findings from investigations through written explanations and conclusions.<br>Identify scientific evidence that has been used to support to refute ideas or arguments.<br>Report and present findings from enquiries, including causal relationships in oral and written forms such as displays and other presentations.<br>Link their conclusions to other scientific knowledge.<br>Explain how they could improve their way of working. |
| **Year 5/6 Spring Term 3** | Animals including humans (Year 6)<br>Scientific Enquiry: Research,<br>Children to know that the heart pumps blood to the lungs to get oxygen.<br>Children to know that gas exchange takes place alveoli in the lungs.<br>Children know that the heart pumps oxygenated blood around the body.<br>Children to know arteries carry oxygenated blood away from the heart.<br>Children to know that veins carry deoxygenated blood away from the heart.<br>Children to know that capillaries are the smallest blood vessels in the body and it's here that the exchange of water, nutrients, oxygen and carbon dioxide takes place.<br>Children know that regular exercise strengthens muscles, improves circulation, releases brain chemicals, helps you sleep more easily and strengthens bones. | Planning<br>Children can: -<br>Explore different ways to test an idea, choose the best way, and give reasons for their choice.<br>Plan and carry out an investigation by controlling variables fairly and accurately.<br>Use test results to make further predictions and set up further comparative tests.<br>Present a report of their findings through writing/ display and presentation.<br>Make a prediction which links with other scientific knowledge.<br>Explain how a scientist has used their scientific |

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| | Children know that drugs, alcohol and smoking have negative effects on the body.<br>Children know nutrients pass through villi and are absorbed into the blood vessels and that water is absorbed into the small intestine in exactly the same way as other nutrients are absorbed.<br>Children know blood transports gases, nutrients and waste products.<br>Children to know that kidneys are organs which filter blood and make urine from waste and excess water. | understanding plus good ideas to have a breakthrough.<br>Obtaining and presenting evidence<br>Children can:<br>Explain why they have chosen specific equipment including ICT based equipment.<br>Record their measurements in different ways- bar charts, tables and line graphs.<br>Plan in advance which equipment they will need and use it well.<br>Record their measurements and observations systematically.<br>Explain qualitative and quantitative data.<br>Considering evidence and evaluating<br>Children can:<br>Use a graph to answer scientific questions.<br>Link what they have found out to other science.<br>Record more complex data and results using scientific diagrams, classification keys, tables, bar charts/ line graphs.<br>Report findings from investigations through written explanations and conclusions.<br>Identify scientific evidence that has been used to support to refute ideas or arguments.<br>Report and present findings from enquiries, including causal relationships in oral and written forms such as displays and other presentations.<br>Link their conclusions to other scientific knowledge.<br>Explain how they could improve their way of working. |

SLIMBRIDGE primary school

# Science Curriculum
# Knowledge and Skills Progression

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| **Year 5/6 Spring Term 4** | **Living things and their habitats (Year 6)**<br>Scientific Enquiry: Identify and Classify. Pattern Seeking<br>Children to observe the common observable characteristics (e.g. number of legs, exo/endoskeleton, feathers, fur etc) of some animals, plants and micro-organisms from the immediate environment.<br>Children to use a classification system and key to identify some animals, plants and micro-organisms from the immediate environment.<br>Pupils to research the significance of the work of Carl Linnaeus, a pioneer of classification.<br>Pupils to research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.<br>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.<br>Discuss reasons why living things are placed in one group and not another<br>Focus on the sub-division of micro-organisms, plants and animals.<br>Through direct observation: classify animals into commonly found invertebrates (such as insects, spiders, snails and worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). | Planning<br>Children can: -<br>Explore different ways to test an idea, choose the best way, and give reasons.<br>Plan and carry out an investigation by controlling variables fairly and accurately.<br>Use test results to make further predictions and set up further comparative tests.<br>Present a report of their findings through writing/ display and presentation.<br>Make a prediction which links with other scientific knowledge.<br>Explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough.<br>Obtaining and presenting evidence<br>Children can:<br>Explain why they have chosen specific equipment including ICT based equipment.<br>Record their measurements in different ways: bar charts, tables and line graphs.<br>Plan in advance which equipment they will need and use it well.<br>Record their measurements and observations systematically.<br>Explain qualitative and quantitative data.<br>Considering evidence and evaluating<br>Children can:<br>Use a graph to answer scientific questions.<br>Link what they have found out to other science |

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| | | Record more complex data and results using scientific diagrams, classification keys, tables, bar charts/ line graphs<br>Report findings from investigations through written explanations and conclusions.<br>Identify scientific evidence that has been used to support to refute ideas or arguments.<br>Report and present findings from enquiries, including causal relationships in oral and written forms such as displays and other presentations.<br>Link their conclusions to other scientific knowledge.<br>Explain how they could improve their way of working. |
| **Year 5/6 Summer Term 5** | **Earth and space (Year 5)**<br>Scientific Enquiry: Observe over time /Research<br>Children to know that the Earth rotates (spins) on its axis to complete a full rotation once in every 24 hours.<br>To know that the Earth whilst rotating orbits (revolves) around the sun which takes a little more than 365 days.<br>Children can name the planets of the solar system (Mercury, Venus, Earth, Mars, Saturn, Neptune, Uranus, Jupiter)<br>Children to know that Mercury, Venus, Mars and Earth are rocky planets, while Jupiter, Saturn and Neptune are made of gas.<br>Children to understand that the term 'Geocentric model' refers to the belief that the Earth was at the centre of the solar system.<br>Children to understand that the term 'Heliocentric model' (current) describes the Sun as being at the centre of the solar system. | Planning<br>Children can: -<br>Explore different ways to test an idea, choose the best way, and give reasons.<br>Plan and carry out an investigation by controlling variables fairly and accurately.<br>Use test results to make further predictions and set up further comparative tests.<br>Present a report of their findings through writing/ display and presentation.<br>Make a prediction which links with other scientific knowledge.<br>Explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough.<br>Obtaining and presenting evidence<br>Children can: |

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| | Children to know that the Moon orbits the Earth in an ovoid while spinning on its axis.<br>Children to know that the moon appears to be different shapes and sizes at different times of the month.<br>To know that the Sun, Earth, Moon and planets are roughly spherical in shape.<br>To know that the sun appears to move across the sky during the day but the sun does not move at all.<br>To know that daytime occurs when the side of Earth is facing towards the sun and night occurs when it is facing away from the sun.<br>To know that we should not look directly at the sun as it can cause eye damage. | Explain why they have chosen specific equipment including ICT based equipment<br>Record their measurements in different ways- bar charts, tables and line graphs.<br>Plan in advance which equipment they will need and use it well.<br>Record their measurements and observations systematically.<br>Explain qualitative and quantitative data.<br>Considering evidence and evaluating<br>Children can:<br>Use a graph to answer scientific questions.<br>Link what they have found out to other science.<br>Record more complex data and results using scientific diagrams, classification keys, tables, bar charts/ line graphs.<br>Report findings from investigations through written explanations and conclusions.<br>Identify scientific evidence that has been used to support to refute ideas or arguments.<br>Report and present findings from enquiries, including causal relationships in oral and written forms such as displays and other presentations.<br>Link their conclusions to other scientific knowledge.<br>Explain how they could improve their way of working. |
| | Evolution and inheritance (Year 6)<br>Scientific Enquiry: Research | Planning<br>Children can: -<br>Explore different ways to test an idea, choose the best way, and give reasons. |

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| | Know that livings things used to look different to how they do now and this is evidenced by fossils.<br>Know that fossils provide information about living things that inhabited the Earth millions of years ago.<br>Know animals and plants produce offspring that is similar (owls produce baby owls and humans produce baby humans) but offspring are not identical to their parents.<br>Children know that features of humans and animals may be passed on to offspring which is why they look like similar e.g. hair colour, face shape etc.<br>Understand that as well as variation between parents and their offspring, there is variation between plants and animals (different breeds of dog, different types of plants).<br>Children understand that Chares Darwin first developed ideas about evolution through his book 'The Origin of Species.'<br>Understand there are many different types of environments around the world e.g. polar regions, grasslands, rivers, oceans, deserts and rainforests.<br>Understand that different animals have different characteristics to help them survive in the environment they live in e.g. Camels have long eye lashes to keep out the sand, wide feet to walk easily on sand etc.<br>Know adaptive traits are influenced by environment and adaptation can occur due to food and climate e.g. birds migrate.<br>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.<br>Understand that natural selection ('survival of the fittest') is the process by which living things which are better adapted to their environment survive, | Plan and carry out an investigation by controlling variables fairly and accurately.<br>Use test results to make further predictions and set up further comparative tests.<br>Present a report of their findings through writing/ display and presentation.<br>Make a prediction which links with other scientific knowledge.<br>Explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough.<br>Obtaining and presenting evidence<br>Children can:<br>Explain why they have chosen specific equipment including ICT based equipment.<br>Record their measurements in different ways: bar charts, tables and line graphs.<br>Plan in advance which equipment they will need and use it well.<br>Record their measurements and observations systematically.<br>Explain qualitative and quantitative data.<br>Considering evidence and evaluating<br>Children can:<br>Use a graph to answer scientific questions.<br>Link what they have found out to other science.<br>Record more complex data and results using scientific diagrams, classification keys, tables, bar charts/ line graphs.<br>Report findings from investigations through written |

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| | whereas those that are not well suited become extinct e.g. giraffes with slightly longer necks. | explanations and conclusions.<br>Identify scientific evidence that has been used to support to refute ideas or arguments.<br>Report and present findings from enquiries, including causal relationships in oral and written forms such as displays and other presentations.<br>Link their conclusions to other scientific knowledge.<br>Explain how they could improve their way of working. |

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| | Working Scientifically | Plants | Animals inc humans | Living things in habitats | Evolution and inheritance | Rocks | Everyday materials | Properties and changes materials | States of matter | Light | Sound | Forces and magnets | Seasonal change | Earth and space | Electricity |
| EYFS | | x | x | x | | x | x | | | x | x | | x | | |
| Y1 | | x | x | | | | x | | | | | | x | | |
| Y2 | | x | x | x | | | x | | | | | | | | |
| Y3 | | x | x | | | x | | | | x | | X | | | |
| Y4 | | | x | X | | | | | x | | x | | | | x |
| Y5 | | | x | x | | | | x | | | | x | | x | |
| Y6 | | | x | X | x | | | | | x | | | | | x |
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