Primary Science Progression Map

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum *Pupils should be taught:*	***Children at the expected level of development will: -*** • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. • Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. • Make comments about what they have heard and ask questions to clarify their understanding	***Working Scientifically*** • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions. ***Plants*** • 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. ***Animals including Humans*** • identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • identify, name, draw and label the basic parts of the human	***Working Scientifically*** • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions. ***Living Things and their Habitats*** • explore and compare the differences between things that are living, dead, and things that have never been alive • 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 • identify and name a variety of plants and animals in their habitats, including microhabitats • 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.	***Working Scientifically*** • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to	***Working Scientifically*** • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.	***Working Scientifically*** • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments. ***Living Things and their Habitats*** • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of	***Working Scientifically*** • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments. ***Living Things and their Habitats*** • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences,

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		body and say which part of the body is associated with each senses ***Everyday Materials*** • distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties. ***Seasonal Changes*** • observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies.	***Plants*** • observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. ***Animals including Humans*** • 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. ***Uses of Everyday 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 • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	answer questions or to support their findings. ***Plants*** • identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • 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 • investigate the way in which water is transported within plants • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. ***Animals including Humans*** • 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 • identify that humans and some other animals have skeletons and muscles for support, protection and movement. ***Rocks*** • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things	***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 to living things. ***Animals including Humans*** • describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions • construct and interpret a variety of food chains, identifying producers, predators and prey. ***States of Matter*** • compare and group materials together, according to whether they are solids, liquids or gases • 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) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	reproduction in some plants and animals. ***Animals Including Humans*** • describe the changes as humans develop to old age. ***Properties and change of Materials*** • 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 • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • 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	including microorganisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics. ***Animals Including Humans*** • 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 • describe the ways in which nutrients and water are transported within animals, including humans. ***Evolution and Inheritance*** • 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 • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. ***Light*** • recognise that light appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects

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				that have lived are trapped within rock • recognise that soils are made from rocks and organic matter ***Light*** • recognise that they need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by an opaque object • find patterns in the way that the size of shadows change. ***Forces and Magnets*** • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • 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 • describe magnets as having two poles • predict whether two magnets will attract or repel each other,	***Sound*** • identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases. ***Electricity*** • identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • 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 • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors.	of acid on bicarbonate of soda. ***Earth and Space*** • describe the movement of the Earth, and other planets, relative to the Sun in the solar system • describe the movement of the Moon relative to the Earth • describe the Sun, Earth and Moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. ***Forces*** • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	are seen because they give out or reflect light into the eye • 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 • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. ***Electricity*** • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram.

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				depending on which poles are facing			
By the end of the year, children should be able to…							
Plants							
Working Scientifically	**Nursery:** Plant seeds and care for growing plants. **Reception:** Explore the natural world around them Explore the natural world around them, making observations and drawing picture of animals and plant s (ELG)	Explore the outdoor area of school and observe plants that are growing. Look at different potatoes and potato products, prepare tubs for growing, and plant a chitted potato. Plant seeds in a jar or bag. Predict what will happen and start to watch them grow. Look at flowers outside in the playground, make a large model in the classroom. Look at the different trees in the area. Do leaf and bark rubbings outside, create a large piece of art on the playground floor.	Investigate how plants disperse their seeds and why. Explore plants that spread their seeds by utilising the wind. Make a seed helicopter and a dandelion seed. Investigate different ways that plants can disperse their seeds, including seed designed to stick on animals and humans. Using clay or modroc, create a large burr, with hooks and use junk modelling to create other seeds. Plant beans in bags of water to investigate what they need to grow into healthy plants. Predict what will happen to the bean left growing in a cupboard. Record the growth of cress seeds and predict how long it will take for them to be long enough to eat. Recreate a plant with craft material labelling the different parts.	Plant seedlings to investigate what plants need to grow strong and healthy. Record the growth of the seedlings. Make detailed, labelled drawings of what has happened. Use data loggers to record temperature and light over a 24-hour period Make close observations and create models of sections through different fruits to discover the difference between fruits and vegetables. Draw graphs, make drawings and write reports to explain findings from investigations. Make close observations of different flowers with magnifiers. Create bee and flower models to learn how insects and other creatures are important in the pollination of flowers. Discover what happens to flowers after pollination Ask questions and make observational drawings and notes to explore different fruits. Make a paper seed and investigate wind dispersal			

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				by testing different versions to find the best flier.			
Skills	**Reception:** Describe what they see, hear and feel whilst outside Explore the natural world around them, making observations and drawing picture of animals and plant s (ELG) Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (ELG) Make comments about what they have heard and ask questions to clarify their understanding (ELG)	Identify the different parts of a wild flowering plant. Describe what each part of a wild flowering plant does. Identify a variety of common wild and garden plants.	Observe and describe the growth of seeds and bulbs. Find out and describe what plants need to grow and stay healthy. Explain the difference between seeds and bulbs. Identify and explain the different parts of a plant. Describe the life cycle of a plant.	Identify and describe the different functions of a flowering plant. Explore what plants need for life and growth. Investigate how water is transported within plants. Explore what each part of the flower plays in the life cycle of a flowering plant. Explore what pollination and fertilisation is. Explore the different methods of seed dispersal.			
Knowledge	**Nursery:** Begin to understand the need to respect and care for the natural environment and all living things Understand the key features of the life cycle of a plant and an animal. **Reception:** Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. (ELG)	Know what plants need to grow. Know the different parts of a wild flowering plant. Name a variety of common wild and garden plants. Understand the difference between trees and flowering plants. Understand the difference between deciduous and evergreen trees.	Understand that seeds and bulbs grow into mature plants. Know what plants need to grow and stay healthy. Know the difference between seeds and bulbs. Know the different parts of a plant. Know the life cycle of a plant. Know what kind of liquid a plant needs to survive and stay healthy.	Know the different functions of a flowering plant. Know what plants need for lie and growth. Know how water is transported within plants. Know what each part of the flower plats in the life cycle of a flowering plant. Know what pollination and fertilisation is. Understand how insects and other creatures are important in the pollination of flowers. Know the different methods of seed dispersal.			
Vocabulary	branch bulb flower fruit garden grow leaves petals plants	deciduous evergreen germination living, Produce reproduce seedling trunk wild	coniferous reproduction survival Warmth	anchor carbon dioxide dispersal fertiliser life-processes oval oxygen pollen pollination			

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	root seed soil stem tree vegetables weeds			seed formation transportation			
Animals including Humans							
Working Scientifically	**Nursery:** Use all their senses in hands on exploration on natural materials **Reception:** Explore the natural world around them, making observation and drawing pictures of animals and plants (ELG)	Observe changes to the body over time by comparing baby photos with current ones. Collect data about head size, hand and foot size, hair and eye colour. Look for patterns in the measurements collected. Explore different foods using different senses and classify into groups. Explore how different senses are used in the environment. Gather together safe but stimulating things to engage the different senses. Classify these together into the five sensory groups. Explore animals' behaviours and habitats in the local environment and look for behaviour patterns. Observe woodlice outside in their own habitat. Look at their features and predict what type of place a woodlouse would like to live. Create a woodlouse house and record where they go. Plan an investigation to test the absorbency of different types of paper. Predict which paper will be the best at soaking up the accident and then test them to find out.	Using magnifying glasses, closely observe feathers and eggs and draw what is seen. Gather information about visitors who are pregnant or have very young children by careful questioning. Observe and record what happens to the body during exercise.	Tabulate, draw graphs and analyse data from a survey of people's diet and use it to answer questions. Make predictions, gather data, discuss, display and interpret findings about whether people have stronger muscles because they use them more. Plan and carry out an investigation to answer a health and fitness question.	Use everyday objects to demonstrate the human digestive system. Use physical activity to demonstrate an understanding of the functions of each part of the digestive system.	Use annotated diagrams to present the key stages of foetal development. Research and create an infographic on baby growth. Compare 'red books' and predict growth patterns. Create a human timeline.	Create a painting of blood as seen under a powerful microscope and include a detailed description to accompany it. Plot the journey of water and food through the body.

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Skills	**Reception:** Explore the natural world around them, making observation and drawing pictures of animals and plants (ELG) Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (ELG) Make comments about what they have heard and ask questions to clarify their understanding (ELG)	Identify the difference between carnivores and herbivores. Identify a variety of animals that are carnivores, herbivores and omnivores. Explain how animal's teeth link to their diet. Identify, draw and label the basic parts of the human body. .	Observe the development of a chicken in an egg. Identify the differences between babies, young children, adults and elderly people. Identify essential provisions that humans need to survive. Investigate what happens to the human body during exercise. Describe what humans can do to stay healthy including exercise, nutrition and hygiene.	Identify what types and amounts of nutrition animals and humans need. Explain why animals have skeletons. Distinguish between vertebrate and invertebrate. Decide whether an animal is an invertebrate or vertebrate. Identify the common names of the human bones.	Identify different teeth and describe their functions in humans. Explain how different drinks can affect teeth. Explain how toothpaste can help clean decay. Describe the different parts of the digestive system. Describe the functions of different parts of the digestive system. Identify which living things are producers, predators and prey. Construct and interpret different food chains.	Explore the key stages of foetal development. Identify the changes that occur during puberty. Explain what happens to the body as it gets old. Identify the key milestones in a human life and how they impact on the body	Identify the main parts of the human circulatory system. Describe the functions of the heart, blood vessels and blood. Describe how nutrients and water are transported in the human body. Explain the difference between cells, tissues and muscles.
Knowledge	**Nursery:** Understand the key features of a life cycle of a plant and an animal Begin to understand they need to respect and care for the natural environment and all living things **Reception:** Explore the natural world around them, making observation and drawing pictures of animals and plants (ELG)	Know the names and features of common animals. Know the difference between carnivores and herbivores. Name a variety of animals that are carnivores, herbivores and omnivores. Know how animal's teeth link to their diet. Name the basic parts of the human body. Say which part of the human body is associated with each sense. Know that there is variation between humans' hair colours. Understand what camouflaged means.	Understand the development of a chicken in an egg. Know the differences between babies, young children, adults and elderly people. Know which essential provisions humans need to survive. Know what happens to the human body during exercise. Understand what makes a healthy, balanced meal using the different food groups.	Know what types and amounts of nutrition animals and humans need. Know what a skeleton is. Know the difference between vertebrate and invertebrate. Know whether an animal is an invertebrate or vertebrate. Know the common names of the human bones. Know the difference between bones and muscles.	Know the names of different teeth and their functions in humans. Know how different drinks can affect teeth. Know how toothpaste can help clean decay. Understand what the digestive system is. Know what a producer, predator and prey is. Know how to use a food chain.	Know the key stages of foetal development. Understand the changes that occur during puberty. Know what happens to the body as it gets old. Know the key milestones in a human life and how they impact on the body.	Name the main parts of the human circulatory system. Know the functions of the heart, blood vessels and blood. Know how nutrients and water are transported in the human body. Know the impact of a healthy lifestyle on the way the body functions. Know the impact of drugs on the human body. Know the difference between cells, tissues and muscles. Know how muscles work.
Vocabulary	(parts of the body) Beak chin elbow Feathers	Amphibians carnivores Features herbivore Mammals	conditions desert diet ethnic origin exercise	Bones carbohydrates Cereals contract dairy	abdomen appendix bile canine colon	ageing Counteract degradation, Development Embryo	alcohol Alveoli Artery balanced diet blood vessels

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	Fin Fur Noise rough, sight skin horn smell smooth soft Sound sour sweet taste thumb toes tongue tooth Touch	non-living omnivore reptiles sense webbed feet	female food chain germs growth habitats healthy life-cycle male medicine micro-habitats Nutrients Nutrition ocean rainforest seashore shelter stages unhealthy, woodland	endoskeleton exoskeleton fats fibre grains hydrostatic skeleton invertebrates Joints lipids minerals muscles Protection protein relax Skeleton Skull Support vitamins	Consume Digestive system enamel enzyme gall bladder gastrointestinal tract Gut incisor Jaw large intestine liver metabolism molar Oesophagus orifice pancreas predatory premolar rectum saliva salivary glands small intestine Vegan Vegetarian	Emotional Foetus Gestation Hormone Life-span Physical Processes Puberty Womb	blood, vein Capillary Circulatory system Deoxygenated drugs internal organs muscular Oxygenated Pulmonary side-effects skeletal tobacco Valve Villi
Living Things and their Habitats							
Working Scientifically	**<u>Nursery:</u>** Use all their senses in hands on exploration on natural materials **<u>Reception:</u>** Explore the natural world around them.		Explore outside, and through observation, the differences between things that are living, dead, and things that have never been alive. Find specimens and explain how they know they are alive or otherwise. Photograph or draw the micro-habitats in the school grounds. Consider and draw conclusions about what lives in these microhabitats and why. Create dioramas of different habitats and label with research information. Create a school allotment and plant edible plants. Research which minibeasts the allotment habitat would benefit from and suggest		Ask relevant questions about living things and their habitats and begin to group them. Observe local habitats and record living things they see around them. Make accurate observational drawings of an invertebrate found in the local environment. Make a group large-scale drawing of an insect. Conduct an experiment to investigate how the greenhouse effect works. Use the results to discuss how people are causing climate change.	Dissect a flower and explore the flowering plant reproduction. Grow new plants from a range of parent plant parts. Observe and sketch insect and amphibian lifecycles for comparison. Research and sketch mammalian and bird life cycles for comparison.	Create a classification key. Observe, record and classify local area living things. Classify unusual creatures and plants.

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			ideas on how to attract them.				
Skills	**Reception:** Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live. Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (ELG) Make comments about what they have heard and ask questions to clarify their understanding (ELG)		Describe how a microhabitat is suited to a particular minibeast. Explain what a minibeast will need in its microhabitat. Identify, explore and compare things that are living, dead or never alive. Identify different sources of food. Identify some wildlife in the local area.		Identify the seven characteristics of a living thing. Organise animals into the major groups. Use a classification key/branching database to group, identify and name living things according to their features. Consider how the local environment has changed. Consider natural and man-made changes to the environment and how living things have adapted to these changes. Investigate how the greenhouse effect works.	Compare the similarities and differences between animals' life cycles. Explain how different animals are suitable for their environment and habitat. Investigate ways that plants reproduce asexually. Describe the different parts of a dissected, real-life flower including the key sexual structures. Explain how plants disperse seeds.	Use a branching classification key to identify subtle differences between certain plants and animals. Design a 'new' creature that fits within a specific classification.
Knowledge	**Nursery:** 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. Know that there are different countries in the world and talk about the differences they have experienced or seen in photos. **Reception:** Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class (ELG)		Name some different minibeasts Know how a microhabitat is suited to a particular minibeast and what it needs to include. Understand how a microhabitat provides for the basic needs of different insects. Know things which are living, dead or never alive. Know what a habitat is and how it is suited for different animals and plants. Understand what a food chain is. Know how wildlife in the local area are part of the food chain.		Understand that living things can be grouped in a variety of ways. Know the seven characteristics of a living thing. Know how scientists use similarities and differences as a basis for organising animals. Understand what climate change is. Know natural and man-made changes to the environment and how living things have adapted to these changes. Know how the local environment has changed.	Know the similarities and differences between animals' life cycles. Know how different animals are suitable for their environment and habitat. Know how plants reproduce asexually. Name the different parts of a dissected, real-life flower including the key sexual structures. Know how plants disperse seeds.	Know about the seven levels of the Linnaeus' system. Understand what microorganisms are and why they are important. Know how to use a branching classification key to identify subtle differences between certain plants and animals.

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	Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (ELG) Make comments about what they have heard and ask questions to clarify their understanding (ELG)						
Vocabulary	Dark Dry Leaf Light Litter shade Sunlight		Antarctic artic characteristics coastal consumer diorama energy food sources Invertebrate minibeasts (names of minibeast e.g., milliped, spider) polar predator prey producer sensing urban Vertebrates		adaptation annelids antennae arachnids backbone bark climate change crustaceans Deforestation Environment excretion global warming greenhouse gases human impact molluscs natural nature reserves Nonflowering respiration segments sensitivity species thorax urbanisation, warm and cold blooded	Anther arthropods Asexual Carpel conception, Dormant Egg Fertilisation Filament Fledglings Gametes Germinate gestation period juvenile Male Metamorphosis Nectary Nymph Ovary Ovules Pistil Pollinator Pregnancy Propagation Pupa sea anemone Sepal Sexual Stamen Stigma Style Tuber	algae anti-biotic Bacteria Hierarchies Kingdoms life domains Linnaean Microorganisms Mould organisms Penicillin Phylum Populations taxonomy Yeast
Everyday materials							
Working Scientifically	**<u>Nursery:</u>** Use all their senses in hands on exploration of natural materials Explore collections of materials with similar and/or different properties **<u>Reception:</u>**	Investigate challenges using magnets. Create games in the classroom using the magnets. Test a selection of materials using a pipette to simulate raindrops and consider why	Investigate which papers are the most absorbent. Devise an investigation to test a variety of materials for their absorbent property. Explore different fabrics and investigate how waterproof				

	Explore the natural world around them, making observation and drawing pictures.	some materials let water through and others do not. Look at a selection of materials and consider which one is best for fixing a torn umbrella. Explain your selection and predict the outcome. Watch a block of ice melt and record the changes. Working with play figures frozen in ice, devise an investigation to release them. Observe what happens to a puddle over time and record the results.	they are using a dropper of water. Explore the textures and properties of different materials by printing with a selection of items. Explore the waterproof properties of wax by creating a wax resist picture. Investigate which ball is the bounciest, plot the results on a chart. Devise an investigation to test the elasticity of a fabric and record the results. Examine a selection of different materials and explore their rigidity by devising an investigation to test them. Test the papers using weights to find the strongest one and record the results. Build a paper bridge strong enough to hold a toy car.				
Skills	**<u>Nursery:</u>** Talk about the differences between materials and changes they notice **<u>Reception:</u>** Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (ELG) Make comments about what they have heard and ask questions to clarify their understanding (ELG)	Recognise the properties of different materials. Explain why different materials are used for certain objects. Match adjectives to describe the properties of different materials. Sort and group objects based on the properties of the materials. Explain what different materials are used for.	Identify materials that are absorbent. Identify materials that are waterproof. Identify materials that are transparent and opaque. Identify the similarities and differences of a variety of everyday materials. Explain how the shapes of solid objects made from some materials can be changed. Choose the best materials to use to build an object.				

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Knowledge	**Reception:** Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. (ELG)	Know the properties of different materials. Know why different materials are used for certain objects. Know the similarities and differences between the physical properties of everyday materials. Know what different materials are used for.	Know which materials are best for certain uses. Know the properties of a variety of everyday materials and objects. Know how and why the shapes of solid objects made from some materials can be changed. Understand that different everyday materials have different levels of buoyancy. Know which materials float best.				
Vocabulary	Dull Glass Hard metal Plastic Rough Shiny Smooth Soft Wood	absorbent bendy/not bendy magnetic man-made material natural opaque pipet, Properties Stiff Stretchy waterproof/not waterproof	Fabric Firm Flexible Reflective Rubber Translucent Transparent Windproof				
Properties and changes of materials							
Working Scientifically	**Nursery:** Use all their senses in hands on exploration of natural materials Explore collections of materials with similar and/or different properties					Investigate hard materials suitable for food preparation. Investigate thermal insulating properties of materials to keep refreshments hot or cold. Investigate possible food packaging materials. Investigate the absorbency of materials suitable for cleaning. Investigate electrical insulators/conductors for health and safety purposes. Investigate materials that combine soundproofing with comfort.	

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						Explore methods to separate mixed materials back into their constituent parts. Write up the experiments. Make new materials.	
Skills	**<u>Nursery:</u>** Talk about the differences between materials and changes they notice **<u>Reception:</u>** Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (ELG) Make comments about what they have heard and ask questions to clarify their understanding (ELG)					Compare the similarities and differences of properties of everyday materials. Investigate soluble and non-soluble materials. Identify which mixtures can be separated through filtering, sieving and evaporating. Identify some chemists who have invented new materials.	
Knowledge	**<u>Reception:</u>** Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. (ELG)					Know the similarities and differences of properties of everyday materials. Know which materials are soluble and non-soluble. Know that some mixtures can be separated through filtering, sieving and evaporating. Know the difference between reversible and irreversible. Understand that dissolving, mixing and changes of state are reversible changes. Know some changes result in the formation of new materials, and that this kind of change is not usually reversible.	
Vocabulary						Chemical condense Conductivity Dissolving evaporate, Filter	

Primary Science Progression Map

						Insoluble Irreversible Property Reversable Solubility Soluble Solute Solution solvent suspension thermal Transparency	
States of Matter							
Working Scientifically					Examine and compare the properties of sand and water. Investigate the presence of gases. Use a thermometer to make observations as water changes from one state to another.		
Skills					Describe the properties of solids, liquids and gases. Explain what happens when a sweet is dropped into a fizzy drink. Explain what happens when chocolate is melted and cooled. Explain what happens when a liquid is frozen. Describe what happens at each stage in the water cycle.		
Knowledge					Know the difference between a solid, liquid and a gas. Understand how particles behave in different states. Understand what evaporation and condensation is.		
Vocabulary					change of state Collection condensation Cooling		

Primary Science Progression Map

					Energy evaporation Freeze Gas Liquid melting point Particles precipitation Process Solid State states of matter water cycle water droplets water vapour		
Seasonal Changes							
Working Scientifically		Observe the temperature and wind outside. Take the temperature outside in the morning and the afternoon. Record these observations in the classroom and discuss the changes. Track a shadow by observing and measuring it over time. Make a bar chart of paper strips of shadow length plotted against time intervals. Set up rainfall gauges up in the playground and record the rainfall over a period of time. Make a windsock to measure wind direction and a wind vane to measure the direction of the wind. Make a thermometer box to house a thermometer and use it outside in the playground. Children write a list of equipment needed.					

Primary Science Progression Map

Skills	**Reception:** Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (ELG) Make comments about what they have heard and ask questions to clarify their understanding (ELG)	Identify objects that match to each season. Investigate how shadows change during the day. Identify the similarities and differences between difference seasons.					
Knowledge	**Nursery:** Know that there are different countries in the world and talk about the differences they have experienced or seen in photos **Reception:** Understand the effect of changing seasons on the natural world around them Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. (ELG)	Understand what the weather is. Know that weather forecasters tell us what weather to expect. Know what happens in different seasons. Understand what happens to the day length in different seasons. Name the earth, sun and moon in the solar system.					
Vocabulary	Autumn Rain Seasons Snow Spring Summer Sunny weather Windy Winter	Heat Overcast temperature					
				Light			
Working Scientifically				Investigate the nature of darkness, light and sight with a torch, a cardboard box and pencil holes. Predict and then investigate how well different colours and materials reflect light in a simulated dark cave. Use results to sort and classify the samples.			Investigate and demonstrate that light travels in straight lines. Investigate how light reflects by making a periscope. Investigate shadows and how they change as a result of light sources. Explore split light (finding 'rainbows').

Primary Science Progression Map

				Discover the properties of mirrors and reflections by undertaking different investigative tasks and use scientific knowledge on light to explain findings. Investigate how different objects create shadows. Conduct a fair test to find the precise relationship between the distance of a torch and the size of a shadow. Investigate how coloured light beams mix and what it's like to look through different coloured filters.			Investigate coloured light mixing.
Skills				Explain how light travels. Describe the difference between opaque, translucent and transparent objects. Explain how shadows are formed.			Explain why shadows have the same shape as the objects that cast them. Explain what transparent, translucent and opaque mean and why they are used.
Knowledge				Understand that we need light in order to see things. Know that dark is the absence of light. Understand that light is reflected from surfaces, including mirrors. Understand that light from the Sun can be dangerous. Know how to protect my eyes from the Sun.			Understand that light travels in straight lines. Know how the Sun causes shadows. Understand how light is affected by transparent, translucent and opaque objects. Know that objects are seen because they give out or reflect light into the eye.
Vocabulary				Beam block Bounce Glare Light source Ray Reflect Transparent Visible			absence of light Absorb Emitted Refraction Scattered
Forces and Magnets							

Primary Science Progression Map

Working Scientifically	**Nursery**: Explore how things work. Explore and talk about different forces they can feel **Reception:** Explore the natural world around them			Ask questions and then investigate how toy vehicles run on different surfaces. Investigate how it is forces that make things move (pushes and pulls) and that magnetic forces can move things at a distance without forces touching. Investigate how magnets attract some materials and not others. Investigate the polarisation of magnets, making predictions and testing ideas. Write the method for an experiment.		Investigate parachutes and air resistance. Investigate and create levers and pulleys. Investigate gears. Investigate friction. Investigate boats and water resistance.	
Skills	**Nursery**: Talk about what they see, using a wide range of vocabulary. **Reception:** Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (ELG) Make comments about what they have heard and ask questions to clarify their understanding (ELG)			Identify different forces. Discover which forces need contact between two objects and which ones do not need any contact. Identify materials that are attracted to a magnet and materials that are magnetic. Explain how magnets are used in everyday life.		Identify the effects of different types of forces. Investigate the impact of levers, pulleys and gears on forces.	
Knowledge	**Reception:** Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. (ELG)			Understand what a force is. Know which forces need contact between two objects and which ones do not need any contact. Know that magnets attract or repel each other and some materials and not others. Understand how magnetic forces can act at a distance.		Understand what gravity is. Understand why unsupported objects fall towards the Earth.	

Primary Science Progression Map

				Know that magnets have two poles.			
Vocabulary	magnet			attract compass Force force meter Friction Iron Magnetic magnetic field names of magnets non-magnetic Poles repel spring surface swerve Water resistance		Brake Cog Gears Gravitation Gravity Lever Mechanism Newton Opposing Pulleys Resistance streamline	
				Rocks			
Working Scientifically				Observe, group, draw, describe and name rock samples. Investigate different kinds of rocks' physical properties. Investigate the properties of different rocks with fair testing e.g., permeability, hardness and an acid test for the presence of calcium carbonate. Identify different rocks for different purposes in the local area. Record findings. Investigate different soils, asking questions and seeking answers through a variety of scientific enquiries (exploring/ classifying and identifying /fair testing)			
Skills				Use a rock identification key. Explain how fossils are formed. Describe how soil is formed.			

Primary Science Progression Map

Knowledge				Know the differences between igneous, sedimentary and metamorphic rocks. Know how fossils are formed. Know what palaeontology is and what a palaeontologist does. Name different types of soil.			
Vocabulary				anthropic base rock body fossil cast fossil chemical fossil Extinct igneous Impermeable lava magma metamorphic mould fossil organic matter Permeable replacement fossil sediment sedimentary sub soil topsoil trace fossil			
				Electricity			
Working Scientifically	**<u>Nursery:</u>** Explore how things work.				Identify electrical components and explore electrical circuits. Test different materials to see whether or not they complete a circuit.		Investigate a range of simple electric circuit challenges (planning/fair testing/exploring). Investigate the effects of voltage and number of components on a working circuit. Draw circuit diagrams. Design and make a dimmer switch. Design and create a light decoration circuit.

Primary Science Progression Map

Skills	**<u>Nursery:</u>** Talk about what they see, using a wide range of vocabulary. **<u>Reception:</u>** Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (ELG) Make comments about what they have heard and ask questions to clarify their understanding (ELG)				Identify electrical dangers around the home. Identify which appliances need electricity. Identify basic parts of a circuit. Build a circuit. Explain why a switch is important in a circuit and what it does. Predict what would happen if there was a break in the circuit. Identify materials which are good conductors or insulators. Explain why metals are good conductors. Identify objects which are good conductors or insulators and explain why.		Set up a range of circuits to identify how they work and how to achieve a range of effects.
Knowledge	**<u>Reception:</u>** Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. (ELG)				Know what electricity is and why it is important. Know which appliances need electricity. Name basic parts of a circuit. Understand what makes a complete circuit. Know what a switch is and why it is important in a circuit. Know what would happen if there was a break in the circuit. Know what a conductor and insulator is. Know which materials and objects are good conductors or insulators.		Know which symbols to use when representing a simple circuit in a diagram. Know the effect of the voltage of cells used in a circuit on the brightness of a lamp or the volume of a buzzer.

Primary Science Progression Map

Vocabulary	electricity,				Appliances Buzzer Cell Circuit component Conductor crocodile clips electric current electrical insulator fossil fuels insulator, Mains Motor renewable energy Wires		atom Dimmer electrical symbols electrons neutrons nucleus Parallel circuit protons series circuit
				Sound			
Working Scientifically					Investigate vibrations and how sound travels. Investigate pitch and volume by exploring instruments and the different sounds they make. Plan and conduct an investigation into which material best reduces the sounds we hear.		
Skills	**<u>Nursery:</u>** Listen with increased attention to sounds. **<u>Reception:</u>** Listen attentively, move to and talk about music, expressing their feelings and responses. Describe what they see, hear and feel whilst outside Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (ELG) Make comments about what they have heard and ask questions to clarify their understanding (ELG)				Explain how sound vibrations travel through a medium to the ear. Describe how musical instruments make sound. Explain how different sounds are made, including higher and lower pitch. Investigate why some materials are better for sound to travel through than others. Describe how the length of the vibration can affect the sound. Describe how distance can affect the sound.		

Primary Science Progression Map

Knowledge	Understand sounds they have heard.				Know what vibrations are and how they travel through a medium to the ear. Understand how musical instruments make sound. Understand how the shape of an ear affects how we hear sounds . Know why some materials are better for sound to travel through than others.		
Vocabulary	quiet, loud, ear,				Amplitude Pitch vibration Volume Wave		
Earth and Space							
Working Scientifically						Develop enquiry questions. Create a scale model of the solar system. Create an orrery to explore heliocentricity. Set up an investigation to demonstrate that the Earth spins on its own axis. Create a sundial and explore time zones. Implement some investigations to show why the moon appears to change shape throughout the month	
Skills						Explain the movement of the Moon in relation to the Earth. Explain why we have day and night and how the Earth orbits the Sun. Explain how a sundial works and why we have different time zones around the world.	
Knowledge						Understand the movement of the planets in relation to the Sun.	

						Know the order of the planets in our solar system. Know what waxing, waning, new and full mean in relation to the Moon. Understand what a lunar month is. Know what an elliptical orbit is. Understand why we have seasons.	
Vocabulary						Axis constellation crescent geocentric gibbous heliocentric Jupiter lunar Mars Neptune orbit Phases of the Moon Mercury Planets revolve, rotate, Rotation Saturn solar system Uranus Venus waning waxing	
Evolution and Inheritance							
Working Scientifically							Identify things that are inherited and things that are learned. Explore variation through dog breeds. Identify features that support survival in a given environment.

Primary Science Progression Map

Skills							Compare the differences between environmental and inherited characteristics. Describe how animals are adapted to suit their environment in different ways. Find out about the evolutionary facts behind some traditional folk tales about features of some animals.
Knowledge							Know the difference between environmental and inherited characteristics Know how animals and plants are adapted to suit their environment in different ways and that this adaptation can lead to evolution Understand that living things have changed over time Understand 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
Vocabulary							Evolution Fossils Gene Genetics Homo sapiens Inherited Mutation natural selection offspring Survival of the Fittest