

Science Curriculum Map Detailed overview

Topic/ National Curriculum						
EYFS	Biology- Children know about similarities and differences in relation to living things.	Biology/ Physics- They make observations of animals and plants and explain why some things occur, and talk about changes	Biology- They talk about the features of their own immediate environment and how environments might vary from one another.	Chemistry/physics- Children know about similarities and differences in relation to places, objects and materials		
	Scientific Enquiry					
	Develop ideas of grouping, sequences, cause and effect Creating & Thinking Critically Create simple representations of events, people and objects Being Imaginative: 40-60+ months	Show curiosity about objects, events and people - Playing & Exploring Questions why things happen - Speaking: 30-50 months Closely observes what animals, people and vehicles do The World 8-20 months Use senses to explore the world around them Playing & Exploring Make links and notice patterns in their experience Creating & Thinking Critically	Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world The World: 30-50 months Answer how and why questions about their experiences ELG: Understanding	Take a risk, engage in new experiences and learn by trial and error- Playing & Exploring Engage in open-ended activity -Playing & Exploring Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically	Choose the resources they need for their chosen activities ELG: Self Confidence & Self Awareness Handle equipment and tools effectively ELG: Moving & Handling Develop their own narratives and explanations by connecting ideas or events ELG: Speaking Builds up vocabulary that reflects the breadth of their experience Understanding: 30-50 months	
Key Vocabulary						
EYFS	Plants flower stem petals roots vegetable fruit plant tree branches trunk leaves	Healthy Living: healthy diet exercise hygiene hydrated mindfulness emotions		material frozen ice/melting dry/wet waterproof reflection symmetry floating sinking bumpy/smooth absorb		
Cultural Capital						
EYFS	Hatching and observing caterpillars Hatching eggs (chicken or ducks)	Plant sunflowers for mother's day Growing beanstalks Science Week	Outdoor play in school grounds and on the beach/ local area.	Freezing and melting ice activities. Water play Playing in the snow (if we get any)	Beach school Stansted Airport visit– jobs, living	

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Yr1		Plants - Biology - 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. - observe changes across the four seasons	Animals including humans - Biology - 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 - Name different sources of food and where they come from. (year 2 objective covered in year 1) - 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 body and say which part of the body is associated with each sense	Everyday Materials- Chemistry - 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- Physics - observe changes across the four seasons - Observe and describe weather associated with the seasons and how day length varies.
	Scientific Enquiry				
		Make close observations of leaves, seeds, flowers etc. Compare two leaves, seeds, flowers etc. Classify leaves, seeds, flowers etc. using a range of characteristics Identify plants by matching them to named images Make observations of how plants change over a period of time When further afield, spot plants that are the same as those in the local area studied regularly, describing the key features that helped them	Make first hand close observations of parts of the body e.g. hands, eyes Compare two people Take measurements of parts of their body Compare parts of their own body Look for patterns between people e.g. Do people with big hands have big feet? Classify people according to their features Investigate human senses e.g. Which part of my body is good for feeling, which is not? Which food/flavours can I identify by taste? Which smells can I match? Make first hand close observations of animals from each of the groups Compare two animals from the same or different group	Classify objects made of one material in different ways e.g. a group of object made of metal Classify in different ways one type of object made from a range of materials e.g. a collection of spoons made of different materials Classify materials based on their properties Test the properties of objects e.g. absorbency of cloths, strength of party hats made of different papers, stiffness of paper plates.	Describe the general types of weather and changes in day length over the seasons. Describe some other features of their surroundings, themselves, animals , plants that change over the seasons

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			Classify animals using a range of features Identify animals by matching them to named images Classify animals according to what they eat			
	Key Vocabulary					
Yr1		Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area	carnivores, herbivores and omnivores Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves Names of animals experienced first-hand from each vertebrate group	Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/ cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through	Weather (sunny, rainy, windy, snowy etc.) , Seasons (winter, summer, spring, autumn), Sun, sunrise, sunset, Day length	
	Prior Learning					
		They make observations of animals and plants and explain why some things occur, and talk about changes. They talk about the features of their own immediate environment and how environments might vary from one another.	They make observations of animals and plants and explain why some things occur, and talk about changes. They talk about the features of their own immediate environment and how environments might vary from one another.	Children know about similarities and differences in relation to places, objects and materials.	They make observations of animals and plants and explain why some things occur, and talk about changes.	
	Cultural Capital					
		Science Week Pond Dipping Park visit to look at local trees and plants	Market Day	Boat Day CCL Science Lifeboat man visit (SOS day) outfit	Beach (geog- coast line)	

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Topic/ National Curriculum					
Yr2	Living things and their Habitats- Biology - 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.	Plants- Biology - 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 - Biology - 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- Chemistry - 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	
	Scientific Enquiry				
	Explore the outside environment regularly to find objects that are living, dead and have never lived Classify objects found in the local environment Observe animals and plants carefully, drawing and labelling diagrams Create simple food chains for a familiar local habitat from first hand observation and research Create simple food chains from information given e.g. in picture books (Gruffalo etc.)	Make close observations of seeds and bulbs Classify seeds and bulbs Research and plan when and how to plant a range of seeds and bulbs Look after the plants as they grow – weeding, thinning, watering etc. Make close observations and measurements of their plants growing from seeds and bulbs Make comparisons between plants as they grow	Ask people questions and use secondary sources to find out about the life cycles of some animals Observe animals growing over a period of time e.g. chicks, caterpillars, a baby Ask questions of a parent about how they look after their baby Ask pet owners questions about how they look after their pet Explore the effect of exercise on their bodies	Classify materials Make suggestions about alternative materials for a purpose that are both suitable and unsuitable Test the properties of materials for particular uses e.g. compare the stretchiness of fabrics to select the most appropriate for Elastigirl's costume, test materials for waterproofness to select the most appropriate for a rain hat	

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			Classify food in a range of ways, including using the Eatwell guide Investigate washing hands, using glitter gel			
Key Vocabulary						
	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, names of local habitats e.g. pond, woodland etc., names of micro-habitats e.g. under logs, in bushes etc.	As for year 1 plus - light, shade, sun, warm, cool, water, grow, healthy	Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)	Names of materials – increased range from year 1 Properties of materials - as for year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing. Bend/bending, stretch/stretching		
Prior Learning						
Yr2	- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) - Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) - Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) - Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans) - Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans)	- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) - Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)	- Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) - Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) - Name different sources of food and where they come from. (year 2 objective covered in year 1 Market Day)	- Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) - Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials) - Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials) - Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)		

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	• Observe changes across the four seasons. (Y1 - Seasonal changes)					
	Cultural Capital					
	Ivy Farm- geog and science- Local Habitats (fields, long grass, beach, farm, woods) Beach walks Local area walks Beach visits	(planting bulbs ready for the spring) (observing plants from the bulbs that we planted) Outdoor learning- seeds and dispersal	Caterpillar to Butterfly growth observation	Fire of London- making houses and recreating the fire fire brigade and fire safety visits (materials) Braintree Museum – Victorian materials and artifacts		

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Topic/ National Curriculum						
3	Rocks (including fossils) - to compare and group different kinds of rocks on the basis of appearance and simple physical properties - to describe in simple terms how fossils are formed when things that have lived are trapped within rock - to recognise that soils are made from rocks and organic matter	The skeleton (animals, including humans) to identify that some animals have skeletons and muscles for support, protection and movement	Nutrition - to identify that animals need the right nutrition and that this comes from what they eat - to describe the main parts of the digestive system	Plants - to name and describe functions of flowering plants - to explore the requirements of plants for life - to investigate how water is transported in plants - to explore the part that flowers play in the life cycle	Forces and Magnets - to compare how things move on different surfaces - to notice that some forces need contact between 2 objects, but magnetic forces can act at a distance - to observe how magnets attract or repel each other - to compare and group together materials on the basis of whether they are attracted to a magnet - to describe magnets as having 2 poles - to predict whether 2 magnets will attract or repel	Light and Shadow - to recognise that they need light in order to see things - to notice that light is reflected from surfaces - to recognise that light from the sun can be dangerous - to recognise that shadows are formed when the light from a light source is blocked by a solid object - to find patterns in the way that size of shadows change
	Scientific Enquiry					
	Observe rocks closely Classify rocks in a range of ways based on their appearance Devise a test to investigate the hardness of a range of rocks Devise a test to investigate how much water different rocks absorb Observe how rocks change over time e.g. gravestones or old building Research using secondary sources how fossils are formed Observe soils closely Classify soils in a range of ways based on their appearance Devise a test to investigate the water retention of soils Observe how soil can be separated through sedimentation Research the work of Mary Anning Influential scientists /people: Mary Anning	Use secondary sources to research the parts and functions of the skeleton Investigate pattern seeking questions such as - Can people with longer legs run faster? - Can people with bigger hands catch a ball better? Compare, contrast and classify skeletons of different animals	Classify food in a range of ways Use food labels to explore the nutritional content of a range of food items Use secondary sources to find out they types of food that contain the different nutrients Use food labels to answer enquiry questions e.g. How much fat do different types of pizza contain? How much sugar is in soft drinks? Plan a daily diet contain a good balance of nutrients Explore the nutrients contained in fast food	Observe what happens to plants over time when the leaves or roots are removed Observe the effect of putting cut white carnations or celery in coloured water Investigate what happens to plants when they are put in different conditions e.g. in darkness, in the cold, deprived of air, different types of soil, different fertilisers, varying amount of space Spot flowers, seeds, berries and fruits outside throughout the year Observe flowers carefully to identify the pollen Observe flowers being visited by pollinators e.g. bees and butterflies in the summer Observe seeds being blown from the trees e.g. sycamore seeds Research different types of seed dispersal Classify seeds in a range of ways including by how they are dispersed Create a new species of flowering plant	Carry out investigations to explore how objects move on different surfaces e.g. spinning tops/coins, rolling balls/cars, clockwork toys, soles of shoes etc. Explore what materials are attracted to a magnet Classify materials according to whether they are magnetic Explore the way that magnets behave in relation to each other Use a marked magnet to find the unmarked poles on other types of magnets Explore how magnets work at a distance e.g. through the table, in water, jumping paper clip up off the table Devise an investigation to test the strength of magnets	Explore how different objects are more or less visible in different levels of lighting Explore how objects with different surfaces e.g. shiny vs matt are more or less visible Explore how shadows vary as the distance between a light source, an object or surface is changed Explore shadows which are connected to and disconnected from the object e.g. shadows of clouds and children in the playground Choose suitable materials to make shadow puppets Create artwork using shadows

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Key Vocabulary					
Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil	Skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints	Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water,	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal – wind dispersal, animal dispersal, water dispersal	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole	Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous
Prior Learning					
Year 1 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. (Y1 - Everyday materials) Year 2 • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)	Year 1 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). (Y1 - Animals, including humans) Year 2 Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 - Animals, including humans) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans)	Year 1 Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) Name different sources of food and where they come from. (year 2 objective covered in year 1) Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals, including humans) Year 2 Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 - Animals, including humans) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans)	Year 1 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. Identify and name the roots, trunk, branches and leaves of a tree. Year 2 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.	Year 2 Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)	Year 1 Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)
Cultural Capital					
Stone age (link to history)			Outdoor learning		(Fire safety)

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Topic/ National Curriculum					
4	States of matter - S, L, G Water cycle - to compare and group solids, liquids and gases - to 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) - to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Sound - to identify how sounds are made, associating some of them with something vibrating - to recognise that vibrations from sounds travel through a medium to the ear - to find patterns between the pitch of a sound and features of the object that produced it - to find patterns between the volume of a sound and the strength of the vibrations that produced it - to recognise that sounds get fainter as the distance from the sound source increases	Human Body Digestion Teeth - to identify that animals need the right nutrition and that this comes from what they eat - to describe the main parts of the digestive system - to explore the different types of teeth in humans	Living things Classification keys Habitats Food chains - to recognise that living things can be grouped - to explore and use classification keys to help group, identify and name a variety of living things - to recognise that environments can change and that this can sometimes pose dangers to living things - to construct and interpret a variety of food chains	Electricity - to identify common appliances that run on electricity - to construct a simple circuit, naming its basic parts - to identify whether a circuit is complete - to recognise some common conductors and insulators, and associate metals with being good conductors
	Scientific Enquiry				
	Observe closely and classify a range of solids Observe closely and classify a range of liquids Explore making gases visible e.g. squeezing sponges under water to see bubbles, and showing their effect e.g. using straws to blow objects, trees moving in the wind Classify materials according to whether they are solids, liquids and gases Observe a range of materials melting e.g. ice, chocolate, butter Investigate how to melt ice more quickly Observe the changes when making rocky road cakes or ice-cream Investigating melting point of different materials e.g. ice, margarine, butter and chocolate Explore freezing different liquids e.g. tomato ketchup, oil, shampoo Use a thermometer to measure temperatures e.g. icy water (melting), tap water, hot water, boiling water (demonstration)	Classify sound sources Explore making sounds with a range of objects such as musical instruments and other household objects Explore how string telephones or ear gongs work Explore using objects that change in feature to change pitch and volume such as length of guitar string, bottles of water or tuning forks Measure sounds over different distances Measure sounds through different insulation materials	Research the function of the parts of the digestive system Create a model of the digestive system using household objects Explore eating different types of food, to identify which teeth are being used for cutting, tearing and grinding (chewing) Classify animals as herbivores, carnivores or omnivores according to the type of teeth they have in their skulls Use food chains to identify producers, predators and prey within a habitat Use secondary sources to identify animals in a habitat and find out what they eat	Observe plants and animals in different habitats throughout the year Compare and contrast the living things observed Use classification keys to name unknown living things Classify living things found in different habitats based on their features Create a simple identification key based on observable features Use fieldwork to explore human impact on the local environment e.g. litter, tree planting Use secondary sources to find out about how environments may naturally change Use secondary sources to find out about human impact, both positive and negative, on environments	Construct a range of circuits Explore which materials can be used instead of wires to make a circuit Classify the materials that were suitable/not suitable for wires Explore how to connect a range of different switches and investigate how they function in different ways Choose switches to add to circuits to solve particular problems such as a pressure switch for a burglar alarm Apply their knowledge of conductors and insulators to design and make different types of switch Make circuits that can be controlled as part of a D&T project N.B. Children should be given one component at a time to add to circuits.

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	Observe water evaporating and condensing e.g. on cups of icy water and hot water Set up investigations to explore changing the rate of evaporation e.g. washing, puddles, handprints on paper towels, liquids in containers Use secondary sources to find out about the water cycle				
	Key Vocabulary				
	Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol N.B. Children in year 4 do not need to use standard symbols as this is taught in year 6
	Prior Learning				
	Year 1 Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials) • Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials) • Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials) Year 2 • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)	Year 1 Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)	Year 1 Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) Year 2 • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 - Animals, including humans) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans) Year 3 Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat. Know how nutrients, water and oxygen are transported within animals and humans. Know about the importance of a nutritious, balanced diet. Identify that humans and some other animals have skeletons and muscles for support, protection and movement: Know about the skeletal and muscular system of a human.	Year 1 Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) • Identify and name a variety of common animals including fish, amphibians, reptiles and mammals. (Y1 - Animals including humans) • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans) Year 2 • Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)	EYFS Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes. (Early Learning Goal)

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	• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)				
	Cultural Capital				
				River study (Mersea Educational Trust)	

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	Topic/ National Curriculum				
5	Forces - to explain effects of air/water resistance and friction - to recognise that some mechanisms allow a smaller force to have a greater effect	Materials Planning Investigations - to compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets - to know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution - to use knowledge of solids, liquids and gases to separate mixtures, including through filtering, sieving and evaporating - to give reasons, based on evidence from comparative and fair tests, for uses of everyday materials, including metals, wood and plastic - to demonstrate that dissolving, mixing and changes of state are reversible changes - to explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	Earth, Sun and Moon to describe the movement of the Earth and other planets relative to the sun in the solar system - to describe the movement of the moon and Earth to describe the sun, Earth and moon as spherical - to explain the process of day and night - to explain that objects fall to Earth due to gravity	Living things Reproduction Life cycles - to compare the life cycles of different animals - to describe reproduction in plants and animals - to name and describe functions of flowering plants - to explore the requirements of plants for life - to explore the part that flowers play in the life cycle	Human Body Birth to death - to describe changes as humans develop to old age
	Scientific Enquiry				
	Investigate the effect of friction in a range of contexts e.g. trainers, bath mats, mats for a helter-skelter Investigate the effects of water resistance in a range of contexts e.g. dropping shapes through water, pulling shapes e.g. boats along the surface of water Investigate the effects of air resistance in a range of contexts e.g. parachutes, spinners, sails on boats Explore how levers, pulleys and gears work Make a product that involves a lever, pulley or gear Create a timer that uses gravity to move a ball Research how the work of scientists such as Galileo	Investigate the properties of different materials in order to recommend materials for particular functions depending on these properties e.g. test waterproofness and thermal insulation to identify a suitable fabric for a coat Explore adding a range of solids to water and other liquids e.g. cooking oil, as appropriate Investigate rates of dissolving by carrying out comparative and fair test Separate mixtures by sieving, filtering and evaporation, choosing the most suitable method and equipment for each mixture Explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning Carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting?	Use secondary sources to help create a model e.g. role play or using balls, to show the movement of the Earth around the Sun and the Moon around the Earth. Use secondary sources to help make a model to show why day and night occur Make first-hand observations of how shadows caused by the Sun change through the day Make a sundial Research time zones Consider the views of scientists in the past and evidence used to deduce shapes and movements of the Earth, Moon and planets before space travel	Use secondary sources and, where possible, first hand observations to find out about the life cycle of a range of animals Compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth Look for patterns between the size of an animal and its expected life span Grow and observe plants that reproduce asexually e.g. strawberries, spider plant, potatoes Take cuttings from a range of plants e.g. African violet, mint Plant bulbs and then harvest to see how they multiply Use secondary sources to find out about pollination	This unit is likely to be taught through direct instruction due to its sensitive nature, although children can carry out a research enquiry by asking an expert e.g. school nurse to provide answers to questions that have been filtered by the teacher.

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	Galilei and Isaac Newton helped to develop the theory of gravitation	What affects the amount of gas produced? Research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton)			
	Key Vocabulary				
	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve reversible/non-reversible change, burning, rusting, new material	Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune) spherical, solar system, rotates, star, orbit, planets	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings	Puberty: the vocabulary to describe sexual characteristics
	Prior Learning				
	Year 3 Compare how things move on different surfaces. Know how a simple pulley works and use making lifting an object simpler Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract and 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 with attract or repel each other, depending on which poles are facing.	Year 2 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. Year 4 Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Year 1 Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	Year 2 Notice that animals, including humans, have offspring which grow into adults. Year 3 Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary from plant to plant. Know the way in which water is transported within plants. Year 4 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. Know and label the features of a river Recognise that environments can change and that this can sometimes pose danger to living things.	Year 2 Notice that animals, including humans, have offspring which grow into adults.
	Cultural Capital				

Science Curriculum Map Detailed overview

5			Outdoor learning?	NSPCC- PSHE link to science	
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Topic/ National Curriculum					
6	Living things • Classification • Micro organisms • to give reasons for classifying plants and animals • to construct and interpret a variety of food chains • to identify and name a variety of animals including fish, amphibians, reptiles, birds and mammals • to identify and name a variety of common animals that are carnivores, herbivores and omnivores	Evolution and adaptation • to recognise that living things change over time and that fossils provide information about this • to identify how animals and plants are adapted to suit their environment in different ways	Human Body • Nutrition • Staying healthy • Circulatory system • to explain the human circulatory system in detail and impact of diet, exercise, drugs and lifestyle • to describe how nutrients are transported in the body	Electricity • to associate lamp brightness or volume of a buzzer with the number/voltage of cells in the circuit • to use recognised symbols in a simple circuit diagram	Light and how we see • to recognise that light travels in straight lines • to explain that we see things because light travels from light sources to our eyes (or via reflections) • to explain why shadows have the same shape as the objects that cast them
	Scientific Enquiry				
	Use secondary sources to learn about the formal classification system devised by Carl Linnaeus and why it is important Use first hand observation to identify characteristics shared by the animals in a group Use secondary sources to research the characteristics of animals that belong to a group Use information about the characteristics of an unknown animal or plant to assign it to a group Classify plants and animals presenting this in a range of ways – Venn diagrams, Carroll diagrams and keys Create an imaginary animal which has features from one or more groups	Design a new plant or animal to live in a particular habitat Use models to demonstrate evolution e.g. Darwin's finches bird beak activity Use secondary sources to find out about how the population of peppered moths changed during the industrial revolution Make observations of fossils to identify living things that lived on Earth millions of years ago Identify features in animals and plants that are passed on to offspring Explore this process by considering the artificial breeding of animals or plants e.g. dogs Compare the ideas of Charles Darwin and Alfred Wallace on evolution Research the work of Mary Anning and how this provided evidence of evolution	Create a role play model for the circulatory system/ use the virtual t-shirts to explore the body. Carry out a range of pulse rate investigations • Fair test – effect of different activities on my pulse rate • Pattern seeking – exploring which groups of people may have higher or lower resting pulse rates • Observation over time - how long does it take my pulse rate to return to my resting pulse rate (recovery rate) • Pattern seeking – exploring recovery rate for different groups of people Learn about the impact of exercise, diet, drugs and lifestyle on the body. This is likely to be taught through direct instruction due to its sensitive nature	Explain how a circuit operates to achieve particular operations, such as control the light for a torch with different brightness's or make a motor go faster or slower Make circuits to solve particular problems such as a quiet and a loud burglar alarm Carry out fair tests exploring changes in circuits Make circuits that can be controlled as part of a D&T project	Light and how we see Explore different ways to demonstrate that light travels in straight lines e.g. shining a torch down a bent and straight hose pipe, shining a torch through different shaped holes in card Explore the uses of the behaviour of light, reflection and shadows such as in periscope design, rear view mirrors and shadow puppets.
Key Vocabulary					

Science Curriculum Map Detailed overview

Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering	Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and lifestyle	Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage NB Children do not need to understand what voltage is but will use volts and voltage to describe different batteries. The words cells and batteries are now used interchangeably	Light and how we see Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous, straight lines, light rays.	
Prior Learning					
Year 4 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. Know and label the features of a river Recognise that environments can change and that this can sometimes pose danger to living things. Year 5 Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.	Year 2 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. Year 3 • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) Year 4 • Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)	Year 2 Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Year 3 Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat. Know how nutrients, water and oxygen are transported within animals and humans. Know about the importance of a nutritious, balanced diet. Identify that humans and some other animals have skeletons and muscles for support, protection and movement: Know about the skeletal and muscular system of a human. Year 4 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. Year 5 Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird. Know the differences between different life cycles. Know the process of reproduction in plants.	Year 4 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	Year 3 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 a solid object. Find patterns in the way that the sizes of shadows change.	

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			Know the process of reproduction in animals.			
	Cultural Capital					
			NSPCC – link to PSHE			