Holgate Primary and Nursery School

SUTTON ROAD PRIMARY SCHOOL AND NURSERY

Personal **R**esponsibility **I**n **D**elivering **E**xcellence

Science Progression Overview

Progressive Science Areas									
		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	Statutory Curriculum Statements	**Communication and Language:** **Birth to 3:** Understand simple questions about 'who', 'what' and 'where' (but generally not 'why'). **3- and 4-Year-Olds:** Use a wider range of vocabulary. Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" **Understanding the World:** **3- and 4-Year-Olds:** Talk about what they see, using a wide vocabulary. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things.	**Communication and Language:** **Reception Children:** Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. Use new vocabulary in different contexts. **ELG: Listening, Attention and Understanding** Make comments about what they have heard and ask questions to clarify their understanding. **ELG: Speaking** Offer explanations for why things might happen. **Understanding the World:** **Reception Children:** Explore the natural world around them. Describe what they see, hear, and feel while they are outside. Recognise some environments that are different to the one in which they live. **ELG: The Natural World:** 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…	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 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.	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.			

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	**Curriculum Skills**	To be able to find plants and flowers in my local area. To be able to talk about how plants and flowers look. To be able to spot differences between plants and flowers. To be able to look after plants.	To be able to plant seeds; watch how they grow and talk about what stays the same and what is different. To be able to look at what a plant might need to grow – soil, light, water, seed. To be able to talk about foods that grow and foods that are made. To be able to talk about healthy and unhealthy foods and how they can be grown from seeds to eat. To be able to talk about the dangers of eating plants. To understand that I must only eat berries etc when with an adult. (Forest Schools Focus)	To be able to name a variety of common wild and garden plants. To be able to name the petals, stem, leaves and root of a plant. To be able to name the roots, trunk, branches and leaves of a tree.	To be able to grow seeds and bulbs so that they grow into plants To be able to explain what plants need to grow and stay healthy	To be able to explain the function of different parts of flowing plants and trees. To be able to explain what different plants need to help them survive. To be able to explain how water is transported within plants. To be able to describe the plant life cycle, especially the importance of flowers.			
Plants	**Retrieval of prior knowledge**	**<u>Experiences / Reading presumed:</u>** Exploring gardens Looking at plants, trees, and growing wildlife.	Growing plants are alive **(F1)** Plants grow outside. **(F1)** We can grow plants in pots. **(F1)** Plants need to be watered. **(F1)**	Flowers have petals **(F2)**	Nettles, daisies, roses, sunflowers, dandelion, and daffodils are types of plants. **(Year 1)** Which of these grow from seeds and which grow from bulbs? **(Year 1)** A flower has roots, a stem, leaves and petals. **(Year 1)**	A flower has roots, a stem, leaves and petals. **(Year 1)** Seeds, bulbs, and plants need water, light, soil, and a suitable temperature to grow. **(Year 2)**			

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	**New Knowledge**	Growing plants are alive. Plants grow outside. We can grow plants in pots. Plants need to be watered.	Some plants are dangerous to humans. Vegetables and fruit grow. To be able to name 5 different vegetables that I have grown at Forest Schools. To be able to name 5 different fruits that I have tasted. Flowers have petals	Nettles, daisies, roses, sunflowers, dandelion, and daffodils are types of plants. Oak, cedar, hawthorn, pine, sycamore, birch, conifer are types of trees. Evergreen trees keep their leaves in winter. Deciduous trees lose their leaves in winter. A flower has roots, a stem, leaves and petals. A tree has roots, a trunk, branches, leaves and a crown.	Seeds, bulbs, and plants need water, light, soil, and a suitable temperature to grow. Seeds and bulbs grow into plants.	Plants need air, light, water, nutrients from the soil and room to grow to survive. Different plants need different amounts of each of these to survive. E.g., Cacti survive with little water and water lilies need to live in water. Roots anchor the plant into the ground and absorb water and nutrients from the soil. The stem holds the plant up and carries water and nutrients from the soil to the leaves. Water evaporates from the leaves and this evaporation causes more water to be sucked up the stem. A trunk is the stem of a tree. Leaves make food for the plant using sun light and carbon dioxide from the air. Flowers make seeds to grow into new plants. The petals attract pollinators to the plant. Insects carry pollen to other plants. Pollination is when the pollen joins with an ovule and a seed starts to form. Pollen from the anther lands on the stigma and travels down the style. Seed dispersal is when the fully formed seeds are moved away from the parent plant.			
Plants	**Vocab**	Plant, flower, tree, grow, fruit, vegetable.	bush, hedge, seed, berries **Non-negotiable:** **Leaves** **Flowers** **Seed** **Branches** **Trees** **Plants**	Buds, bulbs, deciduous, evergreen, trunk, vegetable, wild plants, environment, blossom, petals, branches **Non-negotiable:** **Deciduous** **Evergreen** **Petals** **Roots** **Trunk** **Stem** **Flowering plants**	Roots, crown, deciduous, evergreen, blossom, bulb, trunk, stem, oxygen woodland, habitat, **Non-negotiable:** **Bulb** **Air** **Germination** **Light** **Water** **Soil**	nutrients, pollination, seed dispersal, fertiliser, seed formation, stigma, anther, soil Air, Light, Water, Nutrients, Reproduction, Pollination Transportation, Dispersal **Non-negotiable:** **Nutrients** **Pollination** **Dispersal** **Seed formation**			

Progressive Science Areas

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals, including humans	**Statutory Curriculum Statements**	**Communication and Language:** **Birth to 3:** Understand simple questions about 'who', 'what' and 'where' (but generally not 'why'). **3- and 4-Year-Olds:** Use a wider range of vocabulary. Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" **Physical Development:** **3- and 4-Year-Olds:** Make healthy choices about food, drink, activity and toothbrushing. **Understanding the World:** **3- and 4-Year-Olds:** Begin to make sense of their own life-story and family's history. Explore how things work. 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. Talk about the differences between materials and changes they notice.	**Communication and Language:** **Reception Children:** Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. Use new vocabulary in different contexts. **ELG: Listening, Attention and Understanding** Make comments about what they have heard and ask questions to clarify their understanding. **ELG: Speaking** Offer explanations for why things might happen. **Personal, Social and Emotional Development:** **Reception Children:** Manage their own needs. **ELG: Managing Self:** Manage their own basic hygiene and personal needs, including dressing, going to the toilet, and understanding the importance of healthy food choices. **Physical Development:** **Reception Children:** Know and talk about the different factors that support their overall health and wellbeing: -regular physical activity -healthy eating -toothbrushing -sensible amounts of 'screen time' -having a good sleep routine -being a safe pedestrian **Understanding the World:** **Reception Children:** **ELG: The Natural World:** 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.	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 body and say which part of the body is associated with each sense.	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.	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.	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.	Describe the changes as humans develop to old age.	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 body's function. Describe the ways in which nutrients and water are transported within animals, including humans.

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals, including humans	**Curriculum Skills**	To be able to talk about birthdays, share information about family celebrations and talk about how birthdays are a way to show people/friends/family getting older.	To be able to talk about growing and how we change: babies, toddlers, school child, teenager, grown up, grandparent. To be able to talk about animals and how they change and grow – lambs/sheep, calf/cow etc. To be able to talk about pets and how to look after them. (Food/warmth/exercise etc.)	To understand and name a variety of animals including fish, amphibians, reptiles, birds, and mammals. To be able to classify and know animals by what they eat (carnivore, herbivore, and omnivore). To understand how to sort animals into categories (including fish, amphibians, reptiles, birds, and mammals). To understand how to sort living and non-living things. To understand how to name the parts of the human body that To be able to see. To understand how to link the correct part of the human body to each sense.	To understand the basic stages in a life cycle for animals, including humans. To understand what animals and humans need to survive. To understand why exercise; a balanced diet and good hygiene are important for humans.	To understand about the importance of a nutritious, balanced diet. To understand how nutrients, water and oxygen are transported within animals and humans. To understand about the skeletal system of a human. To understand about the muscular system of a human. To understand about the purpose of the skeleton in humans and animals.	To be able to identify and name the parts of the human digestive system. To understand the functions of the organs in the human digestive system. To be able to identify and know the different types of teeth in humans. To understand the functions of different human teeth. To be able to use food chains to identify producers, predators, and prey. To be able to construct food chains to identify producers, predators, and prey.	To be able to create a timeline to indicate stages of growth in humans.	To be able to identify and name the main parts of the human circulatory system. To understand the function of the heart, blood vessels and blood. To understand the impact of diet, exercise, drugs, and lifestyle on health. To understand the ways in which nutrients and water are transported in animals, including humans.
	Retrieval of prior knowledge	**<u>Experiences / Reading presumed:</u>** Knowledge of different animals. Singing songs about body parts.	Exercise is good for you. **(F1)** We need to eat. (**F1)**	We need to eat. **(F1)** We need to eat food to give us energy. **(F2)** We must eat healthy food as too many unhealthy foods can make us unwell. **(F2)** There are different types of animals around us. **(F2)** All people are different. **(F2)**	We need to eat food to give us energy. **(F2)** We must eat healthy food as too many unhealthy foods can make us unwell. **(F2)** We need exercise to keep our bodies fit and strong. **(F2)** There are five groups of animals called fish (goldfish and sharks), amphibians (frogs and newts), reptiles, (snakes and crocodiles) birds (robins and penguins) and mammals (humans and dogs) **(Y1)** Carnivores eat meat such as a cheetah and an owl. **(Y1)** Herbivores eat plants such as a squirrel. **(Y1)** Omnivores eat meat and plants such as a pig. **(Y1)**	That having a balanced diet, regular exercise and self-hygiene are important to a healthy life. **(Y2)** A human needs different food groups to have a balanced diet. (fruit & vegetables, carbohydrates and starch, protein, high in fat and sugar, dairy foods) **(Y2)**	A human eats different food types to be healthy and they can be herbivores, carnivores, or omnivores. **(Y2) (Y1)** That having a balanced diet, regular exercise and self-hygiene are important to a healthy life. **(Y2)** The body has soft organs that are protected by the skeleton. **(Y3)** The body has different body parts including, muscles, soft organs, skeleton, teeth etc **(Y3)**	Animals including humans have a life cycle. **(Y2)** Humans produce live young. **(Y2)**	That the body has different body parts including, muscles, soft organs, skeleton, teeth etc **(Y1) (Y3) (Y4)** The body has blood that is pumped around the body by the heart. **(Y3)** Humans get their nutrients from food that they eat. (**Y2 /Y3)**

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals, including humans	**New Knowledge**	Exercise is good for you. We need to eat. To be able to name 5 animals	There are different types of animals around us. All people are different. The weather changes at different times in the year. We need to eat food to give us energy. We must eat healthy food as too many unhealthy foods can make us unwell. We need exercise to keep our bodies fit and strong.	There are five groups of animals called fish (goldfish and sharks), amphibians (frogs and newts), reptiles, (snakes and crocodiles) birds (robins and penguins) and mammals (humans and dogs) Carnivores eat meat such as a cheetah and an owl. Herbivores eat plants such as a squirrel. Omnivores eat meat and plants such as a pig. Humans have a head, eyes, a nose, a mouth, teeth, elbows, thumbs, knees, toes, feet, legs, fingers, hands, shoulders, and ears. Sight – eyes let you see. Hearing - ears let you listen. Touch – skin gives you a sense of touch. Taste – your tongue helps you taste. Smell – you smell using your nose.	That some animals including humans have live offspring that grow into adults. That some animals such as frogs, snakes lay eggs that hatch to produce offspring. That animals including humans need water air and food to survive but their habitats differ. That having a balanced diet, regular exercise and self-hygiene are important to a healthy life. That a human needs different food groups to have a balanced diet. (fruit & vegetables, carbohydrates and starch, protein, high in fat and sugar, dairy foods)	That animals and humans need different amounts of nutrients to be healthy. That a balanced diet (eat well plate) for a human is 7% fats and sugar 33% fruit and vegetables 15% dairy 12% Protein 33% carbohydrates and starch A skeleton is a hard structure that's supports the skin, muscle, and tissue, and all the organs that are inside the body. It also protects the internal organs such as the brain heart and lungs. A skeleton can be inside or outside the body. Muscles are soft tissue that are attached to bones by tendons and control the bodies movement. That a human skeleton has 213. That a human body has more than 600 muscles.	Digestion is how the body breaks down food so it can be taken in and used. The digestive system includes - Oesophagus - the long tube between the mouth and the stomach. Mouth - the first part of the digestive system, where food enters the body. Large intestine - the shorter wider tube that follows the small intestine. Small intestine - the long, thin winding tube that food goes through after it leaves the stomach. Stomach - a sack-like, muscular organ that is attached to the oesophagus. When food enters the stomach, it is churned with lots of acid. Rectum - the lower part of the large intestine, where faeces (poo) is stored before it leaves the body. Liver - a large organ which makes bile that neutralises stomach acid. Humans have three main types of teeth. Incisors- help you bite off and chew pieces of food. Canines – are used for tearing and ripping food. Molars- crush and grind food. That a food chain will have producers and consumers, predators, and prey.	That there are six stages in the human life cycle: 1. Foetus- At this time, a baby is growing inside its mum's womb. 2. Baby -A baby is born after spending nine months inside the womb. 3. Childhood- At this stage, you learn to walk and talk. 4. Adolescence-Children become teenagers. 5. Adulthood Your body is fully developed. 6. Old age - The last stage in the life cycle of a human.	That the circulatory system is made up of three parts: the heart, blood vessels and the blood itself. That the heart keeps all the blood in your circulatory system flowing. The blood travels through a network of blood vessels to everywhere in your body. The carries useful materials like oxygen, water and nutrients and removes waste products like carbon dioxide. Most drugs (medicines) are used to help someone get better, but they can be harmful and addictive. That humans need to drink plenty of water and eat at least five portions of fruit and vegetables every day. To exercise regularly to keep your heart, lungs, and muscles strong and healthy.
Animals, including	**Key Vocab**	Family, brother, sister, baby, child, puppy-dog, kitten-cat, exercise, food, care,	uncle, aunt date of birth, young, old, toddler, teenage, sheep-lamb, calf-cow, foal-horse, **Non-negotiable:** **Fish** **Bird** **Insect** **Water** **Food** **Teeth** **Parents**	Fish, amphibians, reptiles, birds, mammals, carnivore, herbivore, omnivore, tame, wild, nocturnal **Non-negotiable:** **Amphibians** **Reptiles** **Mammals** **Carnivore** **Herbivore** **Omnivore**	Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene **Non-negotiable:** **Offspring** **Exercise** **Hygiene** **Adult**	Nutrition, skeleton, muscles, diet, joint, pelvis, cartilage, rib cage, tendon, spine, Movement, Muscles, Bones, Skull, Nutrition, Skeletons, **Non-negotiable:** **Nutrition** **Skeletons** **Muscles** **Diet**	Pancreas, oesophagus, organ, molars, canine, food chain, predators, prey, salivary gland, Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar **Non-negotiable:** **Digestive System** **Incisor** **Canine** **Pre-molar** **Molar**	foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty **Non-negotiable:** **Toddler** **Adolescent** **Old age**	circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration, atriums, cardiovascular, capillaries, pulse, ventricles. **Non-negotiable:** **Circulatory System** **Heart** **Blood vessel** **Blood** **Drugs** **Lifestyle**

Progressive Science Areas									
		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Everyday materials	Statutory Curriculum Statements	**Communication and Language:** **Birth to 3:** Understand simple questions about 'who', 'what' and 'where' (but generally not 'why'). **3- and 4-Year-Olds:** Use a wider range of vocabulary. Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" **Understanding the World:** **Birth to 3:** Explore materials with different properties. Explore natural materials indoors and outside. **3- and 4-Year-Olds:** Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Talk about the differences between materials and changes they notice.	**Communication and Language:** **Reception Children:** Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. Use new vocabulary in different contexts. **ELG: Listening, Attention and Understanding** Make comments about what they have heard and ask questions to clarify their understanding. **ELG: Speaking** Offer explanations for why things might happen. **Understanding the World:** **Reception Children:** Explore the natural world around them. Describe what they see, hear, and feel while they are outside. **ELG: The Natural World:** 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.	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.	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.			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 formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and action of acid on bicarbonate soda.	

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Everyday materials	**Curriculum Skills**	To be able to use everyday vocabulary to talk about materials. To be able to say why I would choose a certain material for my model/craft project/artwork.	To be able to talk about what is the same and what is different between a range of materials. To be able to choose the best material for a model/craft project/artwork and say why I chose to use it. To be able to adapt and make changes if the material I chose are not the best for the job. To be able to talk about the changes I made.	To be able to distinguish between an object and the material it is made from. To understand the materials that an object is made from. To understand the difference between wood, plastic, glass, metal, water, and rock. To understand about the properties of everyday materials. To be able to group objects based on the materials they are made from.	To be able to identify and name a range of materials, including wood, metal, plastic, glass, brick, rock, paper, and cardboard. To understand why a material might or might not be used for a specific job. To understand how materials can be changed by squashing, bending, twisting, and stretching.			To be able to compare and group materials based on their properties (e.g., hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets). To understand how a material dissolves to form a solution, explaining the process of dissolving. To understand and show how to recover a substance from a solution. To understand how some materials can be separated. To be able to demonstrate how materials can be separated (e.g., through filtering, sieving, and evaporating). To understand and can demonstrate that some changes are reversible, and some are not. To understand how some changes result in the formation of a new material and that this is usually irreversible. To understand about reversible and irreversible changes. To be able to give evidenced reasons why materials should be used for specific purposes.	
Everyday materials	**Retrieval of prior knowledge**	**<u>Experiences / Reading presumed:</u>** Exploring the texture and feel of toys, teddies and fabrics in the home, environment, setting.	Some things are soft like teddies, feathers, and hair **(F1)** Some things are hard like bricks, concrete, stones**. (F1)**	Objects / materials all feel different **(F2)** Materials can be used for making things **(F2)**	Objects are things that can be used, a chair is an object. **(Year 1)** Materials are what objects are made from. A chair is made from plastic. Plastic is a material. **(Year 1)** Bendy (can easily be curved, folded, or shaped), not bendy, waterproof (does not let water in), not waterproof, absorbent (if something is absorbent it soaks up water), not absorbent, transparent (can be seen through), opaque (cane be seen through). **(Year 1)**			Properties of objects are what a material is like and how it behaves, bendy, stretchy, waterproof, transparent. **(Year 2)** Objects can be changed by bending, twisting, squashing, and stretching. **(Year 2)** Everyday materials can be grouped by their simple properties **(Year 1)**	

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Everyday materials	**New Knowledge**	Some things are soft like teddies, feathers, and hair. Some things are hard like bricks, concrete, stones. Water makes materials wet.	Objects / materials all feel different. Materials can be used for making things.	Objects are things that can be used, a chair is an object. Materials are what objects are made from. A chair is made from plastic. Plastic is a material. Everyday materials can be grouped by their simple properties. Bendy (can easily be curved, folded, or shaped), not bendy, waterproof (does not let water in), not waterproof, absorbent (if something is absorbent it soaks up water), not absorbent, transparent (can be seen through), opaque (cane be seen through).	Properties of objects are what a material is like and how it behaves, bendy, stretchy, waterproof, transparent. Identify whether a material is suitable for a specific purpose based on its properties. (Paper wouldn't be a suitable material for a chair) Objects can be changed by bending, twisting, squashing, and stretching.			There are three states of matter, solids – Solid's particles are close together meaning solids such as wood and glass hold their shape. Liquids - Can flow and take the shape of a container because the particles are more loosely packed and can move around each other such as water and milk. Gasses – These particles are further apart and are free to move around such as oxygen and helium. States of matter can be changed by: Melting is the process of heating a solid until it becomes a liquid. Freezing is when a liquid cool to become a solid. Evaporation is when a liquid turn into a gas or vapor. Condensing is when a gas such as water vapour turns into a liquid. Dissolving is when solid particles are mixed with liquid particles. Materials that dissolve are known as soluble, materials that will not dissolve are known as insoluble. Reversable changes such as mixing and dissolving solids and liquids together can be reversed by: Sieving – smaller materials fall through the holes in the sieve. Separating them from the larger materials. Filtering - Solid particles will get caught in the filter paper but the liquid will get through. Evaporating - The liquid turns into a gas leaving solid particles behind.	
Everyday materials	**Key Vocab**	Same, different, hard, soft, long, thin, cold, warm	Bumpy, smooth, straight, curved, see through **Non-negotiable:** Wood Glass Metal Paper	Materials, wood, plastic, metal. Liquid. Gas. Stretch, still. Bend. Waterproof. Shiny, hard, soft, dull, rough **Non-negotiable:** Plastic Water Rock Brick Materials	squashing, bending, twisting, stretching, flexible, durable, breakable, strength, **Non-negotiable:** Cardboard Solid Squashing Bending Twisting Stretching			Key Vocabulary Solubility, conductivity, transparency, Thermal evaporation, dissolve, bicarbonate of soda, thermal, filtering, melting, separate. **Non-negotiable:** Hardness Solubility Transparency Solution Substance Sieving Filtering Reversible Irreversible Dissolving	

Progressive Science Areas									
		F1	**F2**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Seasonal Change	**Statutory Curriculum Statements**	**Communication and Language:** **Birth to 3:** Understand simple questions about 'who', 'what' and 'where' (but generally not 'why'). **3- and 4-Year-Olds:** Use a wider range of vocabulary. Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" **Understanding the World:** **Birth to 3:** Explore and respond to different natural phenomena in their setting and on trips. **3- and 4-Year-Olds:** Talk about what they see, using a wide vocabulary. Explore how things work. Talk about the differences between materials and changes they notice.	**Communication and Language:** **Reception Children:** Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. Use new vocabulary in different contexts. **ELG: Listening, Attention and Understanding** Make comments about what they have heard and ask questions to clarify their understanding. **ELG: Speaking** Offer explanations for why things might happen. **Understanding the World:** **Reception Children:** Explore the natural world around them. Describe what they see, hear, and feel while they are outside. Understand the effect of changing seasons on the natural world around them. **ELG: The Natural World:** Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.					
	Curriculum Skills	To be able to talk about the changes I see around my environment.	I am beginning to use the vocabulary linked to seasons. To be able to talk about some of the things that happen during the seasons (e.g., spring/growth, summer/warm, autumn/leaves fall, winter/cold)	To be able to observe and know about the changes in the seasons. To be able to name the seasons and know about the type of weather in each season.					

	Progressive Science Areas								
Seasonal Change	Retrieval of prior knowledge	**Experiences / Reading presumed:** Forest School Weather Focus Singing the days of the week / weather song Talking about the weather in the registration session	We have sunny days **(F1)** We have rainy days **(F1)** We have hot days **(F1)** We have dry days **(F1)**	That weather changes. **(F2)** That there are different seasons. **(F2)**					
	New Knowledge	We have sunny days. We have rainy days. We have hot days. We have dry days.	That weather changes over the months of the year. That there are different seasons.	The 4 seasons are Spring Summer Autumn and Winter. Know the order of the seasons. That Summer is the warmest weather and winter is the coldest weather. In spring we have April showers, and the weather is milder. That in Autumn the weather is damp and chilly. That hours of day light are longer in the summer and shorter in the winter.					
	Key Vocab	colours, warm, hot, cold, rain, wet, dry.	chilly, frost, change, weather **Non-negotiable:** **Hot** **Cold** **Weather** **Day** **Night**	Autumn, Winter, Summer, Spring, fall, temperature, thermometer, weather symbol, deciduous, coniferous **Non-negotiable:** **Winter** **Summer** **Autumn** **Spring** **Seasons**					

Progressive Science Areas									
		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Living things and their habitats	Statutory Curriculum Statements	**Communication and Language:** **Birth to 3:** Understand simple questions about 'who', 'what' and 'where' (but generally not 'why'). **3- and 4-Year-Olds:** Use a wider range of vocabulary. Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" **Understanding the World:** **3- and 4-Year-Olds:** Talk about what they see, using a wide vocabulary. Begin to make sense of their own life-story and family's history. Explore how things work. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Explore and talk about different forces they can feel.	**Communication and Language:** **Reception Children:** Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. Use new vocabulary in different contexts. **ELG: Listening, Attention and Understanding** Make comments about what they have heard and ask questions to clarify their understanding. **ELG: Speaking** Offer explanations for why things might happen. **Understanding the World:** **Reception Children:** Explore the natural world around them. Recognise some environments that are different to the one in which they live. **ELG: The Natural World:** 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.		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 micro-habitats. 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.		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.	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.	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants, and animals. Give reasons for classifying plants and animals based on specific characteristics.

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Living things and their habitats	**Curriculum Skills**	To be able to talk about animals and their young (farm animals/zoo animals) To understand that animals need looking after and that people have animals in their homes/gardens called 'pets'.	To be able to talk about how different animals grow and change (e.g., butterflies/frogs/chicks) To be able to talk about where different animals live. To be able to talk about what is the same and what is different. To be able to talk about decay and changes that happen.		To be able to identify things that are living, dead and never lived. To understand how a specific habitat provides for the basic needs of things living there (plants and animals). To be able to identify and name plants and animals in a range of habitats. To be able to match living things to their habitat. To understand how animals find their food. To be able to name some different sources of food for animals. To understand and can explain a simple food chain.		To be able to group living things in different ways. To be able to use classification keys to group, identify and name living things. To be able to create classification keys to group, identify and name living things (for others to use). To understand how changes to an environment could endanger living things.	To understand the life cycle of different living things, e.g., mammal, amphibian, insect bird. To understand the differences between different life cycles. To understand the process of reproduction in plants. To understand the process of reproduction in animals.	To be able to classify living things into broad groups according to observable characteristics and based on similarities & differences. To understand how living things have been classified. To be able to give reasons for classifying plants and animals in a specific way.
	Retrieval of prior knowledge	**<u>Experiences / Reading presumed:</u>** Visiting farms Having, seeing, or reading about pets Sharing books about lifecycles e.g. The Very Hungry Caterpillar.	Animals have homes. **(F1)** Animals have babies **(F1)**		Animals have different homes **(F2)** Some animals eat other animals. **(F2)** Some animals / plants die **(F2)**		**Habitats** are natural places where things live. A habitat provides living things with everything they need to **survive. (y2)**	A food chain shows how animals get their food. Food chains are one of the ways living things **depend** on each other to stay alive **(y2)** **Classification** is where animals are grouped according to their similarities. **(Y4)**	Animals change as they grow **(f2)** **Mammals** such as **humans** develop inside their mothers and are dependent on their parents for many years. **(Y5)** **Amphibians** such as frogs are laid in eggs and then once hatched go through many changes until they become an adult. **(Y5)** Some **insects** such as butterflies go through **metamorphosis** to become an adult. (**Y5)** **Birds** are hatched from eggs and are looked after by their parents until they can live independently. **(Y5)**

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Living things and their habitats	**New Knowledge**	Animals have homes. Animals have babies.	Birds live in a nest. Frogs live near water on a pond. Animals have different homes. Fish live in water. Some animals eat other animals. Some animals / plants die. Animals change as they grow		Know the differences between living, dead and never been alive. **Living** – Have all the life processes. **Dead** – Was once living. They did have all the life processes but are now dead. **Never been alive** – things that are made from plastic, metal, or rock. Things that have had no life process. **Habitats** are natural places where things live. A habitat provides living things with everything they need to **survive** such as food, shelter, and water. Habitats include woodland, urban, coastal, arctic, ocean, river, mountain. A food chain shows how animals get their food. Food chains are one of the ways living things **depend** on each other to stay alive.		**Classification** is where animals are grouped according to their similarities. Animals can be grouped into **vertebrates animals** with a backbone or **Invertebrates** animals without a backbone. Changes to an environment can be natural or caused by humans. Changes to an environment can have positive as well as negative effects. Natural – earthquakes, storms, fires Human-made – deforestation, pollution, creating new nature reserves.	**Mammals** such as **humans** develop inside their mothers and are dependent on their parents for many years. **Amphibians** such as frogs are laid in eggs and then once hatched go through many changes until they become an adult. Some **insects** such as butterflies go through **metamorphosis** to become an adult. **Birds** are hatched from eggs and are looked after by their parents until they can live independently. Some living things such as plants contain both the male and female sex cells. In others such as humans they contain either the male or female sex cell. Mammals use sexual reproduction to produce offspring. The male sex cell called the sperm fertilises the female sex cell. Most pants contain both the female and male sex cells. Plants can't fertilise themselves. Wind and insects help to transfer the pollen.	Scientists called taxonomists sort and group living things into categories according to their similarities. **The Linnaeus system** classifies living things into eight levels. Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species Each group allows scientists to observe and understand the characteristics of living things more clearly. Animals can be grouped into **vertebrates animals** with a backbone or **Invertebrates** animals without a backbone. **Microorganisms** are very tiny living things that can only be seen under a microscope. They are viruses, bacteria moulds, and yeast. Some animals (Dust mites) and plants (phytoplankton) are also microorganisms.
	Key Vocab	Farms, zoo, parks, field, homes, gardens, water, ground, tree, home	nest, born, countryside, rivers, ponds, burrow, shelter		Dinosaur, indigenous, rivers, woodland, ponds, sea, rainforest, desert, species, microhabitats Habitat, microhabitat, depend, survive, food chain, food sources. **Non-negotiable:** **Living** **Dead** **Never alive** **(Micro)Habitat** **Food chain**		Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Insects, Spiders, Worms, Environment, Habitats, classification, **Non-negotiable:** Classification keys Environment Local	Reproduction, puberty, gestation, classification, precision, reproduction, teenager, obese, toddler, embryo, mammals, amphibians, **Non-negotiable:** Life cycle Reproduction	Classification, Vertebrates, Invertebrates, Micro-organisms, species, fungi, Monera, bacteria, Protista, algae, **Non-negotiable:** Characteristics Microorganism

Electricity	Progressive Science Areas								
		Nursery	Reception / F2	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6
	Statutory Curriculum Statements	**Communication and Language:** **Birth to 3:** Understand simple questions about 'who', 'what' and 'where' (but generally not 'why'). **3- and 4-Year-Olds:** Use a wider range of vocabulary. Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" **Understanding the World:** **3- and 4-Year-Olds:** Talk about what they see, using a wide vocabulary. Explore how things work. Talk about the differences between materials and changes they notice.	**Communication and Language:** **Reception Children:** Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. Use new vocabulary in different contexts. **ELG: Listening, Attention and Understanding** Make comments about what they have heard and ask questions to clarify their understanding. **ELG: Speaking** Offer explanations for why things might happen. **Understanding the World:** **ELG: The Natural World:** Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.				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.		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.
	Curriculum Skills	To be able to identify things around my home and school that need power. To be able to talk about how to keep safe around electricity. To understand that plugs are dangerous.	To understand that electricity is a type of power. To be able to spot things that run on electricity.				To be able to identify and name appliances that require electricity to function. To be able to construct a series circuit. To be able to identify and name the components in a series circuit (including cells, wires, bulbs, switches, and buzzers). To understand how to draw a circuit diagram. To be able to predict and test whether a lamp will light within a circuit. To understand the function of a switch in a circuit. To understand the difference between a conductor and an insulator, giving examples of each.		To understand how the number & voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer. To be able to compare and give reasons for why components work and do not work in a circuit. To be able to draw circuit diagrams using correct symbols.

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Electricity	Retrieval of prior knowledge	**Experiences / Reading presumed:** Using (alongside an adult) and spotting electrical appliances in school and around the home e.g., microwave, television, laptop, chargers – with adult support and supervision.	That electricity can be dangerous. **(F1)**				That some appliances use electricity so they can work. **(F2)** That electrical appliances uses batteries or are plugged in. **(F2)** That an electrical appliance needs to be turned on to work. **(F2)** That electricity can be dangerous. **(F2)**		That electricity can be dangerous. **(F1)** That a circuit is made using, wires, cells, switches and may contain a bulb or buzzer and there are symbols for these. **(Y4)** That a circuit needs to be complete for the appliance to work. **(Y4)** That electricity passes through conductors but doesn't pass through insulators. **(Y4)**
	New Knowledge	Lots of things need power to work. Some of our power comes from electricity. That electricity can be dangerous.	That some appliances use electricity so they can work. That electrical appliances uses batteries or are plugged in. That an electrical appliance needs to be turned on to work.				That electricity travels through a circuit. That a circuit is made using, wires, cells, switches and may contain a bulb or buzzer. That a circuit needs to be complete for the appliance to work. That the switch in a circuit completes or breaks the circuit. That conductors allow electricity to pass through them. That insulators do not allow electricity to pass through them.		Know that more cells in a circuit can make a bulb brighter or the volume of a buzzer louder. Know the symbols that represent the components in a circuit and draw them. Know how to test a circuit works correctly.
	Key Vocab	Power Electricity Plug Danger safety	Socket Wire				Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, socket, appliance, **Non-negotiable:** **Circuit** **Cell/battery** **Wire** **Bulb/lamp** **Series** **Conductor** **Insulator** **Switch**		Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell, generator, turbine, fuses Non-negotiable: **Voltage** **Diagram** **Symbols**

Light	Progressive Science Areas								
		Nursery	Reception / F2	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6
	Statutory Curriculum Statements	**Communication and Language:** **Birth to 3:** Understand simple questions about 'who', 'what' and 'where' (but generally not 'why'). **3- and 4-Year-Olds:** Use a wider range of vocabulary. Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" **Understanding the World:** **3- and 4-Year-Olds:** Talk about what they see, using a wide vocabulary. Explore how things work. Talk about the differences between materials and changes they notice.	**Communication and Language:** **Reception Children:** Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. Use new vocabulary in different contexts. **ELG: Listening, Attention and Understanding** Make comments about what they have heard and ask questions to clarify their understanding. **ELG: Speaking** Offer explanations for why things might happen. **Understanding the World:** **Reception Children:** Explore the natural world around them. Describe what they see, hear, and feel while they are outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. **ELG: The Natural World:** 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.			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 changes			Recognise that light appears to travel in straight lines. Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. 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.

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Light	**Curriculum Skills**	To be able to talk about night-time. To be able to talk about daytime.	To understand that the sun gives us light. To understand that daytime is light in the UK. To understand that the night is dark in the UK. To understand that a torch and a light bulb give us light. To understand that when we have not light it is dark			To understand what dark is (the absence of light). To understand that light is needed to see. To understand that light is reflected from a surface. To understand and demonstrate how a shadow is formed. To be able to explore shadow size and explain the changes. To understand the danger of direct sunlight and describe how to keep protected.			To understand how light travels. To understand and demonstrate how we see objects. To understand why shadows have the same shape as the object that casts them. To understand how simple optical instruments work, e.g., periscope, telescope, binoculars, mirror, magnifying glass etc.
	Retrieval of prior knowledge	**<u>Experiences / Reading presumed:</u>** Sharing stories about day and night / light and dark. Exploring and playing with light e.g., light boxes, torches	When I play in the sunshine, To be able to sometimes see my shadow on the ground. **(F1)** When I turn the light off it gets darker. **(F1)**			The sun gives us light. **(F2)** A torch and a light bulb give us light **(F2)** When we have not got any light, it is dark **(F2)**			Light is a form of energy that travels in a wave from its source. A light source is an object that makes its own light. **(Y3)** We need light to be able to see things. **(Y3)** When light hits an object, it is reflected (bounces off). Some materials reflect light well. Other materials do not reflect light well. **(Y3)** A shadow is an area of darkness where the light has been blocked by an opaque object. **(Y3)** A shadow is larger when an object is closer to the light source this is because the object blocks more of the light. **(Y3)** When the light source is directly above the object, the shadow will be directly underneath. **(Y3)** When a light source is to one side of an object, the shadow will appear on the opposite side. The shadow will also be longer. **(Y3)**

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Light	**New Knowledge**	When I play in the sunshine, To be able to sometimes see my shadow on the ground. When I turn the light off it gets darker. Sometimes the moon can be seen in the sky at night. Sometimes the sun can be seen in the sky in the daytime.	The sun gives us light. Daytime is light in the UK. The night is dark in the UK. A torch and a light bulb give us light. When we have not got any light, it is dark			Light is a form of energy that travels in a wave from its source. A light source is an object that makes its own light. We need light to be able to see things. Light travels in a straight line. When light hits an object, it is reflected (bounces off). Some materials reflect light well. Other materials do not reflect light well. Light can damage the retina (A layer at the back of the eye) To help protect the eyes you can wear a wide brim hat or sunglasses. A shadow is an area of darkness where the light has been blocked by an opaque object. A shadow is larger when an object is closer to the light source this is because the object blocks more of the light. When the light source is directly above the object, the shadow will be directly underneath. When a light source is to one side of an object, the shadow will appear on the opposite side. The shadow will also be longer.			**We need light to be able to see things, light travels in a straight line these lines are often called rays or beams of light.** **Light travels in a straight line and hits an object. The light ray is then reflected off the chair and travels in a straight line to the human eye enabling us to see objects.** A shadow is always the same shape as the object that casts it. This is because when an opaque object is in the path of light traveling from a light source, it will block the light rays that hit it, while the rest of the light can continue travelling. **Optical instruments are** based on **optics**. They use mirrors and lenses **to** reflect and refract light and form images.
Light	**Key Vocab**	Light, lighter, dark, darker, shadow, sun, moon	Sunshine, moonlight, light, dark, daytime, night-time, torch, light bulb			Pupil, retina, shadow, opaque, translucent, transparent, light, light source, dark, reflection, reflect, reflective. **Non-negotiable:** **Circuit** **Cell/battery** **Wire** **Bulb/lamp** **Series** **Conductor** **Insulator** **Switch**			refraction, Reflection, Light, Colour, ray, Spectrum, Rainbow, filters, lens, retina, cornea, iris, pupil, illuminate, opaque, translucent, **Non-negotiable:** Voltage Diagram Symbols

Forces and Magnets	Progressive Science Areas								
		Nursery	Reception / F2	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6
	Statutory Curriculum Statements	**Communication and Language:** **Birth to 3:** Understand simple questions about 'who', 'what' and 'where' (but generally not 'why'). **3- and 4-Year-Olds:** Use a wider range of vocabulary. Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" **Understanding the World:** **Birth to 3:** Explore materials with different properties. Explore and respond to different natural phenomena in their setting and on trips. **3- and 4-Year-Olds:** Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.	**Communication and Language:** **Reception Children:** Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. Use new vocabulary in different contexts. **ELG: Listening, Attention and Understanding** Make comments about what they have heard and ask questions to clarify their understanding. **ELG: Speaking** Offer explanations for why things might happen. **Understanding the World:** **Reception Children:** Explore the natural world around them. Describe what they see, hear, and feel while they are outside. **ELG: The Natural World:** Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.			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, depending on which poles are facing.		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.	
	Curriculum Skills					To understand about and describe how objects move on different surfaces. To understand how some forces require contact and some do not, giving examples. To understand about and explain how objects attract and repel in relation to objects and other magnets. To be able to predict whether objects will be magnetic and carry out an enquiry to test this out. To understand how magnets work. To be able to predict whether magnets will attract or repel and give a reason.		To understand what gravity is and its impact on our lives. To be able to identify and know the effect of air resistance. To be able to identify and know the effect of water resistance. To be able to identify and know the effect of friction. To be able to explain how levers, pulleys and gears allow a smaller force to have a greater effect.	

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Forces and Magnets	Retrieval of prior knowledge	**Experiences / Reading presumed:** Experiences of exploring a range of materials including metal with a magnet.	To be able to make something move by pushing it or pulling it. **(F1)**			Some objects are made from metal. **(F2)** That magnets stick to some metal objects. **(F2)** To be able to make something move by pushing it or pulling it. **(F1)**		That magnetic forces can be transmitted without direct contact. **(Y3)** That there is magnetic north pole and what it is. **(Y3)**	
	New Knowledge	To be able to make something move by pushing it or pulling it.	Magnets can pick up / stick to / stick on / pull some objects. Some objects down stick to a magnet. Some things float in water. Some things sink in water. Some objects are made of metal			That different surfaces effect how an object travel. That magnetic forces can be transmitted without direct contact. That objects can attract or repel in relation to other objects and magnets. That objects some objects are magnetic. That objects can be grouped according to if they are magnetic or not. That there is magnetic north pole and what it is.		That Earth has gravity. That gravity is a force. That gravity holds Earth and other planets in orbit around the sun. That air resistance or drag acts against gravity on falling objects and this is how parachutes work. That water resistance helps swimmers to move forward. That friction is a force between two surfaces that are sliding or trying to slide across each other. That levers, pulleys and gears allow a smaller force to have a greater effect.	
	Key Vocab	Material Push Pull	Metal Float Sink Stick			Attract and repel, magnetic north, magnetic, attract, Force, Contact, Repel, Friction, Poles, Push, Pull **Non-negotiable:** **Force** **Magnetic** **Attract** **Repel** **Pole**		air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys, levers, Galileo **Non-negotiable:** Gravity (Air/Water) Resistance Friction Lever Pulley Gear	

	Progressive Science Areas							
	Nursery	**Reception / F2**	**Yr1**	**Yr2**	**Yr3**	**Yr4**	**Yr5**	**Yr6**
Science Covered in 1 Year Group Only **Statutory Curriculum Statements**	**Communication and Language:** **Birth to 3:** Understand simple questions about 'who', 'what' and 'where' (but generally not 'why'). **3- and 4-Year-Olds:** Use a wider range of vocabulary. Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" **For Rocks:** Refer to materials. **For sounds:** Refer to light. **For Earth and Space:** Refer to forces and seasonal change. **For Evolution and Inheritance:** Refer to Animals including humans and Plants.	**Communication and Language:** **Reception Children:** Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. Use new vocabulary in different contexts. **ELG: Listening, Attention and Understanding** Make comments about what they have heard and ask questions to clarify their understanding. **ELG: Speaking** Offer explanations for why things might happen.			**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 that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter.	**Sounds** 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. **States of matter** Understanding whether a materials is a solid, liquid or gas and group them accordingly. Understand that some materials change state when they are heated or cooled. Find and measure the temperature at which this happens in degrees Celsius. Understand and explain Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**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.	**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.

		F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Science Covered in 1 Year Group Only	Curriculum Skills					To be able to compare and group rocks based on their appearance and physical properties, giving a reason. To understand how fossils are formed. To understand how soil is made. To understand about and explain the difference between sedimentary, metamorphic, and igneous rock.	**Sounds** To understand how sound is made. To understand how sound travels from a source to our ears. To understand how sounds are made, associating some of them with vibrating. To understand the correlation between pitch and the object producing a sound. To understand the correlation between the volume of a sound and the strength of the vibrations that produced it. To understand what happens to a sound as it travels away from its source. **States of matter** To compare and group materials together, according to whether they are solids, liquids or gasses. 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. To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	To understand about and explain the movement of the Earth and other planets relative to the Sun. To understand about and explain the movement of the Moon relative to the Earth. To understand and demonstrate how night and day are created. To be able to describe the Sun, Earth, and Moon (using the term spherical).	To understand how the Earth and living things have changed over time. To understand how fossils can be used to find out about the past. To understand about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents). To understand how animals and plants are adapted to suit their environment. To be able to link adaptation over time to evolution. To understand about evolution and can explain what it is.
	Retrieval of prior knowledge or experiences					Exploration of the world around us in plant and habitats – Science Study of rocks and stones in F2 Forest Schools sessions,	**Sounds** That sound can be made, heard and felt. **States of matter** To compare and group materials together, according to whether they are solids, liquids or gasses. 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. To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Knowledge of the planet Earth from Geography Knowledge of day and night from the study of light in Science.	Offspring Animals and plants produce offspring that are similar but not identical to them. Offspring often look like their parents because some features are passed on. **Fossilisation:** An animal dies. It gets covered with sediments which eventually become rock. More layers of rock cover it. Only hard parts of the creature remain, e.g., teeth, bones, and shells. Over thousands of years sediment might enter the mould to make a cast fossil. Bones may change to mineral but will stay the same shape.

		F1	**F2**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Science Covered in 1 Year Group Only	**New Knowledge**					There are three types of naturally occurring rocks. **Igneous rock** that has been formed from magma or lava. **Metamorphic - Rock** that started out as igneous or sedimentary but has changed due to being exposed to extreme heat or pressure. **Sedimentary -** Rock that has been formed by layers of sediment being pressed down hard and sticking together. You can see the layers of sediment in the rock. **Sedimentary rocks**: chalk, sandstone, limestone. **Metamorphic rocks:** marble, quartzite, slate **Igneous rocks**: obsidian, granite, basalt **Soil** is the uppermost layer of the Earth. It is a mixture of different things: Minerals (the minerals in soul come from finely broken-down rock). Air. Water. Organic matter (including living / dead plants and animals). **Fossilisation:** An animal dies. It gets covered with sediments which eventually become rock. More layers of rock cover it. Only hard parts of the creature remain, e.g., teeth, bones, and shells. Over thousands of years sediment might enter the mould to make a cast fossil. Bones may change to mineral but will stay the same shape. Changes in the sea level take place over a long period of time. As erosion and weathering take place, eventually the fossil becomes exposed.	**Sounds** Sound is a type of energy. Sounds are created by vibrations. The louder the sound, the bigger the vibration. Inside your ear, the vibrations hit the eardrum and are then passed to the middle and then the inner ear. They are then changed into electrical signals and sent to your brain. Your brain then tells you that you are hearing a sound. Pitch is a measure of how high or low a sound is. A whistle being blown creates a high-pitched sound. A rumble of thunder is an example of a low-pitched sound. The size of the vibration is called the amplitude. Louder sounds have a larger amplitude and quieter sounds have a smaller amplitude. Faster vibrations = higher pitch Slower vibrations = lower pitch **States of matter**	The Moon orbits the Earth in an oval-shaped path while spinning on its own axis. At various times in a month, the Moon appears to be different shapes. This is because as the Moon rotates round Earth, the Sun lights up different parts of it. Earth orbits (spins) on its axis. It does a full rotation once in every 24 hours. While Earth is rotating, it is also orbiting (revolving) around the Sun. It takes a little more than 365 days to orbit the Sun. Daytime occurs when the side of the Earth is facing towards the Sun. It appears that the Sun moves across the sky during the day, but the Sun does not move at all. It seems to use that the Sun moves because of the movements of the earth. Night occurs when the side of Earth is facing away from the Sun. Spherical bodies = Astronomical objects that are shaped like spheres.	Fossils are the preserved remains, or partial remains, of ancient animals and plants. Fossils let scientists know how plants and animals used to look millions of years ago. This is proof that living things have evolved over time. Evolution is the gradual process by which different kinds of living organism have developed from earlier forms over millions of years. Scientists have proof that living things are continuously evolving – even today. Adaptive traits are characteristics that are influenced by the environment. These adaptations can be a result of many things such as food and climate change.
	Key Vocab					Fossil, fossilisation, soil, crystals, sedimentary, metamorphic, igneous, organic matter, volcanic, magma, erosion, **Non-negotiable:** **Fossil** **Organic matter** **Soil**	**Sounds** Volume, Vibration, Wave, Pitch, amplitude Tone, Speaker, insulation, outer, middle, and inner ear, cochlea, auditory, frequency, hammer **Non-negotiable:** Vibration Medium Pitch Volume Distance Sound wave **States of matter** States of matter, solid, liquid, gases, particles, freezing, melting **Non-negotiable:** Evaporation, water vapour, condensation, precipitation	Earth, Sun, Moon, Axis, lunar, orbit, Rotation, Day, Night, Phases of the Moon, star, constellation, solar system, astronomical, planets, rotation, eclipse, spherical **Non-negotiable:** Planets Solar System Earth Spherical body Rotation	Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics **Non-negotiable:** Adaptation Evolution Inheritance