Science Curriculum Knowledge Progression Map

Overview of Primary Science Curriculum

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Living things and their habitats Living and dead, describe habitats, basic food chains		Living things and their habitats Group living things, use classification keys. Change in environment can threaten life	Living things and their habitats Animal - different life cycles, reproduction in plants and animals	Living things and their habitats Classifications including microorganisms, plants and animals.
Plants Name basic parts— identify common plants	Plants Seed/bulb grow into plants. What plants need.	Plants Function - including how water is transported. Life cycle of plants			
Animals, including humans Name common animals and senses.	Animals, including humans Animals have offspring, basic needs for survival. Importance of exercise, food hygiene.	Animals, including humans Need for right amount of nutrition Skeletons and muscles	Animals, including humans Basic function of digestive system. Teeth. Food chains	Animals, including humans How humans change with age	Animals, including humans Human circulatory system. Exercise, drugs and lifestyle.
		Rocks Group and compare different rocks, how they are formed and how fossils are formed.			Evolution and inheritance Fossils, adaption and evolution and how offspring are different to parents.
Everyday materials Name, describe and sort everyday materials	Uses of everyday materials Uses of materials, their properties and how some change shape.		States of matter Solids, liquids, gases, changes in state and the water cycle.	Properties and changes of materials Dissolve, separating, reversible changes. Changes that produce new materials	
		Light Need for light to see. How shadows are formed - size.			Light Travels in straight lines, How light enables us to see. How shadows are formed - shape
		Forces and magnets Contact and non-contact forces. Magnets, magnetic materials and magnetism.		Forces Gravity, air/water resistance, friction. Levers, pulleys and gears	
Seasonal Changes Observe weather and changes across seasons				Earth and Space Movement, Earth, planets & moon. Night and day	
			Electricity Simple circuits, switches, conductors and insulators		Electricity Brightness of lamp, volume of buzzer, symbols and circuit diagrams
			Sound How sound is made and travels. Pitch and volume		

Science Curriculum Knowledge Progression Map

Year 1					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Plants (Part One) • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Tree observations/plant daffodils) **Seasonal changes (Autumn)** • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	**Everyday materials** • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties.	**Seasonal changes (Winter)** • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	**Seasonal changes (Spring)** • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. **Plants (Part Two)** • Identify and describe the basic structure of a variety of common flowering plants, including trees. (tree/daffodil observations) **Animals including humans (Part One)** • 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.	**Animals including humans (Part Two)** • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). **Plants (Part Three)** • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Bean growing)	**Seasonal changes (Summer)** • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. **Animals including humans (Part Three)** • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

Science Curriculum Knowledge Progression Map

Year 2			
Autumn	**Spring 1**	**Spring 2**	**Summer**
Use of everyday materials • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	**Animals including humans** • Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	**Plants** • Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	**Living things and their habitats** • Explore and compare the differences between things that are living, dead, and things that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including 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

Science Curriculum Knowledge Progression Map

Year 3				
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer**
Animals including humans • Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food – they get nutrition from what they eat. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	**Light** • Recognise that they need light in order to see things, and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change.	**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.	**Forces and Magnets** • Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.	**Plants** • Identify and describe the functions of different parts of flowering plants: roots; stem/trunk; leaves; and flowers. • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. • Investigate the way in which water is transported within plants. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Rocks** • Recognise that soils are made from rocks and organic matter.

Science Curriculum Knowledge Progression Map

Year 4				
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer**
Sound • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. • Find patterns between the pitch of a sound and features of the object that produced it. • Find patterns between the volume of a sound and the strength of the vibrations that produced it. • Recognise that sounds get fainter as the distance from the sound source increases.	**Animals including humans** • Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions.	**States of matter** • Compare and group materials together, according to whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**Living things and their habitats** • Recognise that living things can be grouped in a variety of ways. • Recognise that environments can change and that this can sometimes pose dangers to living things. **Animals including humans** • Construct and interpret a variety of food chains, identifying producers, predators and prey.	**Electricity** • Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors. **Living things and their habitats** • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.

Science Curriculum Knowledge Progression Map

Year 5				
Autumn 1	**Autumn 2**	**Spring**	**Summer 1**	**Summer 2**
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.	**Properties and Changes of Materials** • Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	**Forces and Magnets** • 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.	**Living things and their habitats** • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Describe the life process of reproduction in some plants and animals.	**Animals including humans** • Describe the changes as humans develop to old age.

Science Curriculum Knowledge Progression Map

Year 6				
Autumn 1	**Autumn 2**	**Spring**	**Summer 1**	**Summer 2**
Electricity • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. • Use recognised symbols when representing a simple circuit in a diagram.	**Living things and their habitats** • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. • Give reasons for classifying plants and animals based on specific characteristics.	**Light** • 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.	**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.	**Animals including humans** • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. • Describe the ways in which nutrients and water are transported within animals, including humans.

Science Curriculum Knowledge Progression Map

Vocabulary

EYFS

Nursery and Pre-School

- **Plants:** plant, leaf, stem, branch, root, bark, flower, petal, seed, berry, fruit, vegetable, bulb, plant, hole, dig, water, weed, grow, shoot, die, dead, soil, names of plants they grow
- **Rocks:** natural, shells, pebbles, stones
- **Materials:** mix, stir, cook, hot, oven, microwave, change, burn, melt, hard, runny, set, freeze, freezer, cold, blend, hard, soft, bendy, stiff, wobbly, wood, plastic, paper, card, fabric
- **Light:** Light, torch, bulb, lamp, spotlight, shiny, bright, brighter, brightest, Sun, shine, glow, mirror
- **Animals including humans:** egg, chick, bird, caterpillar, cocoon, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young, fur, feathers, scales, tail, wings, beak, claws, paws, hooves, swim, walk, run, jump, fly, spots, stripes, grow, change, baby, toddler, child, adult, old person, smell, taste, touch, feel, hear, see, blind, deaf
- **Living things and their habitats:** natural, plant, animal, leaves, seeds, conkers, acorns, twigs, bark, shells, feathers, pebbles, stones, same, different
- **Forces:** object, float, sink, water, up, down, top, bottom, push, pull, magnet, spring, squash, bend, twist, stretch, turn, spin, smooth, rough, fast, slow
- **Sound:** sound, noise, loud, quiet, high, low, music, bang, blow, pluck, soft, hard, fast, slow, names of instruments
- **Electricity:** battery, plug, socket, electricity, wire, sound, light, move

Reception

- **Plants:** tree, bush, herb, names of plants they see
- **Living things and their habitats:** plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment (e.g. beach, forest)

Key Stage One

Year 1

- **Plants:** 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
- **Animals including humans:** 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, parts of the human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue
- **Seasonal changes:** weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length
- **Everyday materials:** 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

Year 2

- **Plants:** light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling
- **Animals including humans:** offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)
- **Living things and their habitats:** Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival,
  names of local habitats (e.g. pond, woodland etc.),

Lower Key Stage Two

Year 3

- **Plants:** photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport
- **Animals including humans:** nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine
- **Light:** Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous
- **Rocks:** rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay)
- **Forces and magnets:** 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

Year 4:

- **Electricity:** 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
- **Animals including humans:** digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey
- **Sound:** sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation

Upper Key Stage Two

Year 5

- **Earth and Space:** Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit
- **Forces:** force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears
- **Properties and changes of materials:** thermal insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material
- **Living things and their habitats:** Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, cuttings metamorphosis, asexual, plantlets, runners, bulbs, cuttings
- **Animals including humans:** puberty, the vocabulary to describe sexual characteristics in line with the school's RSE policy

Year 6

- **Animals including humans:** heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, cycle, circulatory system, diet, drugs, lifestyle
- **Evolution and inheritance:** offspring, sexual reproduction, vary, characteristics, adapted, inherited, species, evolve, evolution
- **Electricity:** circuit diagram, circuit symbol, voltage
- **Living things and their habitats:** vertebrates, fish, amphibians, reptiles, birds, mammals, warm-blooded, cold-blooded, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers

Science Curriculum Knowledge Progression Map

• **Seasons:** spring, summer, autumn, winter, seasons, sunny, cloudy, hot, warm, cold, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, animals, young, plants, flowers • **Materials:** Ice, water, frozen, icicle, snow, melt, wet, cold, slippery, smooth, big, bigger, biggest, smaller, smaller, smallest, hard, soft, bendy, wood, plastic, paper, card, metal, strong, weak, hot, waterproof, soggy, not waterproof, best, change, change back • **Light:** sun, sunny, light, shadow, shady, clouds, torch, see-through, not see-through, source, light source • **Forces:** float, sink, up, down, top, bottom, surface, move, roll, drop, fly, turn, spin, fall, fast, slow, faster, slower, fastest, slowest, further, furthest, wind, air, water, blow, bounce • **Sound:** sound, noise, listen, hear, music, voices, bird song, traffic, sirens, thunder, high, low, loud, quiet, soft, volume, crackle, thunder, hum, buzz, roar • **Earth and Space:** Sun, Moon, Earth, star, planet, sky, day, night, space, round • **Animals including humans:** names of animals, live, on land, in water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice, hair (e.g. black, brown, dark, light, blonde, ginger, grey, white, long, short, straight, curly), eyes (e.g. blue, brown, green, grey), skin (e.g. black, brown, white), big/tall, small/short, bigger/smaller, baby, toddler, child, adult, old person, old, young, brother, sister, mother, father, aunt, uncle, grandmother, grandfather, cousin, friend, family, boy, girl, man, woman	names of micro-habitats (e.g. under logs, in bushes etc.), condition: light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied • **Use of everyday materials:** opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	• **Living things and their habitats:** classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate • **States of matter:** solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle	• **Light:** straight lines, light rays