Year 1

	Seasonal Changes	Animals including Humans	Plants	Everyday Materials
Knowledge	1. Observe changes across the four seasons. 2. Observe and describe weather associated with the seasons and how day length varies.	1. Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. 2. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. 3. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). 4. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	1. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. 2. Identify and describe the basic structure of a variety of common flowering plants, including trees.	1. Distinguish between an object and the material from which it is made. 2. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. 3. Describe the simple physical properties of a variety of everyday materials. 4. Compare and group together a variety of everyday materials on the basis of their simple physical properties.
Enquiry	***Classification:*** *N/A* ***Observing over time:*** - Take weather measurements and make observations over time. - Record/ Photograph what children are wearing (jumper, coats, hats, scraves, etc). - Make observations of	***Classification:*** - Classify animals they have seen/have first-hand experience of, choosing their own criteria to do so. - Classify animals based on physical structure. - Classify animals they have first-hand experience of based on what they eat (plants, other animals,	***Classification:*** Allow children to classify leaves, flowers, and seeds, choosing their own criteria. ***Observing over time:*** - Observe a tree through the year. - Observe a trail/patch to identify how plants change through the year.	***Classification:*** - Classify objects made from the same material (e.g. lots of things made from plastic). - Classify one object made from different materials (e.g. cups made of different materials). - Classify different fabrics based on texture (e.g. to make a feely-book for a child). - Classify paper/ plastics/

	daylight hours e.g. send a diary and toy bear home with one child each day and ask the child to record their activities, but the bear needs to go to bed when it gets dark and the children must record the time this happens. (This gathers evidence, over time, that day length changes and so do activities.) ***Pattern Seeking**:* At the end of the year, look for patterns in evidence e.g. Does it rain more in spring? Do we have more sunny days in the summer? Which was the coldest month? ***Comparative/Fair testing:*** N/A ***Researching**: N/A*	both). (Complete this after the research.) ***Observing over time:*** - Observe animals in the local environment throughout the year. ***Pattern seeking:*** Children generate questions for investigations such as: - Do people with longer arms have longer legs? - Do all animals with …… have ……? ***Comparative/Fair testing:*** Can I taste the difference between different flavoured crisps or skittles etc.? ***Researching:*** - Use secondary sources to name animals seen in the local environment that they may not currently be able to name (e.g. birds: magpie, blackbird). - Research what animals they have first-hand experience of.	***Pattern Seeking**:* Based on observations, encourage children to identify patterns. ***Comparative/ Fair Testing**:* N/A ***Researching:*** Use secondary sources to name plants (including trees) based on observations of leaves, seeds, flowers, buds, and bark.	fabrics. ***Observing over time**: N/A* ***Pattern Seeking**:* N/A ***Comparative/ Fair Testing:*** Test objects made of different materials to see how effective they are e.g. umbrellas/hats/coats for waterproofness, cloths/nappies for absorbency, socks for elasticity, bounciness of balls, sunglasses for protection from the sun, picnic plates for stiffness, door mats for wiping your feet, different papers for writing on/painting etc. ***Researching:** N/A*

Year 2:

	Animals including Humans	Living things and their habitat	Uses of Everyday Material	Plants
Knowledge	1. Notice that animals, including humans, have offspring which grow into adults. 2. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). 3. Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	1.Explore and compare the differences between things that are living, dead, and things that have never been alive. 2. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. 3. Identify and name a variety of plants and animals in their habitats, including micro-habitats. 4. 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.	1. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. 2. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	1. Observe and describe how seeds and bulbs grow into mature plants. 2. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Enquiry	***Classification:*** Based on the children's own criteria: - Classify food items - Classify animals. ***Observing over time:*** - Observe a life cycle (e.g. caterpillars, chicks, farm animals). - Observe how their body changes during/after exercise. ***Pattern Seeking:*** N/A ***Comparative/Fair testing:*** *N/A* ***Researching:*** Research adult animals and their young e.g. googling pictures and names of animal babies – swan and cygnet.	***Classification:*** - Find things that are living. - Find things that are dead. - Find things that have never been alive. - Classify things found in the environment (choosing their own criteria to do so), leading to living, dead and never been alive. - Classify minibeasts found in the environment based on physical structure. - Classify plants found in the environment. ***Observing over time:*** - Explore animals in micro-habitats throughout the year (under a rock, under a log, in a pond, in a bush, in the long grass). - Explore plants in micro-habitats throughout the year (e.g. woodland area, ponds, meadows). ***Pattern seeking:*** Children generate questions for investigation such as: - Are there more daisies in the meadow or on the field? - Where do you see more ivy? - Where do you see more	***Classification:*** Based on the children's own criteria, classify materials e.g. samples of wood, metal, plastic, etc. ***Observing over time:*** N/A ***Pattern Seeking:*** N/A ***Comparative/ Fair Testing:*** - Test materials for different uses (e.g. Which material can you use to make an aeroplane? Which fabric would you use for curtains? Which materials are best for Cinderella's mop? Which fabric would you choose for Elastigirl's costume? Which paper can be used for a book, fabrics for a child's dungarees, materials for aeroplanes etc?) ***Researching:*** N/A	***Classification:*** Based on children's own criteria: -classify seeds - classify bulbs. ***Observing over time****:* Plant seeds and bulbs and observe how they grow. ***Pattern Seeking****:* Children generate questions for investigations such as: - Do big seeds germinate more quickly? - Does it matter which way round you plant a bulb or seed? - Which comes first, the root or the shoot? ***Comparative/ Fair Testing:*** *N/A* ***Researching:*** Look at packets to decide how to plant and care for seeds e.g. How much water do they need? Do they need shade/full sun?

		butterflies? - Where do snails live? ***<u>Comparative/Fair testing</u>***: *N/A* ***<u>Researching:</u>*** - Use secondary sources to name plants and animals seen in the local environment that they may not currently be able to name . - Research what animals they have first-hand experience of eat.		

Year 3:

	Plants	Animals including humans	Forces and Magnets	Light	Rocks
Knowledge	1. Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. 2. 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. 3. Investigate the way in which water is transported within plants. 4. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	1. 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. 2. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	1. Compare how things move on different surfaces. 2. Notice that some forces need contact between two objects, but magnetic forces can act at a distance 3. Observe how magnets attract or repel each other and attract some materials and not others. 4. 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. 5. Describe magnets as having two poles. 6. Predict whether two magnets will attract or repel each other, depending on which poles are facing.	1.Recognise that they need light in order to see things and that dark is the absence of light. 2. Notice that light is reflected from surfaces. 3. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. 4. Recognise that shadows are formed when the light from a light source is blocked by a solid object. 5. Find patterns in the way that the size of shadows change.	1. Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. 2. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. 3. Recognise that soils are made from rocks and organic matter.

Enquiry	***Classification:*** Classify flowers based on the children's own criteria. ***Observing over time:*** **-** Observe celery (with roots and leaves) in coloured water. - Observe white carnations (freshly cut) in coloured water. - Gather seeds and photographic evidence of blossoms/flowers and berries on a particular trail throughout the year. ***Pattern Seeking****:* Investigate what happens when conditions are changed e.g. more/less light/water, change in temperature, nutrients. ***Comparative/Fair testing:*** *N/A*	***Classification:*** Based on the children's own criteria: - classify food items (leading to sorting by nutrients) - classify animals (leading to sorting by whether or not they have skeletons). ***Observing over time:*** *N/A* ***Pattern seeking:*** Children generate questions for investigation into objective 1 such as: - Do 'healthy' drinks have less sugar? - Does brown bread have more fibre? Children generate questions for investigation into objective 2 such as: **-** Do people with long arms throw further? **-** Can people with short legs jump higher? **-** Can people with longer legs run faster? **-**Can people with	***Classification:*** Based on the children's own criteria: - sort materials (leading towards metal/non-metal and magnetic/not magnetic) - sort toys (leading to what makes them move e.g. push/pull). ***Observing over time:*** *N/A* ***Pattern Seeking****:* *N/A* ***Comparative/ Fair Testing****:* -Test how objects move on different surfaces e.g. cars, spinning tops, wind-up/clockwork toys. - Test the strength of different magnets. ***Researching:*** - Find out how magnets are used in everyday life.	***Classification:*** Based on the children's own criteria: - classify light sources (leading to man-made/natural). - classify materials (leading to reflective/non-reflective, transparent/translucent/opaque). ***Observing over time****: N/A* ***Pattern Seeking****: N/A* ***Comparative/ Fair Testing:*** - Test materials for reflectiveness. - Test materials for transparency. - Investigate shadows (size of shadows, shape of shadows). ***Researching:*** N/A	***Classification:*** - Based on the children's own criteria, classify rocks. (At the beginning of the topic, this will most likely focus on appearance, leading to physical properties at the end of the unit.) ***Observing over time****:* - Observe how soil separates into different layers in water. ***Pattern Seeking****:* *N/A* ***Comparative/ Fair Testing:*** - Test the hardness of different rocks. - Test what happens when rocks are put in water. - Test how quickly water runs through different types of soil. ***Researching:*** - Research how fossils are formed.

	Researching*:* - Research the functions of the parts of flowering plants. - Research different methods of seed dispersal. - Research different methods of pollination.	bigger hands catch a ball more easily? ***Comparative/Fair testing:*** *N/A* ***Researching:*** - Look at food packaging to identify the amount of nutrients in different food items. - Research which types of food contain which nutrients. - Generate questions to research about the human skeleton.			

Year 4:

	Animals including Humans	States of Matter	Sound	Electricity	Living things and their habitats
Knowledge	1.Describe the simple functions of the basic parts of the digestive system in humans. 2. Identify the different types of teeth in humans and their simple functions. 3. Construct and interpret a variety of food chains, identifying producers, predators and prey.	1.Compare and group materials together, according to whether they are solids, liquids or gases. 2. 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). 3. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	1. Identify how sounds are made, associating some of them with something vibrating. 2. Recognise that vibrations from sounds travel through a medium to the ear. 3. Find patterns between the pitch of a sound and features of the object that produced it. 4. Find patterns between the volume of a sound and the strength of the vibrations that produced it. 5. Recognise that sounds get fainter as the distance from the sound source increases.	1. Identify common appliances that run on electricity. 2. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. 3. 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. 4. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. 5. Recognise some common conductors and insulators, and associate metals with being good conductors.	1.Recognise that living things can be grouped in a variety of ways. 2. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. 3. Recognise that environments can change and that this can sometimes pose dangers to living things.

Enquiry	***Classification:*** Compare and contrast different types of teeth (linking to simple functions). - Classify jaw bones/teeth to aid with making food chains e.g. recognise what eats plants and what eats animals by looking at their teeth. ***Observing over time:*** *N/A* ***Pattern Seeking****:* *N/A* ***Comparative/Fair testing:*** *N/A* ***Researching****:* - Research the different parts of the digestive system. (Children present what they've learned in different ways: create a model, write a song, write a story, create a PPT, etc.)	***Classification:*** Based on the children's own criteria: - classify solids (including grains, crystals, powders: physical properties). -classify liquids. ***Observing over time:*** **-**Watch ice melt (ice hands). - Watch hand prints dry e.g. water hand prints on coloured paper towel. - Watch frozen liquids melt. ***Pattern seeking:*** *N/A* ***Comparative/Fair testing:*** - What affects the melting rate of chocolate (size of pieces, temperature of water, type of chocolate)? -What affects the rate an 'ice pole' melts? - What affects the rate of evaporation? - Test the 'runniness' of liquids.	***Classification:*** Based on the children's own criteria, sort musical instruments. ***Observing over time:*** *N/A* ***Pattern Seeking****: N/A* ***Comparative/ Fair Testing****:* -Measure volume from different instruments. - Measure how volume changes away from a source. - Investigate string telephones. - Explore pitch e.g. through a carousel of activities using milk bottles, straw pipes, rulers, elastic band guitars. ***Researching:*** - Research, make and play their own instruments based on what they learned about pitch and volume.	***Classification:*** -Based on the children's own criteria, classify household appliances and/or toys (leading to electrical/not electrical, batteries/mains). -Test materials to classify into insulators and conductors. ***Observing over time****:* *N/A* ***Pattern Seeking****: N/A* ***Comparative/ Fair Testing:*** *N/A* ***Researching:*** *N/A*	***Classification:*** Based on the children's own criteria: - classify a number of living things in their local environment (plants and animals). - classify a number of living things in the wider environment (plants and animals) after completing research. - introduce branching databases/dichotomous keys. ***Observing over time****:* - Observe living things in their local environment at different times of the year. ***Pattern Seeking****:* - Do animals with …. have ….? - Do plants with …. have ….? ***Comparative/ Fair Testing****: N/A* ***Researching:*** - Research and be able

	- Research what different animals eat within a specific environment, e.g. coral, polar, African grasslands, in order to construct food chains.	***Researching:*** - Research the melting point of metals. - Research the water cycle. (Children present what they've learned in different ways: create a model, write a song, write a story, create a PPT, etc.)			to name plants and animals in the wider environment e.g. polar, desert, jungle, etc. - Research global environmental issues and their impact on living things.

Year 5:

	Properties and Changes of Materials	Living Things and their Habitat	Forces	Earth and Space	Animals including Humans
Knowledge	1.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. 2. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. 3. Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. 4. Demonstrate	1. Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. 2. Describe the life process of reproduction in some plants and animals.	1.Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. 2. Identify the effects of air resistance, water resistance and friction that act between moving surfaces. 3. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	1.Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. 2. Describe the movement of the Moon relative to the Earth. 3. Describe the Sun, Earth and Moon as approximately spherical bodies. 4. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	1. Describe the changes as humans develop to old age.

	that dissolving, mixing and changes of state are reversible changes. 5. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. 6. 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.				

Enquiry	***Classification:*** Based on the children's own criteria: - classify the materials themselves e.g. samples of wood, metal, plastic, etc. - after observing what happens when solids are added to liquids, classify materials based on the outcomes. ***Observing over time:*** - Observe rusting with uncoated nails in different liquids. (This can be achieved by removing coating with sandpaper.) ***Pattern Seeking****: N/A* ***Comparative/Fair testing:*** - Which material would be good for a tent? - Which material would be good to make a tea bag	***Classification:*** - Classify animals according to their life cycle. ***Observing over time:*** - Grow from cuttings and observe whether they grow roots/stem/ leaf/flower. - Grow from, and harvest, bulbs through the year. (Can be done in conjunction with Year 2.) - Observe strawberry/spider plants through the year. ***Pattern seeking:*** Children generate questions such as: - Do larger mammals have longer gestation periods? - Do larger animals live longer? - Do smaller animals lay more eggs? ***Comparative/Fair testing:*** *N/A* ***Researching:***	***Classification:*** *N/A* ***Observing over time:*** *N/A* ***Pattern Seeking****: N/A* ***Comparative/ Fair Testing****:* - Compare friction e.g. trainers or weighted match box pulled with forcemeter, balloon rockets, CD hovercraft, balloon cars. - Compare water resistance e.g. boats in a gutter of water, plasticine in a cylinder of liquid (easier with a more viscous liquid e.g. bubble bath). - Compare air resistance e.g. spinners, parachutes, sailing boats, straw rockets. - Compare levers, pulleys and gears ***Researching:*** Research Heath Robinson and Rube Goldberg machines. (Children present what they've learned in different ways: create a	***Classification:*** *N/A* ***Observing over time****:* - Measure shadows throughout the day. ***Pattern Seeking****: N/A* ***Comparative/ Fair Testing:*** *N/A* ***Researching:*** Generate questions to research about the Earth and space. (Children present what they've learned in different ways: create a model, write a song, write a story, create a PPT, etc.)	***Classification:*** *N/A* ***Observing over time****: N/A* ***Pattern Seeking****: N/A* ***Comparative/ Fair Testing****: N/A* ***Researching:*** Develop questions to ask an expert e.g. a health visitor, doctor or nurse. (Questions will need to be filtered by the teacher.)

	from? - Which materials keep things warm/cold? - Which material would be good for a bag for different purposes? - Test solids for solubility. - Compare rates of solubility. - Burn different materials (not plastic or toxic substances). ***Researching**: N/A*	- Generate questions to research the life cycle of a chosen animal: mammal, amphibian, insect, bird e.g. dragon fly, cuckoo, salmon, worm, owl. (Children present what they've learned in different ways: create a model, write a song, write a story, create a PPT, etc.) - Research how gardeners asexually reproduce plants.	model, write a song, write a story, create a PPT, etc. This could be cross-curricular with D&T and English biography writing.)		

Year 6

	Electricity	Living things and their habitat	Animals including humans	Light	Evolution and inheritance
Knowledge	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. 2. 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. 3. Use recognised symbols when representing a simple circuit in a diagram.	1.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. 2. Give reasons for classifying plants and animals based on specific characteristics.	1.Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. 2. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. 3. Describe the ways in which nutrients and water are transported within animals, including humans.	1.Recognise that light appears to travel in straight lines. 2. 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. 3. 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. 4. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	1.Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. 2. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. 3. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Enquiry	***Classification:*** *N/A* ***Observing over time:*** *N/A* ***Pattern Seeking****: N/A* ***Comparative/Fair testing:*** -*I*nvestigate the effect of adding more bulbs to a circuit. -Investigate the effect of adding more cells to a circuit. - Investigate the effect of adding more buzzers to a circuit. - Investigate the effect of adding more motors to a circuit. ***Researching****: N/A*	***Classification:*** -Classify animals according to Carl Linnaeus' system. - Classify plants into flowering, mosses, ferns and conifers, based on specific characteristics. - Create a branching database/dichotomous key to classify a set of living things. ***Observing over time:*** *N/A* ***Pattern seeking:*** *N/A* ***Comparative/Fair testing:*** *N/A* ***Researching:*** - Research the characteristics of a vertebrate/invertebrate group. (Children present what they've learned in different ways: create a model, write a song, write a story, create a PPT, etc.) - Research the characteristics of flowering plants, mosses, ferns and	***Classification:*** ***Observing over time:*** - Observe pulse rates before, during and after exercise. ***Pattern Seeking****:* Children generate questions for investigation such as: - Do older people have lower pulse rates? - Do boys have higher pulse rates? ***Comparative/ Fair Testing****:* Complete different activities to compare the impact on their own heart rate. ***Researching:*** Generate questions to research about the human circulatory system. (Children present what they've learned in different ways: create a model, write a song, write a story, create a PPT, etc.)	***Classification:*** *N/A* ***Observing over time****: N/A* ***Pattern Seeking****:* *N/A* ***Comparative/ Fair Testing:*** Investigate the shape of shadows and link this to light travelling in straight lines. ***Researching:*** *N/A*	**Classification:** To show variation in a species: - Classify a species of animal e.g. cats, dogs - Classify a species of plant e.g. daffodils, tulips, lilies. ***Observing over time****: N/A* ***Pattern Seeking****:* Use different pieces of equipment, e.g. chopsticks, toothpicks, cutlery, to look for patterns linking the suitability of bird beaks for the available food e.g. rice, grapes, raisins. ***Comparative/ Fair Testing:*** *N/A* ***Researching:*** Research different types of a species and their characteristics making them suitable for

		conifers. - Research the difference between bacteria, virus and fungi to give reasons why these are not plants or animals. - Research how micro-organisms can be helpful or harmful. - Research unusual animals e.g. axolotl, platypus, kangaroos etc.			different habitats e.g. penguins.