

Science LTP	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception	<u>All About Me</u> <ul style="list-style-type: none"> Identifying their family. Commenting on photos of their family; naming who they can see and of what relation they are to them. Can talk about what they do with their family and places they have been with their family. Can draw similarities and make comparisons between other families. Name and describe people who are familiar to them. Read fictional stories about families and start to tell the difference between real and fiction. Talk about members of their 	<u>Terrific Tales</u> <ul style="list-style-type: none"> Can talk about what they have done with their families during Christmas' in the past. Show photos of how Christmas used to be celebrated in the past. Use world maps to show children where some stories are based. Use the Jolly Postman to draw information from a map and begin to understand why maps are so important to postmen. Share different cultures versions of famous fairy tales. 	<u>Amazing Animals</u> <ul style="list-style-type: none"> Listening to stories and placing events in chronological order. What can we do here to take care of animals in the jungle? Compare animals from a jungle to those on a farm. Explore a range of jungle animals. Learn their names and label their body parts. Could include a trip to the zoo. Nocturnal Animals Making sense of different environments and habitats Use images, video clips, shared texts and other resources to bring the wider world into the classroom. Listen 	<u>Come Outside</u> <ul style="list-style-type: none"> Trip to our local park (to link with seasons); discuss what we will see on our journey to the park and how we will get there. Introduce the children to recycling and how it can take care of our world. Look at what rubbish can do to our environment and animals. Create opportunities to discuss how we care for the natural world around us. Can children make comments on the weather, culture, clothing, housing. Change in living things – Changes in the leaves, weather, seasons, 	<u>Ticket to Ride</u> <ul style="list-style-type: none"> Use Handa's Surprise to explore a different country. Discuss how they got to school and what mode of transport they used. Introduce the children to a range of transport and where they can be found. Look at the difference between transport in this country and one other country. Encourage the children to make simple comparisons. Use bee-bots on simple maps. Encourage the children to use navigational language. 	<u>Fun at the Seaside</u> <ul style="list-style-type: none"> To understand where dinosaurs are now and begin to understand that they were alive a very long time ago. Learn about what a palaeontologist is and how they explore really old artefacts. Introduce Mary Anning as the first female to find a fossil. Materials: Floating / Sinking – boat building Metallic / non-metallic objects Seasides long ago – Magic Grandad Share non-fiction texts that offer an insight into contrasting environments. Listen to how children communicate their understanding of their own environment and contrasting environments through conversation and in play.

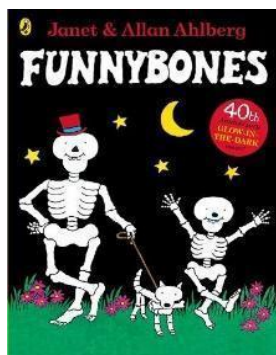
	<p>immediate family and community.</p> <ul style="list-style-type: none"> • Navigating around our classroom and outdoor areas. Create treasure hunts to find places/ objects within our learning environment. • Introduce children to different occupations and how they use transport to help them in their jobs. • Listen out for and make note of children's discussion between themselves regarding their experience of past birthday celebrations. • Long ago – How time has changed. Using cameras. • How have I changed since I was a baby? 	<ul style="list-style-type: none"> • To introduce children to a range of fictional characters and creatures from stories and to begin to differentiate these characters from real people in their lives. • Stranger danger (based on Jack and the beanstalk). Talking about occupations and how to identify strangers that can help them when they are in need. 	<p>to what children say about what they see</p> <ul style="list-style-type: none"> • Listen to children describing and commenting on things they have seen whilst outside, including plants and animals. • After close observation, draw pictures of the natural world, including animals and plants • What are our favourite celebrations each year? 	<ul style="list-style-type: none"> • Explore the world around us and see how it changes as we enter Summer. Provide opportunities for children to note and record the weather. • Building a 'Bug Hotel' • Draw children's attention to the immediate environment, introducing and modelling new vocabulary where appropriate. • Encourage interactions with the outdoors to foster curiosity and give children freedom to touch, smell and hear the natural world around them during hands-on experiences. • Look for children incorporating their understanding of the seasons and 	<ul style="list-style-type: none"> • Can children talk about their homes and what there is to do near their homes? • Look out for children drawing/painting or constructing their homes. • Encourage them to comment on what their home is like. Show photos of the children's homes and encourage them to draw comparisons. • Environments – Features of local environment Maps of local area Comparing places on Google Earth – how are they similar/different? • Introduce the children to NASA and America. • Introduce children to significant figures 	
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				<p>weather in their play.</p> <ul style="list-style-type: none"> • Use the BeeBots 	<p>who have been to space and begin to understand that these events happened before they were born.</p> <ul style="list-style-type: none"> • Can children differentiate between land and water. • Take children to places of worship and places of local importance to the community. • Why do we wear different clothes at different times of the year? 	
KS1	<p><u>Working scientifically</u></p> <p>During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • Asking simple questions and recognising that they can be answered in different ways • Observing closely, using simple equipment • Performing simple tests • Identifying and classifying • Using their observations and ideas to suggest answers to questions • Gathering and recording data to help in answering questions 					

Year 1

Human body and the senses

- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
- Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene.



Everyday materials naming of materials and their properties

- 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
- 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

Outdoor learning:
Seasons

Human body and the senses

- 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 Experiments Plan, carry out and evaluate science experiments:

- Ask simple questions.
- Observe closely, using simple equipment.
- Perform simple tests.

Name common animals and describe their basic needs

- Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates.
- 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 (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets)
- Notice that animals, including humans, have offspring which grow into adults.

Plants- basic structure and observing growth over time

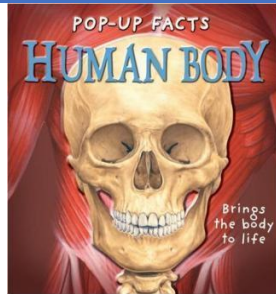
- Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen.
- Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers.
- Observe and describe 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.

Name common animals and describe their basic needs

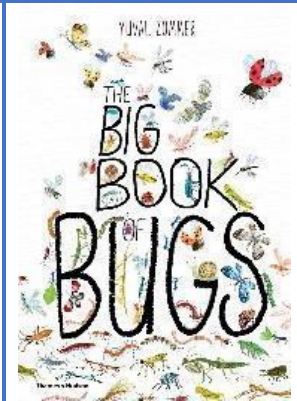
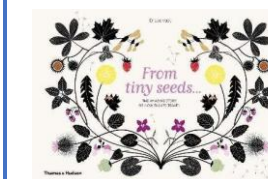
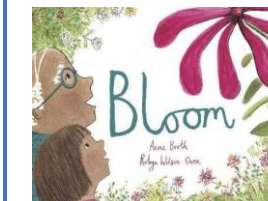
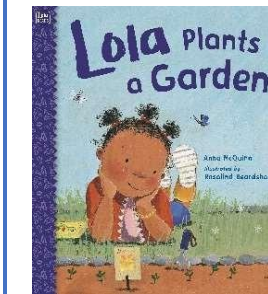
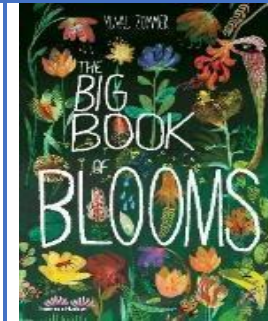
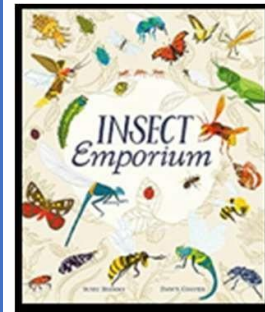
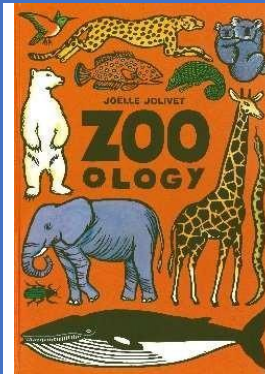
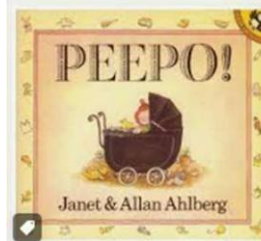
- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- Identify and name a variety of common animals that are carnivores, herbivores and omnivores

Science Experiments Plan, carry out and evaluate science experiments:

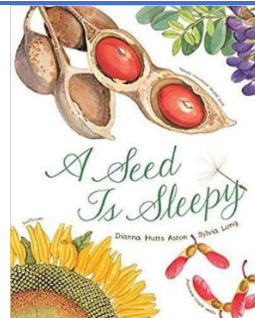
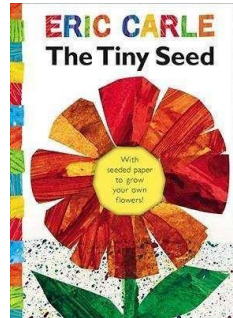
- Ask simple questions.
- Observe closely, using simple equipment.
- Perform simple tests.



- Observe and describe weather associated with the seasons and how day length varies.



Year 2	<u>Materials and their properties</u>	<u>Living things - Life processes</u>	<u>Animals, humans and their basic needs</u>	<u>Evolution and inheritance - how humans resemble their parents</u>	<u>Plants - identify what they need to grow and stay healthy</u>	<u>Electrical circuits - simple electrical circuits</u>
	<ul style="list-style-type: none"> • 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. • Find out how the shapes of solid objects made from some materials can be 	<ul style="list-style-type: none"> • Explore and compare the differences between things that are living, that are dead and 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 	<ul style="list-style-type: none"> • Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. • 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 (birds, fish, amphibians, reptiles, mammals and invertebrates, 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. 	<ul style="list-style-type: none"> • Identify how humans resemble their parents in many features. 	<ul style="list-style-type: none"> • Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers. • 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. 	<ul style="list-style-type: none"> • Identify common appliances that run on electricity. • Construct a simple series electrical circuit.

	<p>changed by squashing, bending, twisting and stretching.</p> <ul style="list-style-type: none"> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses. 	<p>plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p>	<ul style="list-style-type: none"> Notice that animals, including humans, have offspring which grow into adults. Investigate 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. 		 	
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Lower KS2

Working scientifically

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Setting up simple practical enquiries, comparative and fair tests.
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Identifying differences, similarities or changes related to simple scientific ideas and processes.
- Using straightforward scientific evidence to answer questions or to support their findings.

Year 3

Animals including humans- food groups and nutrition. Main parts of the skeleton and function of the skeleton and muscles

- Identify that animals, including humans, need the right types and amounts of nutrition, that they cannot make their own food and they get nutrition from what they eat.
- Identify that humans and some animals have skeletons and muscles for support, protection and movement.

Rocks, soils and fossils Describe rock and fossil formation. comparing and grouping types of rocks and soils

- Compare and group together different kinds of rocks on the basis of their simple, physical properties.
- Relate the simple physical properties of some rocks to their formation (igneous or sedimentary).
- Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.
- Recognise that soils are made from rocks and organic matter.

Forces and Magnets how things move on different surfaces, magnetic and non-magnetic materials, attract and repel

- 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.

Enrichment and retrieval activities to deepen understanding of rocks, animals including humans and forces. Use concept cartoons, experiments, questioning and observations

- Design and make a toy that needs 'push' or 'pull' forces.
- Present a YouTube clip to describe how fossils are formed. Use diagrams, data and oral explanations.
- Record findings of how heart rate changes before and after exercise. Use drawings, labelled diagrams, bar charts and tables.
- Understand forces on a non-Newtonian fluid

Plants - functions of plant parts, requirements for growth and life cycle of flowering plants

- Identify and describe the functions of different parts of flowering plants: roots, stem, 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 role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Light - need for light to see, reflection, sun safety and shadow formation

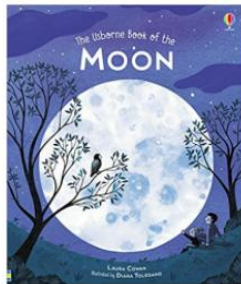
- Recognise that they need light in order to see things and that dark is the absence of light.
- Notice that light is reflected from surfaces.
- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
- Recognise that shadows are formed when the light from a light source is blocked by a solid object.
- Find patterns in the way that the size of shadows change.

			<ul style="list-style-type: none"> Predict whether two magnets will attract or repel each other, depending on which poles are facing. 	(oobleck). Gather and record data in a variety of ways to show the different forces and consequences.		
Year 4	<u>Materials – Solids, liquids and gases</u> <ul style="list-style-type: none"> 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 the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics. Identify the part played by evaporation and condensation in the water cycle and associate the rate 	<u>Electricity</u> <ul style="list-style-type: none"> Identify common appliances that run on electricity. Recognise some common conductors and insulators, and associate metals with being good conductors. 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 	<u>Sound</u> <ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. 	<u>Animals including humans - Digestion</u> <ul style="list-style-type: none"> Construct and interpret a variety of food chains, identifying producers, predators and prey. 	<u>Animals including humans - Digestion</u> <ul style="list-style-type: none"> 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. - egg experiment Explore and use classification keys. 	<u>Living things - Habitats</u> <ul style="list-style-type: none"> Recognise that environments can change and that this can sometimes pose dangers to specific habitats. Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.

	<p>of evaporation with temperature.</p> <p>circuit, based on whether or not the lamp is part of a complete loop with a battery.</p> <ul style="list-style-type: none"> • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. 				
Upper KS2	<p style="text-align: center;"><u>Working scientifically</u></p> <p>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. • Identifying scientific evidence that has been used to support or refute ideas or arguments. 				

Year 5	<u>Earth, Moon and Sun - The planets orbit and rotation</u>	<u>Sound</u>	<u>Materials</u>	<u>Forces</u>	<u>Life Cycles- Reproduction - plants</u>	<u>Life Cycles- Reproduction - animals and insects</u>
	<ul style="list-style-type: none"> Distance from the sun (and what this means), number of moons etc Answer questions/give information about the scientists who first observed the Earth's movement around the sun. To understand that the Earth rotates on its axis. Describe the movement of the earth relative to the sun (rotation) Understand that the earth revolves around the sun. Describe the movement of the earth relative to the sun (revolution) Understand why the effect of the earth's movement on season is more acute at the equator. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets. Understand how 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 	<ul style="list-style-type: none"> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces. Describe, in terms of drag forces, why moving objects that are not driven tend to slow down. Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. Understand that some mechanisms including levers, pulleys and gears, 	<ul style="list-style-type: none"> To understand plants: the function of each part of the flower. Relate the life cycle of a plant to that of other living things e.g. animals. Draw and describe the process of reproduction in some plants. Explain the similarities and differences between the process of reproduction in plants and animals. Describe the different processes of seed dispersal used by a plant during its life cycle. 	<ul style="list-style-type: none"> Describe the changes as humans develop to old age. Draw and describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Compare and contrast the life cycles of different living things. Explain similarities and differences. Relate the reproduction of plants to knowledge of the life cycle of insects/birds/mammals. Identify how animals and plants are adapted to suit their environment in different ways and how that adaptation may lead to evolution. Describe how animals and plants are suited to the environments in which they are found. Illustrate how animals and plants adapt to environments in different ways.

- Explain why the moon's movement affects the tides of oceans and seas on earth.
- Explain how we can predict times of high and low tide.
- Children to learn the names and phases of the moon.
- Phases of the moon
- The moon's movement in relation to the sun



Planetarium



100 things to know about space



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, oxidation and the action of acid on bicarbonate of soda.

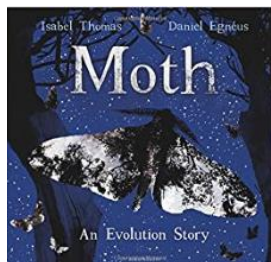
allow a smaller force to have a greater effect.

- Compare and contrast different types of adaptation.
- Explain and give examples of the idea of adaptation.
- Explain why this may lead to evolution.

Year 6

Inheritance and Evolution / Adaptation

- Relate knowledge of plants to studies of evolution and inheritance.
- Relate knowledge of plants to studies of all living things.
- 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.



Living things - Classification

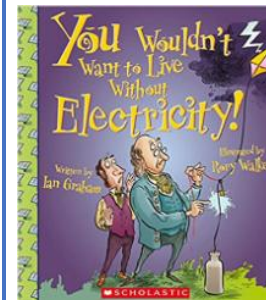
- Describe how living things are classified into broad groups according to common observable characteristics.
- Give reasons for classifying plants and animals based on specific characteristics.
- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.

Light and Shadow

- Understand 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 eyes.
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.
- 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.

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.



Human circulatory system

- Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
- Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions.

Human digestive system

- Describe the ways in which nutrients and water are transported within animals, including humans.
- Function and processes. Impact of lifestyle of our bodies.
- Transportation of water and nutrients.