



Science: Organisational Structure

Class	Cycle						
Bumblebee class YR. R/1		The Human Animal	Zootopia	Material World	Feel the force	How does your garden grow?	See the light
Hedgehog class Yr. 2/3	A	Survival	Light	What are we made from?		Material World & It Makes a Change (KS1)	Forces & Magnets
	B	Eco Detectives	The Secret Life of Plants	Rocks		It's Electrifying	Hearing Things
Barn Owl class Yr. 3/4	A	Electricity	Animals Including Humans	Earth and Space	Animals including humans (teeth and digestion)	Animals and their habitats (whole term).	
	B	Properties and Changes of Materials	States of Matter	Forces (whole term)		Sound (whole term)	
Otter class		Light	Electricity	Animals including Humans	Living Things and their Habitats	States of Matter	Evolution and Inheritance



Title	The human animal
Overview	<p>To aim of this unit is to develop an understanding of the basic structure and function of the human body including knowing the names of some of the main external features. They will explore aspects of the human life cycle appropriate for their age. Children will carry out investigations into the senses as well as variation between themselves and others (with sensitivity).</p> <p>EYFS</p> <ul style="list-style-type: none"> ➤ Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.
Vocabulary	Human, body, head, arm, leg, eyes, ears, nose, mouth, senses, smell, taste, touch, sight, hearing
Key Learning Objectives	<ul style="list-style-type: none"> ➤ Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. ➤ Understand how senses enable humans and other animals to be aware of the world around them. ➤ Recognise similarities and differences between themselves and others, and to treat others with sensitivity. ➤ Compare main external parts of humans to other animals
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Drawing and labelling the human body. ➤ A range of practical experiences that explore the full range of the senses e.g. feely bags, blindfolded games and tasting tests etc ➤ Welly walk exploring our senses.

Title	Zootopia
Overview	<p>In this unit, children will learn about the diversity of animal life on our planet. They will begin by considering what defines a living organism in terms of the processes of life and the differences between plants and animals. They will explore the basic structures of different animals and learn the names and identifying characteristics of the main groups. Children will explore adaptation at basic level by looking at the relationship between animal bodies and their life style e.g. diet and habitat.</p> <p>EYFS</p> <ul style="list-style-type: none"> ➤ Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.
Vocabulary	Common animals, fish, amphibians, birds, reptiles, mammals, pets, herbivores, carnivores, omnivores, diet, meat, plants, characteristic
Key Learning Objectives	<ul style="list-style-type: none"> ➤ Describe and compare the structure of a variety of common animals ➤ Identify and name a variety of common animals including, fish, amphibians, reptiles, birds and mammals



	<ul style="list-style-type: none"> ➤ Identify and name a variety of common animals that are carnivores, herbivores and omnivores by noting indicative features ➤ Group living things according to observable similarities and differences
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Drawing a labelling a variety of animal forms ➤ Handling of a range of visiting animals or visit a zoo. ➤ Classifying models/pictures of animals based on physical features e.g. using Venn Diagrams and dichotomous keys. ➤ Matching animals to lifestyles (how they move/nocturnal etc) and diets through physical features.

Title	Material World
Overview	<p>Through this unit children learn about the characteristics and the subsequent uses of a range of common materials and develop the appropriate vocabulary for describing and comparing materials.</p> <p>EYFS</p> <ul style="list-style-type: none"> ➤ Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.
Vocabulary	Material, wood, plastic, glass, metal, paper, rock, brick, fabric, properties, hard, soft, absorbent, waterproof, bendy, stretchy, stiff
Key Learning Objectives	<ul style="list-style-type: none"> ➤ Recognise and name common types of material and recognise that some of them are found naturally ➤ Find out how the shapes of objects made from some materials can be changed by some processes, including squashing, bending, twisting and stretching ➤ Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses ➤ Use their senses to explore and recognise the similarities and differences between materials ➤ Describe the simple physical properties of a variety of everyday materials ➤ Sort objects into groups on the basis of simple material properties ➤ Distinguish between an object and the material from which it is made ➤ Compare and group together a variety of everyday materials on the basis of their simple physical properties
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Sorting materials ➤ Testing Materials: magnetic, waterproof, absorbent, rigid, etc ➤ Design an umbrella/rain coat for class teddy (which material will be best, test their design)



Title	Feel the Force
Overview	<p>The aim of this unit is for children to understand how pushes and pulls affect the movement and shape of objects.</p> <p>EYFS</p> <ul style="list-style-type: none"> ➤ Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.
Vocabulary	Force, push, pull, movement, float, sink
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To understand how pushes and pulls affect the movement and shape of objects.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Explore everyday situations involving forces and identify the forces involved e.g. push, pull and twist etc. ➤ Carry out a range of investigations with toys e.g. cars on ramps, falling, floating and sinking.

Title	How does your garden grow?
Overview	<p>To aim of this unit is to develop an understanding of the structure and function of plants including knowing the names of some of the common plants in their local environment. Children will investigate some of the basic processes of plants with a focus on the growth of seeds.</p> <p>EYFS</p> <ul style="list-style-type: none"> ➤ Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.
Vocabulary	Common plants, wild plants, garden plants, deciduous, evergreen, tree, trunk, branches, leaf, root, bud, flower, blossom, petals, fruit, vegetables, bulb, seed
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To know what a plant is and how they are different from animals. ➤ To identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. ➤ To recognise and name the basic structure of plants (including trees). ➤ Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. ➤ To understand that seeds grow into flowering plants. ➤ To observe how plants change over time. ➤ Observe changes across the four seasons ➤ Observe and describe weather associated with the four seasons.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Drawing and labelling a variety of plants. ➤ Children plant a sunflower seed and observe changes over time. ➤ Grow cress and keep a diary of growth and experiment with different conditions to investigate the best conditions for growth ➤ Dissect a plant and label the parts. ➤ Welly walk to identify common plants ➤ Welly walk to identify deciduous and evergreen trees.



Title	See the light
Overview	<p>Children will understand how light originates from a source and be able to distinguish between an original source and reflected light. They will learn that darkness is the absence of light and begin to explore how we see things.</p> <p>EYFS</p> <ul style="list-style-type: none"> ➤ Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.
Vocabulary	Light, dark, shadow, reflect, natural, sunlight, moon, torch, candle, lamp
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To identify different light sources, including the sun ➤ To understand that darkness is the absence of light
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Identify different light sources. ➤ Explore how it easy it is to see things in different lights. ➤ Look at how objects and clothes can be designed to show up in low light. Design some of their own.



Hedgehog Class

Title	Survival (animals and humans)
Overview	The aim of this unit is for the children to develop an understanding of animals, including humans and how we grow, develop and survive. The children will look in more detail to the stages of n animals and humans' life, patterns in humans and what we need to survive which includes understanding the difference between 'want' and 'need'. The children will continue and develop their understanding of hygiene, how to eat healthily and the importance of exercise.
Vocabulary	<ul style="list-style-type: none"> ➤ Offspring & Names of baby/adult animals (e.g. signet/swan) ➤ Survive/survival ➤ Want/need (the difference between them) ➤ Hygiene ➤ Food groups (carbohydrates, protein, fats and sugars, fruit & vegetable, dairy) ➤ Illness, germs ➤ Exercise ➤ Heart ➤ Muscle ➤ Pulse / heart rate
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To understand that animals have offspring which grow into adults. ➤ To know the basic needs of animals and humans for them to survive. ➤ To investigate patterns in humans. ➤ To understand the importance of hygiene. ➤ To know the five food groups and the foods which belong to them. ➤ To know the importance of exercise. ➤ To know how exercise affects our bodies.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Match pictures of offspring to the adult ➤ Order the stages of animals growing into an adult ➤ Children to list the things they think humans need to survive – use this to highlight the difference between something we want and something we need. ➤ Children to imagine they are on a desert island – they need to plan how they are going to survive. ➤ Complete science experiments – children to investigate patterns in humans – pose a question – is the oldest person the tallest? Children to think of other questions they could investigate. ➤ Use the bread experiment (do this at the beginning of the topic to review towards the end) – children to touch bread that they don't touch, that they touch, and one that they touch after washing hands. ➤ Recap the five food groups, children to sort food into the correct groups. Children to learn about what these food groups provide us with. Children to create a meal plan for an athlete. ➤ Children to understand how exercise keeps us mentally and physically healthy. Children to take part in exercise activities and to think about how this affects their bodies.



Title	What are we made from?
Overview	<p>The aim of this unit is for children to extend their understanding of animals and humans. The children’s learning will focus on the different structures of animals and the impact this has on how they move. The children will learn about skeletons and muscles and the functions that these have. The children will deepen their understanding about eating healthily by learning about nutrition and nutrients what they provide humans with. The children will also have the opportunity to compare human and animal diets.</p>
Vocabulary	<ul style="list-style-type: none"> ➤ Skeleton ➤ Vertebrates ➤ Invertebrate ➤ Exoskeleton ➤ Endoskeleton ➤ Hydro skeleton ➤ Adapt ➤ muscle ➤ Names of bones (jaw, rib cage, radius, ulna, knee cap, ankle bone, fibula, skulls, collar bone, humerus, spine, pelvis, femur, tibia). ➤ Joints ➤ Support ➤ Protection ➤ Movement ➤ Nutrition ➤ Nutrients ➤ Carbohydrates, protein, fats & oils, fibre, vitamins and minerals ➤ Herbivore ➤ Carnivore ➤ Omnivore
Key Learning Objectives	<ul style="list-style-type: none"> ➤ Understand that humans and some animal have a skeleton ➤ To know why humans and some animals have a skeleton ➤ To identify vertebrates and invertebrates ➤ To know the different types of skeleton ➤ To know the function of our muscles ➤ To know that some animals do not have a skeleton and to understand how they move ➤ To know how muscles and bones work together to create movement ➤ To know the types of nutrients we need. ➤ To understand where animals, including humans get their nutrition from. ➤ I can identify nutrients. ➤ To compare human and animal diets.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Recap the parts of the body – draw and label around a peer. ➤ Label the bones in the skeleton – play ‘bone bingo’ ➤ Concept cartoons – Spellbound - Consider if Ricky would be better off without bones ➤ Concept sentences – give children key words and they use them in sentences to show their understanding of the vocabulary ➤ Sort animals into groups (vertebrates, invertebrates, exoskeleton) ➤ Play odd ones out ➤ Research which foods contain these nutrients and how do they keep us healthy. ➤ Sort foods under the nutrients they provide (or vice versa as they may provide more than one nutrient) ➤ Children to look at food labels and understand what these mean. Use these labels to compare foods based on the nutrients that they provide.



	<ul style="list-style-type: none"> ➤ Recap types of animals – omnivores, herbivores and carnivores – understand how these have adapted so they can find their food/nutrients. ➤ Compare the diets of pets, animals which live in a zoo and animals that live in the wild.
--	---

Title	Material World
Overview	The aim of this unit is to extend upon the children’s existing knowledge of materials and deepen their understanding about properties of given materials and their suitability for various purposes. The unit is linked to ‘It Makes a Change’ which is to be taught after this unit.
Vocabulary	<ul style="list-style-type: none"> ➤ Material ➤ Property ➤ Waterproof, Absorbent, Opaque, Translucent, Transparent, Rigid (hard), Flexible (soft), rough, smooth, dull, shiny ➤ Suitable / unsuitable
Key Learning Objectives	<ul style="list-style-type: none"> ➤ Describe the simple physical properties of a variety of everyday materials ➤ Sort objects into groups on the basis of simple material properties ➤ Distinguish between an object and the material from which it is made ➤ Compare and group together a variety of everyday materials on the basis of their simple physical properties ➤ Recognise and name common types of material and recognise that some of them are found naturally ➤ Find out about the uses of a variety of materials and how these are chosen for specific uses on the basis of their simple properties
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Recap names of materials and their properties ➤ Organise materials based on their properties ➤ Draw the property (e.g. rigid) – draw a picture to represent this property ➤ PMI P (What is positive about it) M (What is minus (negative) about it?) I (what is interesting about it?) Give the statement: ‘Everything in the world is made out of plastic’ Write a sentence about what would be positive, a minus and interesting about is this statement was to happen. ➤ Scenarios – windows made out of wood, umbrella made out of glass etc – write if it is a suitable or unsuitable material and explain why referring to the materials properties. ➤ Would you rather? ➤ Testing: magnetic, waterproof, absorbent, flexible, rigid



Title	It Makes a Change
Overview	The aim of this unit is to continue to develop children's understanding of materials. During this unit the children will move onto exploring how materials can change, including reversible and irreversible changes.
Vocabulary	<ul style="list-style-type: none"> ➤ Temperature ➤ Thermometer ➤ Reversible ➤ Irreversible
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To explore the concept of temperature and how it is measured ➤ To explore how the concept of temperature affects objects, living things and the world ➤ To investigate the way some materials, change when they are heated or cooled. ➤ To understand the terms reversible and irreversible and to predict which materials will come under each term. ➤ To find out about how materials are changed (by heating or cooling) to make common items. ➤ To sequence the process of how a material is changed into a common item (e.g. woollen clothes - from the sheep to garment, sugar - sweets chairs, wood to furniture, ore – cars.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Carry out experiments in heating and cooling items. ➤ Children to predict which items will be reversible and those that will be irreversible ➤ Teachers may wish to show 'how it is made' videos encouraging children to predict beforehand and explain back the process to show their understanding.



Title	Force and Magnets
Overview	The aim of this unit is for children to extend their knowledge of forces and be introduced to magnets. They will compare how things move on different surfaces and notice that some forces need contact between two objects, but magnetic forces can act at a distance. The children will 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. The children will be able to describe magnets as having two poles and be able to predict whether two magnets will attract or repel each other, depending on which poles are facing.
Vocabulary	<ul style="list-style-type: none"> ➤ Magnet ➤ magnetic ➤ Force ➤ Pole ➤ Field ➤ Attract ➤ Repulse ➤ newtons
Key Learning Objectives	<ul style="list-style-type: none"> ➤ Recap on types of forces ➤ Learn how forces are measured ➤ Use a force meter with accuracy ➤ Compare how things move on different surfaces ➤ Learn about what magnets are and which materials are magnetic ➤ Learn about the properties of magnets including poles, fields, attracting and repulsion. ➤ Carry out a fair test investigation using magnets. ➤ Notice that some forces need contact between two forces but magnets don't.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Give children a selection of words and ask them to sort them as pushes or pulls. Talk about forces and how we encounter them all the time in our daily life. ➤ Tell children that Force is measured in Newtons after Isaac Newton. ➤ Show children how we use a forcemeter to measure forces. ➤ Children to investigate how much force is necessary to pull various objects along a desk. Encourage them to raise a question to investigate. Plot as a bar graph. ➤ Guide children in how to carry out a fair test investigation involving cars moving down a ramp. Consider what could affect the cars and how we could measure this. ➤ Let children have a small time to play with the various magnets. ➤ Carry out a sorting investigation to discover which type of materials are magnetic. Now test a selection of coins. Predict before. ➤ Carry out a series of mini experiments predicting, then noting what happens when N meets N, N meets S and S meet S. What have children discovered? ➤ Talk about big magnet inside the planet. We can use compasses to find our way around. ➤ Map magnetic fields around various shaped magnets. ➤ Question: How can we find out which is the strongest magnet?



	<ul style="list-style-type: none"> ➤ Allow children to design their own fair test investigation. For example they could measure how far it away they attract an object, they can measure how much mass they can pick up e.g. paper clips or they could measure how many pages of a books it can pull through etc ➤ Apply their scientific knowledge of magnets to a D&T project/ Children design and make a game that involves magnets. Order resources and magnets as necessary. DO NOT use neodymium magnets (super strong). ➤ www.youtube.com/watch?v=J5YpPNEkiQ4 ➤ www.youtube.com/watch?v=rvg4UPHAuqc ➤ www.youtube.com/watch?v=ES1svQwUrYk
--	--

Title	Hearing things
Overview	The aim of this unit is to introduce children to the concept of sound and for them to begin to develop a basic understanding of how we hear sound and how sound travels. Children will relate sounds to their sense of hearing and understand that sounds travels away from a source.
Vocabulary	<ul style="list-style-type: none"> ➤ soundwaves ➤ vibrations ➤ insulated ➤ source
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To identify the many kinds of sound and sources of sound ➤ To understand that we hear sound with our ears ➤ To understand that sounds travel away from sources, getting fainter as they do so, and that they are heard when they enter the ear ➤ To investigate how sound travels and can be insulated
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Explore how sounds are made through the process of vibration. ➤ Carry out investigations on how sound travels – what happens when you increase the distance from the source of the sound. ➤ Investigate how you can insulate sound. ➤ Make some basic junk model instruments. ➤ Investigate how sound travels and can be insulated.



Title	Eco Detectives
Overview	In this unit, children will learn about the diversity of habitats on the Earth. They will explore how living things have adapted to them in terms of body forms, life cycles and behaviours. Children will look at wildlife in their local area as well as in a nearby reserve. They will learn about the role humans can play for good and bad in terms of their impact on the environment.
Vocabulary	<ul style="list-style-type: none"> ➤ Habitat & Microhabitat (including woodland, meadow, desert rainforest, ocean, seashore) ➤ Dead, alive & living ➤ Movement ➤ Respiration/respire ➤ Sensitivity ➤ Nutrition ➤ Excretion ➤ Reproduction ➤ growth ➤ temperature ➤ climate/weather ➤ suited/ suitability ➤ energy ➤ producer & consumer ➤ prey & predator
Key Learning Objectives	<ul style="list-style-type: none"> ➤ Explore and compare the differences between things that are living, dead, and things that have never been alive. ➤ Identify similarities and differences between different environments and ways in which these affect animals and plants that are found there ➤ 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 ➤ 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. ➤ How to treat living creatures with care and sensitivity ➤ Learn about the importance of caring for the environment
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Explore the range of habitats on the earth and how animals and plants are adapted to them. ➤ Study a local habitat near the school. ➤ Visit a local wildlife reserve e.g. Lopham Fenn or Minsmere. ➤ Construct food chains. ➤ Explore endangered wildlife and habitats and charities. ➤ Construct habitats for minibeasts e.g. snails and woodlice. ➤ Find out about the different kinds of plants and animals in the local environment ➤ To relate life processes to animals and plants found in the local environment ➤ Identify and name a variety of plants and animals in local habitats, including microhabitats and the relationships between them.



Title	The Secret Life of Plants
Overview	The aim of this unit is for the children to further develop their understanding of plants. This includes understanding more parts of the plants and their function, going into further detail about what flowers need to live and grow and the life cycle of a plant including pollination, seed formation and seed dispersal. The children will also learn about how water is transported through the plant.
Vocabulary	<ul style="list-style-type: none"> ➤ Air ➤ Light ➤ Water ➤ nutrients ➤ root ➤ stem ➤ leaves ➤ petal ➤ flower ➤ seed ➤ pollen ➤ nectar ➤ fertilisation ➤ stigma ➤ Stamen ➤ Carpel ➤ Pollination ➤ germination ➤ photosynthesis ➤ seed dispersal ➤ seed formation
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To identify and describe the function of the parts from a flowering plant. ➤ To understand and describe what a plant needs for life and growth. ➤ To understand that these vary from plant to plant. ➤ To understand and describe the life cycle of flowering plants. ➤ To investigate the way in which water is transported within plants. ➤ Understand the process of pollination ➤ Investigate how seeds are moved through the process of seed dispersal.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do. They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction. ➤ Pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.



- Children can dissect real flowering parts and use a magnifying class to identify and label the parts of the plant.

Title	Science Rocks!
Overview	The aim of this unit is for pupils to explore and name the different kinds of rocks and soils. They will investigate the uses and properties of rocks. Pupils will explore different soils and will identify similarities and differences between them.
Vocabulary	<ul style="list-style-type: none"> ➤ Rock ➤ Soil ➤ Mineral ➤ Metamorphic rock ➤ Sedimentary rock ➤ Igneous rock ➤ Fossil ➤ Erosion ➤ Bedrock ➤ Subsoil ➤ Top soil ➤ Organic ➤ Permeable & impermeable ➤ Crystals ➤ Ore ➤ Magma ➤ Lava ➤ Earth's crust ➤ Humus ➤ Extinct (animals and volcanoes) ➤ Granite ➤ Marble ➤ Limestone ➤ Chalk ➤ Sandstone ➤ Slate
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To name and identify different types of rocks ➤ To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties ➤ To describe in simple terms how fossils are formed when things that have lived are trapped within rock. ➤ To recognise that soils are made from rocks and organic matter ➤ Explore the local environment for different types of rocks and soils
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Children to have real examples of these rocks to explore. ➤ Children to compare and group rocks ➤ To draw a comic strip on how fossils are formed ➤ Label the parts of the earth's crust and the layers of soil



	<ul style="list-style-type: none"> ➤ Children to look for rocks in our local environment and try to identify them ➤ Children to explore different crystals. ➤ Children could work scientifically by observing rocks, including those used in building and gravestones and exploring how and why they might have changed over time. ➤ Use a hand lens or microscope to help them to identify and classify rocks according to whether they have grains/crystals or fossils in them
--	--

Title	It's Electrifying
Overview	The aim of this unit is for the children will learn about where electricity comes from, and who discovered it. They will also learn that electricity is important part of our lives and about the dangers of mains electricity. They will construct and label a basic circuit.
Vocabulary	<ul style="list-style-type: none"> ➤ Electric, electricity ➤ Generate ➤ solar, wind turbine, power station, nuclear ➤ Hazard, hazardous, ➤ cells, wires, bulbs, circuit
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To understand where electricity comes from, how it is generated and who discovered it (not invented it). ➤ To identify everyday appliances that use electricity ➤ To understand about the dangers of electricity. ➤ To be able to spot electrical hazards and explain why they are dangerous. ➤ To construct a simple series circuits involving batteries, wires and bulbs ➤ To draw a range of circuits including switches ➤ To understand how a switch can be used to break a circuit ➤ To create and draw a range a complete circuit
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Children to create a fact file about electricity – who discovered it, how it is generated, draw and label simple diagram about how electricity reaches our homes. ➤ Visit from fire service to talk to children about electrical dangers / in the home ➤ Children to have pictures of the different rooms in homes and identify the dangers. ➤ Children to have pictures and identify the hazards and appliances



Title	Let there be Light
Overview	The aim of this unit is for the children to understand what a light source is and to know examples of light sources. Children will learn about sources which are not sources of light. Children will find investigate how light travels and to understand how shadows are formed and how they can change.
Vocabulary	<ul style="list-style-type: none"> ➤ Bright ➤ Chemical reactions ➤ Source ➤ Dark ➤ Dim ➤ Electricity ➤ Emits ➤ Light ➤ Mirror ➤ Opaque ➤ Translucent ➤ Transparent ➤ Reflects ➤ Shadow/s ➤ Torch ➤ Sun ➤ Moon
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To recognise that they need light to see things and that dark is the absence of light. ➤ To identify sources of light and those that are not sources of light. ➤ To explore how light is reflected from surfaces. ➤ To recognise that light from the sun can be dangerous and that there are ways to protect their eyes ➤ To recognise that shadows are formed when the light from a light source is blocked by an opaque object ➤ To find patterns in the way that the size of shadows change.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Children to sort sources of light and explain why some are not sources of light – could do this as a cold and hot task. ➤ Children to experiment with a range of surfaces (including mirrors) to investigate how light is reflected from surfaces. ➤ To investigate their own shadows outside on playground and draw around them. Children to observe over time. ➤ Children to create shadows with objects and a torch and to investigate the patterns in the way the shadow changes size.



Barn Owls

Barn Owls – Cycle A

Title	Electricity
Overview	Children will use resources to construct simple circuits, identifying and naming different parts. We will also investigate what will happen if we break or change a circuit. We will explore how open and closed switches effect circuits as well as identifying conductors and insulators of electricity.
Vocabulary	Cell battery circuit crocodile clip bulb Conductor insulator renewable non-renewable switches Sockets switches buzzers
Key Learning Objectives	<ul style="list-style-type: none"> ➤ 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.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Examine a range of appliances and sort which use electricity and which do not (including solar energy). ➤ Construct a series of circuits and record diagrams using correct symbols. ➤ Examine circuit diagrams and predict whether or not they will work, explaining scientific reasoning. ➤ Experiment with a range of materials, investigating which are conductors and which are insulators.



Title	Animals including humans
Overview	Pupils will construct food chains from different habitats building on prior knowledge. We will identify the main elements of a food chain and try and look for similarities across a range of food chains. We will explore the life cycle of mammals, amphibians, birds and insects – looking for what is the same and what is different. Finally, we will research the reproduction process of plant and animals.
Vocabulary	Food chain energy producers consumers Predator prey life cycle mammal amphibian Bird insect plants seed dispersal Stamen carperl germination fertilisation
Key Learning Objectives	<ul style="list-style-type: none"> ➤ Construct and interpret a variety of food chains, identifying producers, predators and prey. ➤ Describe the changes as humans develop to old age. ➤ 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.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Understand the key vocabulary of producers, predators and prey. ➤ Understand the arrows show a transfer of energy. ➤ Construct their own food chains from different habitats. ➤ Analyse a range of life cycles comparing similarities and differences. ➤ Be able to name a different parts of a human life cycle and explain when and why these occur. ➤ Examine the 7 life processes of all living things



Title	Earth and Space
Overview	Using a lot of human diagrams, pupils will describe the movement of the earth and other planets relative to the sun. We will focus on using globes and torches to explain how the earth's rotation causes time zones around the world (including night and day).
Vocabulary	Gravity rotation moon earth Pluto Mercury Mars Saturn Venus Jupiter Neptune Orbit Star Planets Uranus Solar System
Key Learning Objectives	<ul style="list-style-type: none"> ➤ 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.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Name planets and identify what makes them unique. ➤ Create a scaled interactive model of the solar system. ➤ Create an animation showing the relationship between the moon and the earth. ➤ Create a non chronological report to explain the earth's rotation and show how this creates day and night at different times in different parts of the world. ➤ Possible planetarium experience.

Title	Animals including humans (teeth and digestive system)
Overview	Children will investigate different skeletons of animals and look for similarities and differences between them. They will be able to identify the different types of teeth and their function. We will then create a working model of the digestive system using practical resources.
Vocabulary	Teeth Digestive system Incisors Molars Canines Stomach mouth large intestine small intestine oesophagus pancreas
Key Learning Objectives	<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.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Name and labelled different types of teeth and explain their function. ➤ Compare teeth from different skeletons (scientific reasoning) and compare similarities and differences. ➤ Investigate the effect that sugar has on teeth (observing over time). ➤ Describe functions of the digestive systems in humans. ➤ Create an interactive model showing the process of food entering the body and travelling through the digestive system.



Title	Animals and their habitats (whole term)
Overview	Children will Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. We will research how the environment can change which then poses new threats to animals. We will then move into Describing the differences in the life cycles of a mammals, amphibians, insects and birds; looking for similarities and differences.
Vocabulary	Classification vertebrate invertebrate environment Habitat Desert woodland Rain forest polar Ocean Pond micro- habitat Threats manmade threats lifecycle mammal amphibian birds Stamen carpel seed dispersal insect
Key Learning Objectives	<ul style="list-style-type: none"> ➤ 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 environment. ➤ Explore and use classification keys to help group, identify and name a variety of living things in a wider environment. ➤ Recognise that environments can change and that this can sometimes pose dangers to living things.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Sort animals and plants based on characteristics or habitats. ➤ Use classification keys to sort animals. ➤ Make their own classification keys to sort a set of given animals into smaller groups. ➤ Study habitats and create a poster to explain how humans are destroying habitats around the world. ➤ Create a range of lifecycles from different animal classes (reptiles, mammals etc). ➤ Compare similarities and differences of these life cycles. ➤ Look at characteristics of living things. ➤ Identify how flowers reproduce and spread seeds.



Barn Owls – Cycle B

Title	Properties and changes of materials
Overview	Children will use a range of practical resources to 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. They will then explore the uses of these materials; giving reasons based on evidence from investigations. We will be focussing on justification for reasoning including predictions about reversible and irreversible changes.
Vocabulary	Reversible irreversible solubility transparency conductivity magnetic Attract repel solid liquid gas
Key Learning Objectives	<ul style="list-style-type: none"> ➤ 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. ➤ Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. ➤ 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. ➤ Provide reasoned justifications for their views.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Identify characteristics of different objects using the correct scientific vocabulary. ➤ Investigate how different materials respond to magnets. ➤ Investigate how materials dissolve in water. Suggest ways to recover them from water. ➤ Identify the properties of Solids, liquids and gasses. ➤ Real life investigation: What material is best for the job? Children to carry out experiment and record findings. ➤ Investigate reversible and irreversible changes.



Title	States of matter
Overview	Children will use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. We will then aim to prove that we can change some states of matter and then reverse them. Through observations we will investigate how some materials change state when heated or cooled and explain the science behind this. Finally, we will look at the part evaporation plays in the water cycle.
Vocabulary	Solid liquid gas freeze melt particles energy heating Water cycle evaporation condensation temperature dissolving
Key Learning Objectives	<ul style="list-style-type: none"> ➤ Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. ➤ Demonstrate that dissolving, mixing and changes of state are reversible changes. ➤ 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.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Sort objects into solids liquids and gasses, having discussion around how some items have elements of both. For example, a deodorant can. ➤ Investigate changes to different materials. Which are reversible and irreversible? ➤ Observe over time what happens to different materials when they are heated and cooled. Draw conclusions based on previous learning. ➤ Research project. Can the children find different materials that change state at different temperatures? ➤ Create a diagram of the water cycle. Model evaporation through making puddles in the playground and observing how they shrink, recording results.



Title	Forces (whole term)
Overview	During this topic pupils will explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. We will then investigate what can affect the speed that this occurs (air resistance). We will create concept cartoons to explain the other forces that can work against gravity. Finally, making mechanisms and investigating how their components can allow a smaller force to have a greater effect.
Vocabulary	Surface friction force gravity air resistance water resistance Mechanism gear lever buoyancy balanced materials rough smooth
Key Learning Objectives	<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 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.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Use a force metre to investigate the relationship between mass and force. ➤ Explore how forces effect different objects. Create concept cartoons ➤ Fair test experiment to assess how water can effect weight and force of an object. ➤ Create mechanisms that include levers, pulleys and gears and use them to investigate force. ➤ Display results using mathematical graphs and tables.



Title	Sound
Overview	Pupils will recognise that vibrations from sounds travel through a medium to the ear. We make a visual display of this by using a slinky. We will explore patterns between the volume of a sound and the strength of vibrations. After labelling parts of the ear, pupils will use 3 different hoses to create their own stethoscope and test which is the best conductor of sound.
Vocabulary	Pitch volume waves vibrating amplitude decibels Distance Light: dispersion transparent opaque translucent shadow reflect refract
Key Learning Objectives	<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. ➤ 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. ➤ Make comparisons between light and sound
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Investigate how sound is measured. Will the same sound create a different volume in different areas of the school? ➤ Label the parts of the ear. ➤ Use different hoses to create stethoscopes and investigate which is the best conductor of sound. ➤ Create graphs to show the difference between high and low pitch sounds. ➤ Investigate how the same sound can change its volume the further away you get from it. ➤ investigate the loudness or softness of a sound by making a sound machine out of a metal spoon, elastic band and string ➤ Use a slinky to show how sound waves travel.



Otter Class

Title	Light
Overview	<i>During this unit, the children will explore the way that light behaves. They will explore light sources, reflections and shadows and will be able to talk about what they notice. They will be able to explain how light travels and why this allows us to see objects. They will draw scientific diagrams to show this. They will also explore how shadows are cast.</i>
Vocabulary	Light Rays Light source Straight lines Reflect Refract Shadows
Key Learning Objectives	<ul style="list-style-type: none"> ➤ 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
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Make predictions about how light travels and how we see objects ➤ Draw scientific diagrams to show how light travels ➤ Set up an investigation to explore the relationship between light sources, objects and shadows

Title	Electricity
Overview	<i>In this unit, the children will have the opportunity to construct their own simple series circuits. They will use these to answer questions about what happens when they try different components. They will go on to learn how to accurately represent their circuit using recognised symbols.</i>
Vocabulary	Electricity Series circuit Component Symbol Cell Battery Buzzer Bulb Motor Switch Wire Voltage



	Current
Key Learning Objectives	<ul style="list-style-type: none"> ➤ 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
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Build simple circuits, including components such as switches, bulbs, buzzers and motors ➤ Use the correct scientific symbols to represent their circuit ➤ Read and interpret circuit diagrams ➤ Investigate how adding more components to a circuit affects the brightness of a bulb.

Title	Animals including Humans
Overview	<i>During this half term, the children will engage in a research project, gathering facts and information about the human circulatory system. They will present this in a fact file/non-chronological report which they will share with their peers. They will then create a human model to show the way in which blood is pumped around the body. Finally, we will explore the impact poor diet and lifestyle can have on the body and its organs and how this can affect the way the body functions.</i>
Vocabulary	Circulatory system Organs Muscles Veins Arteries Heart Lungs Liver Kidney Brain Blood vessels Blood Nutrients Diet Lifestyle Alcohol Drugs Substance Water
Key Learning Objectives	<ul style="list-style-type: none"> ➤ 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.



Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Research the human circulatory system and report on their findings ➤ Chn to create a human model to show how blood is pumped around the body ➤ Show images of the human organs that have been affected by poor lifestyle and diet. ➤ Discuss the impact that poor lifestyle and diet can have on the body
---------------------------------------	--

Title	Living Things and their Habitats
Overview	<i>The children will start by classifying animals into their own groups and explain the reasoning behind their choices. They will then build upon their prior knowledge of the broad groups that animals can be classified in to (mammals, amphibians, reptiles etc.). After this, they will learn about classification keys and how they can be used to classify animals and plants.</i>
Vocabulary	Arachnid Reptile Amphibian Mammal Bird Fish Vertebrate Invertebrate Classification Microorganism Classification key
Key Learning Objectives	<ul style="list-style-type: none"> ➤ 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
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Sort pictures of animals into their own groups (maybe colour/number of legs etc.) and explain reasoning behind this ➤ Identify the groups that living things can be classified in to ➤ Use classification keys to classify animals and plants ➤ Create classification keys of their own for a peer to use

Title	States of Matter
Overview	<i>During this unit, the children will learn about states of matter and reversible and irreversible changes. They will recap their prior learning about the properties of solids, liquids and gasses and will sort materials into these groups. They will also explore materials that may have properties of more than one state of matter. The children will go on to learn about changes to materials and will investigate reversible and irreversible changes.</i>
Vocabulary	Solid, liquid, gas, change, reversible, irreversible, burning, melting, cooking, dissolving, evaporating, mixing, separating.
Key Learning Objectives	<ul style="list-style-type: none"> ➤ Investigate changes to different materials. ➤ Investigate and recognise reversible and irreversible changes.



	<ul style="list-style-type: none"> ➤ Sort objects into solids liquids and gasses, having discussion around how some items have elements of both. ➤ Know that some materials will dissolve into liquid and form a solution and describe how to recover a substance from a solution
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Sort solids, liquids and gasses ➤ Explore how some materials have properties of more than one state of matter ➤ Investigate changes to materials by mixing, melting, burning, cooking, dissolving and evaporating ➤ Investigate changes that are reversible and irreversible

Title	Evolution and Inheritance
Overview	<i>During this half term, the children will understand the key terms 'evolution' and 'inheritance'. They will learn how over time, living things have changed and will think about the information we can gain from studying fossils. The children will explore how certain animals are suited to their habitat. They will use this knowledge to invent their own animal, explaining the ways in which it is suited to its habitat.</i>
Vocabulary	Environment Inherit Fossil Offspring Reproduction Variation Living things Adaptation
Key Learning Objectives	<ul style="list-style-type: none"> ➤ 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
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Study pictures of fossils – what can they infer from the pictures and what questions would they ask? ➤ Identify inherited and acquired traits and explain the difference between the two ➤ Describe how certain animals have adapted to their environment ➤ Chn to invent their own animal and describe how it is suited to their chosen habitat

