Knights Templar Community Church School and Nursery

Work at it with all your heart

Science

(subject progression)

Intent, Implementation and Impact

Intent

Our intent is to inspire learners to develop a lifelong curiosity and interest in Science. We want the learners at Knights Templar to have a thirst for learning and zest for living. We want them to confidently explore and develop a deeper understanding of the world in which we live. Science changes our lives and is vital to the world's future prosperity. We aim to ensure that all learners are taught essential aspects of the knowledge, methods, processes and uses of science in order to encourage respect for living organisms and the physical environment. We want to develop the learners' curiosity of the natural world and appreciate the achievements that have been made in science.

When planning the science curriculum, we provide learning opportunities through a range of practical investigations. We want our young scientists to be able to ask and answer scientific questions about the world around them. As each learner progresses, they build on their skills to work scientifically, their scientific knowledge and a greater independence in planning and carrying out fair tests.

Knights Templar will adhere to the requirements of the National Curriculum.

Implementation

Our long-term plans, set out a progression of skills and knowledge across Early Years Foundation Stage, Key Stage 1 and 2, following the statutory requirements of the EYFS framework and the National Curriculum 2014. The most relevant Early Years outcomes for science are taken from Understanding the World, Communication and Language and Personal, Social and Emotional Development, where children work towards their Early Learning Goal, which is the prerequisite skills for science within the National Curriculum. At Ks1 and Ks2, we make curriculum links with maths, technology, history, geography and especially developing the language skills of our speaking and listening.

Working scientifically underpins each Science lesson. We ensure our lessons involve problem solving opportunities, which encourages learners to ask and answer questions applying their scientific skills and understanding. We use a wide range of resources including the wealth of outdoor spaces that we have on our school site and in the unique coastal community in which we live.

The progression of skills for working scientifically are developed through the year groups and scientific enquiry skills are of key importance within lessons. The progression of these skills is set out in our Progression Map. Each lesson has a clear focus. Scientific knowledge and enquiry skills are developed with increasing depth and challenge as learners move through the year groups. Interwoven into the teaching sequence are key assessment questions. These

allow teachers to assess individual's levels of understanding at various points in the lesson. They also enable opportunities to recap concepts where necessary. The sequence of lessons helps to embed scientific knowledge and skills, with each lesson building on previous learning.

Assessment

Assessment takes many forms, which include both formative and summative assessments. Teachers use questioning to test conceptual knowledge and skills alongside knowledge retrieval activities to assess scientific knowledge and understanding. Work is recorded in individual children's books, using IT and within our curriculum portfolios. Activities are effectively differentiated so that all learners have an appropriate level of support and challenge.

Teachers are able to access additional support and guidance to ensure that they are equipped with secure scientific subject knowledge, enabling them to deliver high-quality teaching and learning opportunities while making them aware of possible scientific misconceptions.

Impact

By the end of their time at Knights Templar, our young scientists will be:

- **Confident individuals** who develop an increasing range of science specific vocabulary, appreciate and respect the awe and wonder of God's creation balanced against scientific knowledge and discovery and make the most of extra-curricular opportunities including 'Fizz-Pop' club and assemblies
- **Successful learners** who thrive on curiosity, excitement, observation and asking questions and plan, devise and set fair tests as well as analysing and interpreting outcomes
- **Responsible citizens** who understand the uses and implications of science, today and for the future

Statutory Expectations:

Early Years Foundation Stage Framework:			
ELG	Communication and Language	Listening, Attention and Understanding	• Make comments about what they have heard and ask questions to clarify their understanding.
	Personal, Social and Emotional Development	Managing Self	• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices
	Understanding the World	The Natural World	• Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

National Curriculum Working Scientifically:	
KS1	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: • 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.

Lower KS2	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
Upper KS2	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: • 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 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.

Types of Investigations

'Working Scientifically' is the continuous area of study in the National Curriculum for Science in England. This aims to ensure that learners have greater exposure to a range of enquiry types and that they recognize when the various forms of enquiry are taking place. This is to enable them to decide for themselves which type to use in order to tackle the question they are investigating. At Knights Templar Community Church School, we provide opportunities for:

- **Exploring:**

Discovering what happens through play and exploration, e.g. what happens when you add water to fabric?

- **Observing over time:**

Often linked to exploring but with a time variable included, e.g. using a thermometer to observe temperature changes of water.

- **Sorting, classifying and identifying:**

Putting things into groups based on their characteristics, e.g. in how many ways can you sort these materials?

- **Fair test:**

Used when we can control all the variables except the one we are changing, e.g. which 'towel' material will absorb the most water?

- **Pattern seeking:**

Used when there are too many variables to control and so a true fair test is not possible, e.g. do some people have stronger muscles because they use them more?

- **Problem solving:**

Using the science we know to solve a problem, e.g. Using what you have learned about how sounds are made and the loudness of sounds made by different materials, design an effective bird scarer that uses wind chimes or similar.

- **Researching and analysing secondary sources**

Using secondary sources to help answer scientific questions that cannot be answered through practical investigations, e.g. which materials are biodegradable?

Knights Templar Community Church School Long Term Overview and Linear Links:

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS and KS1 Year A	Everyday Materials **How are different materials used?**	Seasonal Changes **What is wonderful about our weather?**	Animals and Humans **Who has a pet?**	Animals including Humans **What makes us unique?**	Plants **What's Growing in our Gardens?**	Everyday Materials **What can we build?**
EYFS and KS1 Year B	Animal Life Cycles **What is a lifecycle?**	Animal Life Cycles **What is a habitat?**	Uses of Everyday Materials **Are all materials the same?**	Materials **How do materials help us explore?**	Plants **Can you keep a plant alive?**	Habitats **What life can be found in a garden?**
KS2 Year A	Light **Shining the Light**	Animals including humans **Fit for Success**	Rocks **This Planet Rocks**	Magnetics and Forces **Magnetic Fun and Games**	Plants **Feast of flowers, fruits and seeds**	Plants **Greatly Green Growers**
KS2 Year B	States of Matter **What is the Matter?**	Electricity **Electric Personalities**	Sound **Sound Spectacular**	Habitats **A world of living things**	Animals Including humans **The circle of life**	Living things and their habitat **Habitat Helpers**

Knowledge and Skills Progression Maps EYFS/KS1 Year A:

Year A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Science To think scientifically: • Ask simple questions recognising that they can be answered in different ways • Observe closely using simple equipment • Perform simple tests • Identify and classify • Use observations and ideas to suggest answers to questions • Gather and record data to help answer questions	**Every Day Materials** *How are different materials used?* **Knowledge** Know the difference between an object and the material from which it is made Know a variety of everyday materials including wood plastic, glass, metal, water and rock, brick, rock, paper Know and describe the simple physical properties of a variety of everyday materials Know and compare materials and their properties Know how to compare and group together a	**Seasonal Changes** *What is wonderful about our weather?* **Knowledge** Know when each of the four seasons occurs. Know what the features of each season are. Know what happens to trees during Autumn and Spring. Know that days are longer in summer (sunshine hours) than in winter. Know and can describe weather in each different season over a year. Know and describe the features of	**Animals Including Humans** *Who has a pet?* **Knowledge** Know a variety of common animals including fish, amphibians, reptiles, birds and mammals e.g. cat, robin, adder, frog, salmon. Know a variety of common animals that are carnivores, herbivores and omnivores. **Skills** Make first hand close observations of animals from each of the groups (city farm) Compare the structure of two animals from the same or different group	**Animals including Humans** *What makes us unique?* **Knowledge** Know that exercise is important to humans and can explain why. Know the different food groups and the benefits of each as part of a healthy, balanced diet Know and can draw and label the basic parts of the human body Know which part of the body is associated with each sense	**Plants** *What's growing in our gardens?* **Knowledge** Know a variety of common wild and garden plants, including deciduous and evergreen trees Know and describe the basic structure of a variety of common flowering plants, including trees. **Skills** Can sort and group parts of plants using similarities and differences e.g. the shape of leaves, the colour of the flower/blossom.	**Everyday Materials** *What can we build?* **Knowledge** Know how the shapes of solid objects are made from some materials and can be changed by squashing, bending, twisting and stretching. Know the difference between materials that are transparent, translucent and opaque. Know and can explain why some materials including wood, metal, plastic, glass, brick, rock, paper and cardboard are

	variety of everyday materials. <u>Skills</u> Compare and group together a variety of everyday materials on the basis of their simple physical properties. Classify objects made of one material in different ways e.g. a group of objects made of metal. Classify one type of object made from a range of materials e.g. a collection of spoons made of different materials. Chosen an appropriate method for testing an object for a particular property. Use their test evidence to answer the questions about properties e.g.	different seasons and how they change through the year. **<u>Skills</u>** Gather and record data about weather conditions in autumn, drawing on observation and using simple equipment (such as a container to measure rainfall) Use data to create a pictogram and use this to describe changes in day length over the seasons. Use their evidence to describe some other features of the weather, surroundings, themselves, animals,	e.g. wings, feathers, vertebrates/invertebrates. Classify animals using a range of features e.g. lay eggs/give birth to live young. herbivore, omnivore (these terms do not have to be explicitly taught). Identify animals by matching statements to named images.	Know which food groups common foods belong to. **<u>Skills</u>** Take measurements of parts of the body and present results in a table to interpret. Conduct simple sense experiments. Which part of my body is good for feeling, which is not? Which food/flavours can I identify by taste? Which smells can I match? Investigate the effect of exercise on their bodies	Can use simple charts and Venn diagrams etc. to identify and classify plants. Use photographs and their own observations to talk about how plants change over time (e.g. seed to sapling to tree) and over the year (deciduous and fruit bearing trees). Plant seeds and observe how they grow and change by making simple observations. Point to and name the parts of a plant, recognising that they are not always the same e.g. leaves and stems may not be green, the leaves are different shapes.	suited to specific purposes. **<u>Skills</u>** Knows and can explain why some materials including wood, metal, plastic, glass, brick, rock, paper and cardboard are suited to specific purposes.

	Which cloth is the most absorbent? Test the properties of objects e.g. absorbency of cloths, strength of party hats made of different papers, stiffness of paper plates, waterproofness of shelters.	and plants found in autumn. Demonstrate their knowledge in different ways e.g. creating seasonal artwork, creating a pictogram (and use this to ask and answer related questions)		Classify food in a range of ways, including using the Eatwell guide		
By the end of Year A: Learners are able to identify similarities and differences in relation to places, objects, materials and living things. They are able to discuss the features of their own environment and how environments might vary from one another, linked to seasonal changes. They can make observations of animals and plants and explain why some things occur, and talk about changes. Children are able to name, label and sort animals, plants and body parts into groups. They are able to perform simple tests, gather data and discuss what they find out.						

EYFS/KS1 Year B:

Year B	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Science To think scientifically: • Ask simple questions recognising that they can be answered in different ways • Observe closely using simple equipment • Perform simple tests • Identify and classify • Use observations and ideas to suggest answers to questions • Gather and record data to help answer questions	**Animals, including humans** *What is a lifecycle?* **Knowledge** Know how animals including humans have offspring which grow into adults, using the appropriate names for the stages **Skills** Ask questions and use secondary sources to find out about the life cycles of some animals Ask questions of a parent about how they look after their baby Describe, using diagrams, the life	**Habitats and Lifecycles** *What is a habitat?* **Knowledge** Know and can explain the differences between things that are living, dead, and things that have never been alive Knows and can name a variety of plants and animals in their habitats, including micro-habitats Know that to survive animals need sunlight, water, air, food and a suitable habitat (including shelter for protection	**Everyday Materials** *Are all materials the same?* **Knowledge** Know the difference between materials that are transparent, translucent and opaque. Know and can explain why some materials including wood, metal, plastic, glass, brick, rock, paper and cardboard are suited to specific purposes. **Skills** Classify and sort materials by their	**Materials- squash, bend, twist** How do materials help us explore? **Knowledge** a: Know how to find out how the shapes of solid objects are made from some materials and can be changed by squashing, bending, twisting and stretching. **Skills** d: Explain from their observations how materials change when a force is exerted on them by squashing, bending, twisting and stretching.	**Plants- Ready, Steady, Grow** *Can you keep a plant alive?* **Knowledge** h: Know that plants may grow from either seeds or bulbs. i: Know that seeds and bulbs can germinate and then grow into seedlings and then continue to grow into mature plants. j: Know that mature plants may have flowers which then develop into seeds, berries and fruits etc.	**Habitats** *What life can be found in a garden?* **Knowledge** o: Know that most living things live in habitats to which they are suited p: Know and can describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other **Skills** t: Explore the outside environment regularly to find

	cycle of some animals, including humans, and their growth to adults e.g. by creating a life cycle book for a younger child Measure/observe how animals, including humans, grow. Collate what they know about looking after a baby/animal by creating a parenting/pet owners' guide	from predators and the environment. Knows and can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and make the different sources of food **Skills** Explain how development and health might be affected by differing conditions and needs being met/not met Observe animals growing over a period of time e.g. chicks, caterpillars, a baby Observe animals and plants carefully,	properties e.g. manmade, natural Investigate and observe what happens to different materials during testing and use this to inform explanation of their properties Investigate which materials are fit for a purpose e.g. What is the best material for an umbrella?	Investigate the transparency of objects, recording class data in a table and drawing simple conclusions from the findings. Ask and answer questions about everyday materials	Knows that seeds and bulbs need to be planted at particular times of the year and will germinate and grow at different rates. Knows that some plants are better suited to growing in full sun and some grow better in partial and full shade. Knows that plants need water, light and a suitable temperature to grow and stay healthy **Skills** Make close observations of seeds and bulbs Classify seeds and bulbs Research and plan when and how to	objects that are living, dead and have never lived Classify objects found in the local environment Can sort into living, dead and never lived Can give key features that mean the animal or plant is suited to its microhabitat Using a food chain can explain what animals eat Can explain in simple terms why an animal or plant is suited to a habitat

		drawing and labelling diagrams Create simple food chains for a familiar local habitat from first hand observation and research Create simple food chains from information given e.g. in picture books (Gruffalo etc.)			plant a range of seeds and bulbs Look after the plants as they grow – weeding, thinning, watering etc. Make close observations and measurements of their plants growing from seeds and bulbs Make comparisons between plants as they grow Can spot similarities and difference between bulbs and seed	
By the end of Year B: Learners are able to explain what a lifecycle is using appropriate vocabulary and can recognise different habitats. They are able to describe materials and how they can be changed. They can use scientific vocabulary linked to plants, animals and materials. They are curious and able to ask questions about what they notice. They should be developing their scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things and carrying out simple tests.						

KS2 Year A:

Year A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Science • 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	**Light** **Shining the Light** **Knowledge** Know that light is needed to see things and that dark is the absence of light Know that light is reflected from surfaces Know that light from the sun can be dangerous and that there are ways to protect the eyes Know that shadow is formed when the light source is blocked by an opaque object. Know and can explain some of the	**Animals including Humans** **Fit for Success** **Knowledge** Know animals, unlike plants which can make their own food, need to eat in order to get the nutrients they need. Know food contains a range of different nutrients that are needed by the body to stay healthy – carbohydrates including sugars, protein, vitamins, minerals, fibre, fat, sugars, water. Know a piece of food will often provide a range of nutrients.	**Rocks** **This Planet Rocks** **Knowledge** Know rock is a naturally occurring material. Know there are different types of rock e.g. sandstone, limestone, slate etc. which have different properties. Know rocks can be hard or soft. They have different sizes of grain or crystal. Know rocks can be different shapes and sizes (stones, pebbles, boulders) and some absorb water.	**Magnets and Forces** **Magnetic Fun and Games** **Knowledge** Know that friction affects the way that things move on different surfaces Know that some forces need contact between two objects, but magnetic forces can act at a distance Know that magnets attract or repel each other and attract some materials and not others. Know and can describe magnets as having two poles	**Plants** **Feast of flowers Fruit and Seeds** **Knowledge** Know and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Know 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 **Skills** Observe what happens to plants over time when the	**Plants** **Greatly Green Growers** **Knowledge** Know through investigation, the ways in which water is transported within plants Know the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Skills** Observe seeds being blown from the trees e.g. sycamore seeds.

• 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	reasons why the size of shadows changes. Know how the shadows of transparent, opaque and translucent materials vary. **Skills** Observe and identify changes to the size and orientation of shadows, relative to their proximity to the light source. Observe and identify the difference in shadows of opaque, translucent and transparent objects/materials. Observe how shadows are formed and affected by different circumstances. Notice that light can be reflected off	Know humans and some other animals have skeletons and muscles which help them move and provide protection and support. **Skills** Classify food in a range of ways Use food labels to explore the nutritional content of a range of food items Use secondary sources to find out the types of food that contain different nutrients. Use food labels to answer enquiry questions e.g. How much fat do different types of pizza contain? How much sugar is in soft drinks?	Know, in simple terms, how fossils are formed when things that have lived are trapped within rock. Know that soils are made from rocks and organic matter. **Skills** Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Can devise tests to explore the properties of rocks and use data to rank the rocks. Can link rocks changing over time with their properties e.g. soft rocks get worn away more easily.	Know whether two magnets will attract or repel each other, depending on which poles are facing **Skills** Record and report on findings from investigations, involving how things move on different surfaces Compare and group materials following magnetic testing, recording findings and use the outcome to answer questions about which materials are magnetic. Make and investigate predictions on whether two magnets will attract or repel, depending on which poles are facing.	leaves or roots are removed. Observe the effect of putting cut white carnations or celery in coloured water. u: Investigate what happens to plants when they are put in different conditions e.g. in darkness, in the cold, deprived of air, different types of soil, different fertilisers, varying amount of space. Spot flowers, seeds, berries and fruits outside throughout the year. Observe flowers carefully to identify the pollen Observe flowers being visited by pollinators e.g. bees and	Research different types of seed dispersal. Classify seeds in a range of ways including by how they are dispersed. bb: Create a new species of flowering plant Can explain observations made during investigations? Can look at the features of seeds to decide on their method of dispersal. Can draw and label a diagram of their created flowering plant to show its parts, their role and the method of pollination and seed dispersal.

answer questions or to support their findings.	surfaces and Replace with 'investigate the visibility of different materials (eg shiny; foil, mirrors and matt; sugar paper) in a darker environment according to which reflect most light.' Investigate the size of shadows according to times of day and year, by tracing shadows outside and comparing differences. Classify materials according to opaque, transparent and translucent. Use oral and written explanations to report on why shadows are formed and how the length and size of a shadow can be changed.	Plan a daily diet contain a good balance of nutrients and record and present findings Explore the nutrients contained in fast food Use secondary sources to research the parts and functions of the skeleton Investigate pattern seeking questions such as; Can people with longer legs run faster? Can people with bigger hands catch a ball better? Compare, contrast and classify skeletons of different animals	Can present in different ways their understanding of how fossils are formed e.g. in role play, comic strip, chronological report, stop-go animation etc. Can identify plant/animal matter and rocks in samples of soil Can devise a test to explore the water retention of soils		butterflies in the summer.	

	Investigates questions related to an object and the shadow it will cause.					
By the end of Year A: Learners are able to know sources of light and understand how shadows are formed. They know the different nutrients that food provide and that plants make their own food. They are able to name features and types of different rocks. They know that some materials are magnetic and understand forces such as friction. They know different functions of the parts of a plant and know how water is transported within a plant. They are able to scientific vocabulary to share their knowledge.						

KS2 Year B:

Year B	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Science • ask relevant questions and using different types of scientific enquiries to answer them • set up simple practical enquiries, comparative and fair tests. • gather, recording, classifying and presenting data in a variety of ways to help in answering questions • report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Use straightforward scientific evidence to	**States of matter – What's the matter?** **Knowledge** Know how to distinguish between a solid, liquid and gas. Know that some materials change state when they are heated or cooled. Know the temperatures at which ice, water and water vapour change state. Know the part played by evaporation and condensation in the water cycle. **Skills**	**Electricity– Electric personalities** **Knowledge** Know appliances that require electricity to function Know the basic parts of a circuit including cells, wires, bulbs, switches and buzzers Know that for an appliance to work within a circuit, it has to be part of a complete loop with a battery. Know that a switch in a circuit is a temporary break in an otherwise 'complete circuit'.	**Sound– Sound spectacular** **Knowledge** Know how sounds are made, associating some of them with vibrating. Know how sound travels from a source to our ears. Know the correlation between pitch and the object. Know the correlation between the volume of a sound and the strength of the vibrations that produced it. Know that sounds get fainter as the distance from the	**Habitats– A world of Living Things** **Knowledge** Know that living things can be grouped in a variety of ways. Know and can name living things in a range of habitats. **Skills** Observe plants and animals in different habitats throughout the year and use recordings to compare and contrast the living things observed. Explore and use classification keys to help group, identify	**Animals including Humans – The Circle of life** **Knowledge** Know the basic parts of the digestive system in humans. Know and can identify the different types of teeth in humans and their simple functions. Know which organisms are producers, predators and prey and apply to the construction and interpretation of food chains **Skills**	**Living things and their habitat Habitat Helpers** **Knowledge** Know and can relate the key adaptational features of an organism to the known features of its habitat. Know and can give examples of how an environment may change both naturally and due to human impact **Skills** Create a simple identification key based on observable features.

answer questions or to support their findings.	Observe closely and classify a range of solids and liquids. Explore making gases visible Classify materials according to whether they are solids, liquids and gases. Observe a range of materials melting. Investigate how to melt ice more quickly. Observe the changes that are non-reversible relating (common ingredients). Investigate melting point of different materials.	Know all metals conduct electricity but some, such as aluminium and titanium, are relatively poor conductors. Know the recognised symbols used to represent components of a circuit and uses these to represent a circuit pictorially. **Skills** Construct and investigate a range of circuits. Investigate which materials can be used instead of wires to make a circuit. Classify materials that conduct electricity and those that don't following	sound source increases **Skills** Experiment with at least three different instruments to observe and explore volume and pitch. Make predictions and draw conclusions about the pitch and volume of sounds. Note how vibrations make sounds of different volumes and travel to our ears. Identify and show how sound travels through particles and into the ear. Make own instruments that produce a range of pitches.	and name a variety of living things in their local and wider environment. Classify living things found in different habitats based on their features. Create a simple identification key based on observable features Use research to explore human impact on the local environment e.g. litter, tree, planting. Use secondary sources to find out about how environments may naturally change. Use secondary sources to find out about human impact, both	Construct and interpret a variety of food chains, identifying producers, predators and prey. Can create food chains based on research. Identifies differences, and similarities of different types of teeth according to herbivore, omnivore and carnivore. Can record the teeth in their mouth (make a dental record). Recreate the human stomach and observe representation of how food breaks down. Label the different parts of the digestive system.	Use research to explore human impact on the local environment e.g. litter, tree, planting. Use secondary sources to find out about how environments may

	Explore freezing different liquids. Observe and measure temperature of icy water, tap water, hot water. Observe water evaporating and condensing. Set up investigations to explore changing the rate of evaporation. Use secondary sources to find out about the water cycle. Using their data, can explain what affects how quickly a solid melt. From their data, can explain how to	investigation and record findings. Investigate the effect of a switch and combinations of switches in simple circuits. Investigate switches and consider variations for specific uses, such as a pressure switch for a burglar alarm. Apply their knowledge of conductors and insulators to design and make different types of switch.		positive and negative, on environments and write a report on this.		

	speed up or slow down evaporation. Present learning about the water cycle in a range of ways e.g. diagrams, explanation text, story of a water droplet.					
By the end of Year B: Learners are able to distinguish between a solid, liquid and a gas. They know that materials can change states. They know the basic parts of a circuit and know appliances which use electricity. They know how sounds are made and how sound travels to our ears. They can name living things in different habitats. They understand the digestive system and the function of the different teeth. They understand food chains and can use appropriate scientific vocabulary.						

Science Vocabulary Progression

EYFS	Year One	Year Two	Year Three
Animals including humans Baby, child, boy, girl, man, woman, parent, family, meat-eater, plant-eater, animal, fish, bird, insect **Plants** farm, jungle, hot, cold, tree, warm, cool, habitats, flower, plant, sky, soil, world, seed, plant, change **Everyday Materials** Sound, noise, loud, quiet, soft, heavy, light, float, sink, water, material, wood, glass, paper, hard, soft **Seasonal Changes** Rain, sun, clouds, season, Summer, Spring, Autumn, Winter, snow, wind, senses, see, touch, hear, smell	**Animals including humans** Fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each) Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear, Nose, Back, Wings, Beak **Plants** Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Trunk, Branches, Stem **Everyday Materials** Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth **Seasonal Changes** Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark	**Animals including humans** Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene **Plants** Seeds, Bulbs, Water, Light, Temperature, Growth **Living things and their habitats** Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert **Everyday materials and their uses** Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics, Squashing, Bend	**Animals including humans** Movement, Muscles, Bones, Skull, Nutrition, Skeletons, **Plants** Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower **Rocks** Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent **Light** Light, Shadows, Mirror, Reflective, Dark, Reflection **Forces and magnets** Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull
	Year Four	**Year Five**	**Year Six**

	Animals including humans Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar **Living things and their habitats** Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats **States of Matter** Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating **Sound** Volume, Vibration, Wave, Pitch, Tone, Speaker	**Animals including humans** Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty **Living things and their habitats** Mammal, Reproduction, Insect, Amphibian, Bird, Offspring **Properties and changes of materials** Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing **Earth and Space** Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation **Forces** Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys	**Animals including humans** Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration **Living things and their habitats** Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects **Evolution and Inheritance** Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics **Light** Refraction, Reflection, Light, Spectrum, Rainbow, Colour, **Electricity** Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell

Science Non-negotiables

Planning:	Resources:	Presentation:	Assessment:	Inclusion for All:
• School format for planning will be used and will identify: Learning Objective, Skills Progression, Teacher input, Practise It and Review It sections • Planning will be shared on p/drive with Key Stage Team • Resources will be identified on the planning • Links to other curriculum areas will be made where appropriate	• Science overview • Knowledge organisers • Kahoot • End of unit retrieval quizzes • KS1 Checklist- linked to SATs	• Dates underlined • LO- as a question linked to knowledge • Begin writing by margin • Draw diagrams on plain paper • Stick worksheets in straight with glue • Floor books can be used to record class learning	• Prior learning revisit • Elicitation- as a Scientist I would like to know/I would like to ask • Now I know… • Oral quizzes to recap learning • Lesson plenary- what have we learnt today? What do we now know? • End of unit retrieval quizzes	• Pre-teaching of key vocabulary • Teacher modelling and scaffolding of language • Use of practical resources • Use of alternative methods of recording • Use of scribes/partnered work