Year	Learning Journey	Knowledge Objectives	Key Outcomes
EYFS	**Farm to fork-Year (A)** **Plants-Year (B)** **Down at the bottom of the garden-Year (C)** **Weather watcher- Year (D)** • In each topic, children will understand how the change of seasons affects farming. They will see how weather effects growth and when to plant seeds/crops. **The rainforest (A)** **Paws, Claws and Whiskers (B)** **Africa (C)** **Explorers pole to pole (D)** • Children will explore the natural world and contrasting environments. They will make observations and draw pictures of animals and plants from these environments.	ELG: The Natural World Children at the expected level of development will: - 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.	• Have a class garden - children will be gardeners and grow their own produce to cook and eat. • Let's experiment- children experiment to see how foods change over time as they decay. • Explore how materials are suited to their jobs. • Explore different climates and how animals and people have adapted to them. • Children go on a minibeast hunt to find and observe minibeasts in their habitats.
KS1	**Dinosaurs (A)** • Children will learn that dinosaurs were herbivores, carnivores and omnivores • Children will compare things that are living, dead and things that have never been alive **The Great Fire of London (A)** • Children will identify the materials used to build houses in the past and present • Children will explore different materials and their properties • Children will explore the suitability of materials for building houses **Toy Box (A)** • Children will identify the different materials used to make toys	**Working scientifically** 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	• Children will investigate dinosaur 'poo' and dinosaur teeth • Children will sort objects into groups • Create a wall made of wattle and daub • Children will investigate different materials, sort and label (TGFL & Houses and Homes) • Children will label the different materials used to build houses (TGFL & Houses and Homes) • Children will be able to answer questions e.g. Why are windows made from glass? (TGFL & Houses and Homes) • Children will label the different materials used to make toys • Children will make their own 'bendy' toy (Morph).

	• Children will investigate how materials can be changed by squashing, bending etc. **Beatrix Potter (A)** • Children will identify some of the animals Beatrix Potter wrote about **Farm to Fork- (A)** • Children will investigate the life cycle of plants, focus on food producing plants • Children will grow plants from seeds **Rainforests (A)** • Children will explore the rainforest habitats/microhabitats and identify the animals that live there • Children will research what different animals eat **Superheroes (B)** • Children will learn about body parts • Children will explore their senses • Children will learn about healthy eating and the importance of good hygiene **Paws, Claws and Whiskers (B)** • Children will learn about different animal groups • Children will identify the similarities and differences between animals • Children will research different pets and how to take care of them • Children will research the life cycles of different animals **Transport (B)** • Children will investigate how toy cars move on different surfaces **Plants –flowers and trees(B)**	**Year 1** **Plants** Pupils should be taught to: • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees **Year 2** **Plants** Pupils should be taught to: • observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy **Year 1** **Animals, including humans** Pupils should be taught to: • identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	• Children will investigate which material makes the best ball • Name different animals and label the different body parts (Africa and Explorers) • Children will conduct an experiment which consolidates learning about what a plant needs in order to grow and stay healthy. • Children will make close observations and comparisons and take measurements of plants they have grown from seeds. • Children will make simple food chains (Rainforests & Africa) • Children will have a visit from “ZooLab” for a hands-on opportunity to handle some rainforest animals e.g. spiders, millipedes • Children will label a picture of a body/skeleton with the different body parts (Superheroes and Amazing Me!) • Children will use their senses to identify different tastes, smells, sounds etc (Superheroes and Amazing Me!) • Produce a poster to show how to be a ‘superhero’ or ‘I am amazing!’ • Children will sort animals into different groups (Paws, Claws and Whiskers & Africa) • Children will label the features of different animals (Paws, Claws and Whiskers & Africa) • Children will write instructions for looking after a pet • Children will create a simple life cycle (Paws, Claws and Whiskers & Explorers)

	• Children will explore the plants that grow around the school grounds including trees • Children will identify the different plants and trees that grow around the school and their structures • Children will investigate how plants change during the different seasons • Children will explore the weather **Seasonal Changes – KS1 spend time looking at the different seasons throughout the year.** **Houses and Homes (C)** • Children will identify the materials used to build houses • Children will explore different materials and their properties • Children will explore the suitability of materials for building houses **Africa (C)** • Children will explore African habitats and identify the animals that live there • Children will research what different animals eat **Inventors and Inventions (C)** • Children will investigate how solid objects can be changed **Down at the bottom of the garden (C)** • Children will grow plants from seeds, focus on fruit and vegetables. • Children will explore micro-habitats and minibeasts • Children will make observations of Spring **Amazing Me! (D)** • Children will learn about body parts	**Year 2** **Animals, including humans** Pupils should be taught to: • notice that animals, including humans, have offspring which grow into adults • find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene **Year 1** **Everyday materials** Pupils should be taught to: • distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties **Year 2** **Uses of everyday materials** Pupils should be taught to: • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	• Children can bring their pet into school and answer questions or send a video on Seesaw • Children will test how far toy cars travel on different surfaces e.g. the playground and write about what they found out • Children will go on a plant hunt around the school and photograph the different plants/trees they find (Plants & Weather Watchers) • Children will use spotter guides to identify the different plants/trees and label photographs/pictures (Plants & Weather Watchers) • Children will sequence photographs that show changes across the different seasons e.g. trees in Spring, Summer, Autumn and Winter (Plants & Weather Watchers) • Children will keep a weather diary (Plants & Weather Watchers) • Children will group animals into carnivores, herbivores and omnivores • Children will melt chocolate/ice. • Children will bend, squash, stretch and twist objects to investigate how they can be changed • Children will undertake a mini-beast hunt in the nature garden • Children will make careful observations of the invertebrates they find • Children will plant seeds and keep and plant diary • Children will make observations of the signs of Spring.

	• Children will explore their senses • Children will learn about healthy eating and the importance of good hygiene **Space and beyond (D)** • Investigate how moon buggies travel on different surfaces **Explorers – Pole to Pole (D)** • Children research polar animals • Children will identify similarities and differences between different animals • Children will label body parts • Children will research life cycles **Weather Watchers (D)** • Children will explore the wild flowers and trees that grow around the school grounds • Children will identify the different wild flowers and trees that grow around the school and their structures • Children will investigate how plants change during the different seasons • Children will explore the weather **Pirates – All Aboard! (D)** • Children will investigate floating and sinking • Children will explore different materials to build model boats	**Year 1** **Seasonal changes** Pupils should be taught to: • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies	• Build and test their own moon buggies on different surfaces and record • Children will sort clothes according to the weather e.g. sunny day, rainy day etc • Children will build and test their own boats using different materials and investigate how well they float
LKS2	**The Vikings are coming (A)** • Children will make scientific enquiries and gather evidence regarding what Vikings eat. Children will report on findings from enquiries and make simple conclusions about Viking health and lifestyles.	• asking relevant questions and using different types of scientific enquiries to answer them • making systematic and careful observations	• Creating Viking meals using traditional ingredients as much as possible. • Analysing Viking poo to see what the Vikings have eaten

		• 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	
	Fantastic Fitness (A) • Focussing on humans and what we need to survive and stay healthy. • Looking at the nutrition and foods that humans eat to maintain healthy bodies and provide enough energy. • Identifying bones and muscles within the human body and how they help us to move effectively.	• identify that humans and some other animals have skeletons and muscles for support, protection and movement • identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat	• Children will use thermometers to see how temperatures of the body change when exercising. • Children create models of the skeleton using art straws and label each key bone. • Creating moving models of the arms to show how the muscles expand and contract. • Trying a variety foods and cooking a healthy balanced meal. • Growing and cooking our own foods.
	In the limelight (A) • Taking the focus of theatres as a basis, we investigate light and sound. • We look at reflection and shadows and how these are made. We then link this in with shadow puppetry. • We consider how different objects and instruments make different sounds and pitches through vibrations and link this	• recognise that they need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes	• Creating our own shadow puppet theatres. • Drawing around our shadows at different times of the day • Science investigations with reflective surfaces. • Creating sound effects for our puppet theatres.

	to sound effects and music within theatre shows. • Understanding how the ears and eyes work with sound and light waves.	• recognise that shadows are formed when the light from a light source is blocked by an opaque object • find patterns in the way that the size of shadows change • 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	• Jumping bean investigations with drums and speakers. • Using musical instruments to see sound vibrations. • Building models of the ear and eye. • Using coloured filters to create theatre lighting.
	Our Changing Coastline (A) • Through looking at how our coastline erodes and the different rocks around the coastline, the children will analyse different types of rocks and their physical properties. • The children will look at how different rocks erode and how this impacts on how sea stacks and arches are formed. • Look at different soils around the country. • Look at how fossils can be found within rocks and then can be found through erosion. • Considering how different rocks are created.	• compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise that soils are made from rocks and organic matter • compare and group materials together, according to whether they are solids, liquids or gases • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	• Creating our own erosion experiments using sedimentary, igneous and metamorphic rocks and salt water to see which conditions will erode the rocks the quickest. • Creating a water cycle experiment • Close analysis and sorting of different types of rocks and their features.

	• Looking at the Water cycle in relation to rivers and oceans. **Look inside my body (B)** • We think about the human digestive system and the different organs within in it. • We consider how we eat food and how our teeth help with this. **Mighty Predators (B)** • Looking at different animals within the local habitats and grouping them in a variety of ways. • Developing classification keys to help us sort animals in our own ways. • Observing how habitats change over time and the impacts this has on the habitats of the animals. • Considering the needs of animals and their survival. • Creating a variety of food chains to show producers, predators and prey within our local habitats. • We look at the teeth of different predators and prey and compare how they are different. **The Steam Revolution (B)**	• 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 • recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • construct and interpret a variety of food chains, identifying producers, predators and prey • identify that animals, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • observe that some materials change state when they are heated or cooled, and	• We create our own digestive system model using tights and orange juice to show how food is digested as it goes through each organ. • We try different foods and investigate how our tongue tastes different foods. • We analyse our teeth and the jobs each tooth does. • We take a trip to Battram Woods to investigate local animals and habitats. • Creation of food chain pictures to illustrate what animals eat what. • Use our knowledge of predators and prey to investigate a predator who escapes from the zoo.

	• The children will look at different forces and how these can be used to help things to more or not move. We link this with trains and how they developed. • Looking at magnets and how they attract and repel different materials. • Observe changes of state when water is heated or cooled and how this knowledge helped to create steam engines and steam power. • Look at the development of steam powered objects and how this developed to provide us with our electrical appliances today. • Looking at how electricity circuits work	measure or research the temperature at which this happens in degrees Celsius (°C) • compare how things move on different surfaces • notice that some forces need contact between 2 objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing • 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	• Analysing the development of steam power through James Watt. • Creating our own electrical circuits. • Either a visit to the Battlefield Line or a visit from someone with steam engines to see how engines create their power through steam. • Scientific investigations with forces and friction on the railway.

	USA Road Trip (B) • Looking at the rainforests in America and comparing species if plants to those we have in the UK. • Identify the functions and parts of various rainforest and local plants and their differing requirements for life depending on their habitats. • Investigate how water is transported through plants and their lifecycle • Also looking at deforestation and how this impacts on habitat and animal survival.	• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • investigate the way in which water is transported within plants • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal • recognise that environments can change and that this can sometimes pose dangers to living things	• Children will look at the climate and habitats of the rainforest and compare to our local environments. • Children create their own mini-rainforests by planting suitable plants. These plants are chose to grow to specific heights to show the different levels of the rainforest. • Children will investigate the needs of plants by growing them under different conditions. • Close study of the Venus fly trap and how it works to give the plant the nutrients needed. • Planting and growing plants from seeds.
	The Super Stone Age (B) • We consider how stones are created and change. • Look at how fossils can be created and found within rocks • Comparing different everyday materials and link to stone, iron and bronze age.	• compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock	• Looking closely at different rocks and fossils within them. • Investigating the different properties of materials.

		Working Scientifically within all LJ areas: • 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.	
UKS2	**Light & Electricity (A)** • Identify how light travels in a straight line.	**Light and electricity.** • recognise that light appears to travel in straight lines	Years A & B 3M Young Innovators Challenges

	• Investigate how we see things. • Investigate and explain shadows. • Investigate the effect of voltage in a circuit. • Compare how components function in a circuit. • Use recognised symbols in a circuit diagram. **Inheritance & Evolution (A)** • Recognise that living things change over time (fossils). • Understand that living things produce offspring not identical to their parents. • Identify how adaptation may lead to evolution. **Earth & Space (A)** • Explain the movement of the Earth, moon and planets. • Identify that they are spherical bodies. • Explain why we have day and night. • Explain the sun's apparent movement across the sky.	• 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 • 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 **Inheritance and Evolution** • 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 **Earth and Space** • describe the movement of the Earth and other planets relative to the sun in the solar system • describe the movement of the moon relative to the Earth • describe the sun, Earth and moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	• 3 x team/individual challenges to plan, design, construct, evaluate and present their scientific learning to an audience. • Design/build a working lighthouse with a series circuit and switch. Add a circuit diagram. • Conduct light experiments using prisms and water to demonstrate refraction. • Draw a cross section of the eye to identify and explain the function of each part. • Plan an investigation using knowledge of shadows to identify: opaque, translucent and transparent materials. • Undertake a fair test to identify the effects relating to different numbers of components within a circuit. • Use test results to set up further comparative/fair tests and record them. • Create a personal family tree. • Use Mr Men/Little Miss characters to help explain inheritance and variation of characteristics. • Explore Darwin's theory of evolution. (Birds' beaks eating experiment.) • Identify how adaptation may lead to evolution - 'survival of the fittest'. • Recognise that scientific ideas change and develop over time. • Create a diagram or animation showing these spherical shapes and their orbits relating to each other.

	Forces (B) • Identify, explain and investigate: gravity, resistance, friction, levers, pulleys and gears. **Animals Including Humans** **Changes and parts of the body (B)** • Identify the circulatory system. • Explain the main functions of the heart, blood and vessels. • Investigate the impact of diet, exercise and drugs on the body. • Understand how nutrients and water are transported around the body. • Explain the changes in humans/animals from birth to old age. **Properties & Changes of Materials (B)** • Compare and group materials.	**Forces** • 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 **Animals Including Humans** **Changes and parts of the body (B)** • 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 **Properties & Changes of Materials (B)** • 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	• Using video, give a verbal explanation using items to represent the Earth, sun and moon of how we experience day and night. • Draw a storyboard explaining the sun's apparent movement across the sky. • Use of Oreos to show the phases of the moon. • Identify/label gravity/resistance forces. • Plan, execute and record an investigation based on a resistance force (e.g., parachutes) and draw conclusions. • Investigate levers and how the fulcrum's position impacts on its effectiveness. • Explore gears noticing how they help cyclists ride. • Predict the amount of friction created using different surfaces. • Link with circuits to build a streamlined fan boat to race against others. • Draw detailed and annotated diagrams of the heart. • Identify how to keep our bodies healthy and avoid substances which could be harmful. • Explain how the circulatory system enables the body to function. • Understand the changes in our bodies and why those changes happen within a life cycle.

	• Identify states of matter: solids, liquids and gases. • Investigate the functions of materials. • Identify ir/reversible changes. • Undertake fair testing. **Living Things & Habitats – Growth (B)** • Classify plants/animals based on similarities and differences. • Identify the differences in life cycles of: a mammal, amphibian, insect, bird. • Explain the life process of reproduction in plants/animals.	• know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda **Living Things & Habitats – Growth (B)** • 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 **Working scientifically within all Learning Journey areas:** • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments	• Classify materials into different groups according to various criteria. • Identify and make a Non-Newtonian fluid using custard or cornflour. • Predict which reactions are ir/reversible. • Conduct practical investigations involving: sieving, filtering, melting, dissolving an evaporating. • Conduct a fair test to answer a question e.g. Which material is most/least conductive/insulating? Link with electricity. • Research the scientists who have made major discoveries past and present. • Using direct observations chn can classify animals into in/vertebrates. • Create a classification key for plants in a local environment. • Explain the importance of Carl Linnaeus as a pioneer of classification. • Draw the life cycles of a variety of plants and animals.