Science Curriculum 2023-2024

2023 - 2024						
	Autumn Term Little People, Big Dreams		Spring Term Express Yourself!		Summer Term Vive La France	
	1	2	1	2	1	2
Nur	To explore materials with different properties		Planting seeds		Life cycles	
Rec	My family	Seasons - Winter	Spring - Change of seasons		Sorting animals and learning about their young	Life Cycles Growing plants
Y1	**Animals, including Humans** Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **Significant Figure(s):** **- Dr Kelsey Byers (Evolutionary Biologist)** **- Tanesha Allen (Zoologist who studies badgers)** **Plants:** Use the local environment throughout the year to explore and answer questions about plants growing in their habitat. Observe the growth of flowers and vegetables that they have planted. *Planting bulbs, tree study* Identifying, Grouping & Classifying - Grouping plants based on features **Seasonal Changes:** Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies.	**Animals, including Humans** 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) Research - Research into the structure of different animals (fish, amphibians, reptiles, birds & mammals). **Significant Figure:** **- Dawood Qureshi (Marine biologist)** **The Big Book of Beasts by Yuval Zommer** Review/retrieval: Can you name different parts of your body? What are they used for? What are your 5 senses? How do you use them? Can you draw parts of your body? (Nur/Rec/Y1)	**Plants** Use the local environment throughout the year to explore and answer questions about plants growing in their habitat. Observe the growth of flowers and vegetables that they have planted. *Tree study, planting seeds* **Seasonal Changes:** Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies. *Weather station* **Significant Figure:** **- Maria Sibylla Merian (German artist, scientific illustrator, and naturalist)** Review/retrieval: What do you need in order to plant a seed? What can you see in different environments (playground, field, park etc.)? What can we do to look after plants? (Nur/Rec)	**Seasonal Changes** Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies. (+ Geography - identify and compare seasonal and daily weather patterns in the United Kingdom) *Weather station. Measure rainfall and wind direction.* Observation over time - Observing and recording how a tree changes over the four seasons. **Significant Figure:** **- Jim Cantore (Meteorologist and storm tracker)** **Tree - Seasons Come and Seasons Go by Patricia Hegarty** Review/retrieval: What environments can you see around you? What do they look like? What does a tree look like? What different types of weather have you seen? How do you feel in these types of weathers? (Nur/Rec/Y1)	**Everyday materials** 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. Comparative & Fair Testing - Which material makes the best _____ etc? **Significant Figure:** **- Dr Pearl Agyakwa (Materials scientist)** **Izzy Gizmo by Pip Jones** Review/retrieval: Similarities and differences between materials/objects. (Nur/Rec)	**Plants** Use the local environment throughout the year to explore and answer questions about plants growing in their habitat. Observe the growth of flowers and vegetables that they have planted. *Tree study, harvesting flowers & veg*
Y2	**All living things & their habitats** Explore and compare differences between things that are living, dead, and things that have never been alive	**Animals, inc Humans** 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	**Uses of Everyday Materials** Identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard Find out how the shapes of solid objects made from some	**Plants** 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	**Animals, inc Humans** Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	**All living things & their habitats** Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and

	Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including micro-habitats Compare animals found in familiar habitats with animals found in less familiar habitats eg caves, make a wormery, bug hotel or indoor woodlice colony *Plant bulbs.* Identifying, Classifying & Grouping - Identify and classify living and non-living things in a habitat. (Bar charts) **Significant Figure:** **- Kelsey Archer Barnhill (Deep Sea Ecologist)** Review/retrieval: Can you name different animals? What do they look like? What are their characteristics? How does the weather impact habitats? (Y1)	**Significant Figure:** **- Elizabeth Garrett Anderson (First English woman to qualify as a doctor)** Review/retrieval: Can you describe the structure of some common animals? (Y1) **Plants** Use local environment throughout the year to observe how different plants grow – Autumn/Winter survey Observation over time - Observing animals grow over time **A Seed Is Sleepy by Diana Aston** Review/retrieval: What happens to a tree through the different seasons? What are the different seasons? (Y1)	materials can be changed by squashing, bending, twisting and stretching Identifying, Classifying & Grouping/Comparative & Fair Testing - Identifying and classifying materials based on their properties and uses. What would be the most suitable material for…? **Significant Figure:** **- Charles Macintosh (Chemist and inventor of waterproof clothing)** **A super sticky mistake by Alison Donald)** Review/retrieval: What is the difference between an object and a material? Compare everyday materials based on their physical properties. (Y1)	Use local environment throughout the year to observe how different plants grow – Spring Survey Comparative & Fair Testing/Pattern Seeking - What do plants need to grow well (water, light, warmth)? Bulb planting and observing changes over time and spotting patterns with different bulbs. (Do you need big seeds to grow big plants? **Significant Figure:** **- Dr Ben Woodcock (Ecological Entomologist)** Review/retrieval: What happens to plants and vegetables when they grow? Can you name some different types of trees? (Y2)	**Plants: Re-visit** 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. Use local environment throughout the year to observe how different plants grow – Summer survey **Significant Figure:** **- Angie Burnett (Plant Biologist who grows plants and sees how they react to different conditions that make it more difficult for them to grow)** Review/retrieval: Can you name basic parts of the body? How do they work? Can you give examples of when you use those body parts? (Y1)	name different sources of food. Research - Research into animals' diets to create simple food chains. **Significant Figure:** **- Dr Amy Pickering (Microbiologist)** Review/retrieval: Can you identify and name common animal groups? What do the following words mean: carnivore, omnivore and herbivore? Can you give examples of animals that fall into these categories. (Y1)
Y3	**Light** Recognise need light in order to see things; that dark is the absence of light Light is reflected from surfaces Light from the sun can be dangerous; there are ways to protect their eyes Shadows are formed when the light from a light source is blocked by a solid object Find patterns in the way that the size of shadows change Data loggers Pattern Seeking & Identifying, Grouping & Classifying - Looking for	**Forces and Magnets** **C**ompare how things move on different surfaces Magnetic forces can act at a distance Observe how magnets attract or repel each other and some materials and not others Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials Describe magnets as having two poles; predict whether two magnets will attract or repel each other.	**Rocks** Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties Explore different kinds of rocks and soils, including those in the local environment Research - Research how fossils are formed Identifying, Grouping & Classifying - Classify different rocks using a branching database. **Significant Figure:** **- Dr Anjana Khatwa (Earth scientist)**	**Rocks** 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. Comparative & Fair Testing - Testing the hardness of different rocks. Pattern Seeking - How absorbent are rocks? **Significant Figure:** **- James Hutton (Scientist who studied rocks and the effects of natural processes on them, such as rain, running water, tides,**	**Plants** Identify and describe the functions of different parts of flowering plants Explore requirements of plants for life and growth Investigate the way in which water is transported within plants Explore the part that flowers play in the life cycle of flowering plants. Observation Over Time - Observe coloured water travelling up plants stem (Labelled Diagrams) **Significant Figure:**	**Animals, including Humans** **I**dentify 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 Identify that humans and some other animals have skeletons and muscles for support, protection and movement Identifying, Grouping & Classifying Classification of skeletons. Identifying and grouping animals with and without skeletons.

	patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes. **Bar graph** Classifying and grouping transparent, translucent and opaque objects. **Significant Figure:** **- Percy Shaw** **(Inventor of the cat's eye)** **The King Who Banned the Dark by Emily Haworth-Booth** Review/retrieval: What do you know about light? How can it be good? How can it be harmful?	Comparative & Fair Testing/Identifying, Grouping & Classifying - Cars down a ramp (change angle/surface/size of wheels) Comparing strengths of metals and non-metals. Comparing different magnets and their strengths. Grouping and classifying different forces within school. **Significant Figure:** **- William Gilbert** **(Doctor who developed the theory of magnetism)** Review/retrieval: How can solid shapes be changed (squashing, bending, twisting and stretching)? What do these words mean? (Y2)	Review/retrieval: Where have you seen rocks before? What do you think they feel like? Why do you think rocks are different colours?	**and volcanoes, on the development of the Earth)** **A rock is lively by Dianna Hutts Aston**	**- Jan Ingenhousz** **(Doctor & Scientist who discovered the process of photosynthesis)** **What's inside a flower? By Rachel Ignotofsky** Review/retrieval: What happens to a bulb/seed when it grows? (Y2) .	Research - Researching and learning the names of different bones. **Significant Figure:** **- Adelle Davis** **(Biochemist & Nutritionist who linked health and diet)** Review/retrieval: What are the different food groups? Why is it important to be hygienic? Why is it important to exercise regularly? What do humans and animals need to survive? (Y2)
Y4	**All Living Things** Identify and study plants and animals in their habitat and how the habitat changes throughout the year. Recognise that environments can change and that this can sometimes pose dangers to living things. Take photos & complete habitat report to compare when re-visit Identifying, Classifying & Grouping - Using and making simple guides or keys to explore and identify local plants and animals Classifying and grouping things into vertebrates and non-vertebrates Keys **Significant Figure:** **- Liz Bonnin** **(TV Presenter & Wildlife Conservationist)** Review/retrieval: Can you identify organisms that are	**States of Matter** Compare and group materials together, according to 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. Observation Over Time - How does surface area affect the rate of evaporation? (Thermometers) Identifying, Classifying & Grouping - Classifying different materials as solid, liquid or gas. **Significant Figure:** **- Daniel Fahrenheit** **(Physicist who invented the Fahrenheit temperature scale and the thermometer)** **The rhythm of the rain by Grahame Baker-Smith**	**Sound** Identify how sounds are made 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 Find patterns between the volume of a sound and the strength of the vibrations Recognise that sounds get fainter as the distance from the sound source increases Pattern Seeking - Finding patterns with different noise sources and their pitch, between the volume of sound and the strength of the vibrations that produce it. (Data loggers) Comparative & Fair Testing - Exploring how to muffle sounds and create your own earmuffs. **Significant Figure:** **- Aristotle** **(Philosopher who**	**Animals, Including Humans** 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 Construct and interpret a variety of food chains, identifying producers, predators and prey. Research - Research into teeth of different humans have. **Significant Figure:** **- Paul Sharpe** **(Bioengineer who studies how to regrow teeth if they become damaged)** **The poo that animals do by Paul Mason** Review/retrieval: What is a food chain? Can you name different sources of food? (Y2) What does it mean to have good nutrition in your diet, and why is it important? (Y3)	**Electricity** Identify common appliances Construct a simple series electrical circuit Identify whether or not a lamp will light in a simple series circuit Recognise that a switch opens and closes a circuit Recognise some common conductors and insulators, and associate metals with being good conductors. *British inventions/inventors - Electric motor: John Logie Baird, 1925* Comparative & Fair Testing - Investigate which materials are conductors and which are insulators. **Significant Figure:** **- Thomas Edison** **(Inventor of the lightbulb and power grid)** **Revisit All Living Things:** Identify and study plants and animals in their habitat and	**Re-visit & extend – All Living Things** Identify and name a variety of living things (plants and animals) in the local and wider environment, using classification keys to assign them to groups Recognise that environments can change and that this can sometimes pose dangers to living things. *Including school pond, bug hotel etc* **Significant Figure:** **- Dr Aarti Sehdev** **(Neurobiologist)** Review/retrieval: Can you explain the life cycle of a flowering plant? What parts of the plant are involved in the life cycle? What are their different functions? (Y3)

	living, dead or never have been alive? Can you name different animals and their habitats? (Y2)	Review/retrieval: What happens when you boil or freeze water? What do you see? What are the similarities and differences?	**developed the concept that sound travels through air due to the movement of air particles)** **Moses goes to a concert by Isaac Millman** Review/retrieval: Can you name, draw and labels part of the human body? What body part is associated with each sense? (Y1)		how the habitat changes throughout the year Review/retrieval: What do plants need to grow? What are the ideal conditions? (Y3)	
Y5	**Forces/Magnetism** Gravity 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. *Gallileo/Newton.* Comparative & Fair Testing - Designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective Testing the different between mass and weight Identifying, classifying and grouping - pulleys, levers and gears **Significant Figure:** **- Galileo Galilei (Astronomer, Mathematician & Physicist who was the first person to use the scientific method to test theories about gravity and the Solar System)** **The Tin Snail by Cameron McAllister** Review/retrieval: How do magnets attract and repel? Can you identify different	**Earth and Space** **Gaia** Movement of the Earth, and other planets, relative to the Sun in the solar system 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. Identifying, classifying and grouping - Group planets based on their size/atmosphere/orbit time/ rotational period etc. **Significant Figures:** **- Professor Karen Aplin (Atmospheric and space scientist)** **- Mae Jemison (Astronaut and first Black woman in space)** **Hidden Figures The True Story of Four Black Women and the Space Race by Margot Lee Shetterly** Review/retrieval: What are the different weather types? What are the different seasons? Which weather types are associated with the seasons? How does the length of a day vary? (Y1)	**All living things & their habitats** Describe 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. Observation Over Time - Observing cross sections of plants. **Significant Figure:** **- Jane Goodall (Wildlife Researcher & Conservationist who studied chimpanzees)** **Charlotte's Web by E.B White** Review/retrieval: How do environments pose a danger to living things? How does a habitat change throughout the year? What impact does the weather have on habitats? (Y4)	**Animals including humans** Describe the changes as humans develop to old age. Research - Researching gestation periods of different mammals Research naturalists e.g. John Tradescant the Elder **Significant Figure:** **- Jennifer Shelley An (Immunologist)** Review/retrieval: What happens when baby animals grow? What happens when human babies grow? What changes occur? (Y2)	**Properties & Changes of Materials** Compare and group together everyday materials Know that some materials will dissolve in liquid to form a solution; describe how to recover a substance from a solution Decide how mixtures might be separated, including through filtering, sieving and evaporating Uses of everyday materials, including metals, wood and plastic. Pattern Seeking - Which object will be a better thermal conductor? Identifying, classifying and grouping - Grouping different materials and their properties **Significant Figure:** **- Jamie Garcia (Chemist who discovered a fully recyclable plastic)** Review/retrieval: What is the water cycle process? Why is it important? Can you name a range of solids, liquids and gases?	**Properties & Changes of Materials** 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. Comparative & Fair testing – testing different variables and which materials will dissolve in water. Review/retrieval: What do the words evaporation and condensation mean? Where do you see this everyday life? (Y4)

	magnetic characteristics? (Y3)					
Y6	**Evolution and Inheritance (incl Mary Anning)** Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago Research/Comparative & Fair Testing - Research into palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution. Research into proof of evolution **Significant Figure:** **- Mary Anning** **Moth by Isabel Thomas** Review/retrieval: Why are skeletons important to humans? Can you compare different rocks based on their appearance and physical properties? How are fossils formed? (Y3)	**Evolution and Inheritance (incl Wallace and Darwin)** 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. **Significant Figures:** **- Charles Darwin** **- Alfred Wallace** **One smart first by Christopher Wormell** Review/retrieval: What changes happen to humans as they develop? (Y5)	**All Living Things** 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. Identifying, classifying and grouping - Use classification systems and keys to identify some animals and plants in the immediate environment. **Significant Figure:** **- Carl Linnaeus (Botanist & Zoologist who developed a taxonomy for classifying organisms)** **Beetle Boy by M G Leonard** Review/retrieval: Can you describe the life cycles of different animals? Explain the life process of reproduction in plants and animals. (Y5)	**Animals (including humans)** Identify and name the main parts of the human circulatory system, and explain 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. Observation Over Time - How does your pulse rate change after exercise? **Significant Figure:** **- Richard Doll (Doctor who proved the link between lung cancer and smoking)** Review/retrieval: What is the digestive system and how does it work? (Y4) How are substances absorbed into the blood stream (eg. dissolving etc.)? (Y5)	**Electricity** Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches Use recognised symbols *British inventions/inventors* Comparative & Fair Testing - Does the number of cells affect the brightness of a bulb in the circuit? **Significant Figures:** **- Mildred S Dresselhaus (Materials Scientist whose research led to the development of the rechargeable batteries in all modern electronic equipment)** **- Michael Farraday** **Goodnight Mr Tom by Michelle Magorian** Review/retrieval: What is the difference between simple, parallel and series circuits? What impact do switches have? What is the difference between conductors and insulators? (Y4) How can levers, pulleys and gears be supported by electrical motors? (Y5)	**Light** Understand that light appears to travel in straight lines Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the 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, and to predict the size of shadows when the position of the light source changes. *British inventions/inventors* *- Light Bulb: Joseph Swan, Percy Shaw, 1933* Pattern Seeking - Investigating the size of shadows based on distance from the light source. **Significant Figure:** **- Euclid (Mathematician who predicted that light travels in straight lines and we only see things that light falls on)** Review/retrieval: Can you name a variety of light sources? (Y3) How is light involved in creating day and night? How does light impact how we see the moon (moon phases)? (Y5)