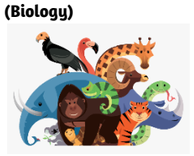
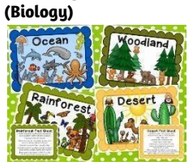
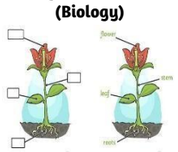
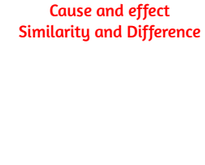
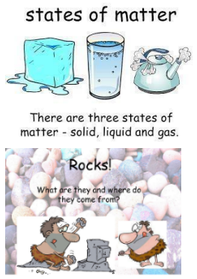
Progression in Science (Knowledge)
Strands of Science, What topics are taught and how they progress from year to year.

STRAND - BIOLOGY

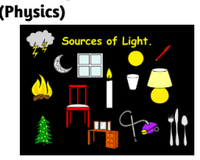
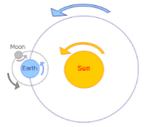
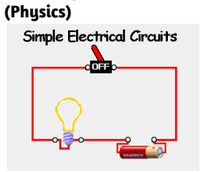
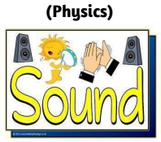
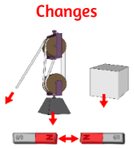
Animals including humans	EYFS	Year 1 Autumn Term & Spring 1	Year 2 Autumn 1	Year 3 Autumn 1	Year 4 Autumn 2	Year 5 Autumn 2	Year 6 Autumn 2
Knowledge (Biology)  **Concepts** Function Changes Growth Energy	• Look at different animals and identify what makes them the same and different • Think about changes between birth to adulthood	• 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	• Understand that animals, including humans, have **offspring which grow into adults** • 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**	• 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** • Identify that humans and some other animals have **skeletons and muscles for support, protection and movement**	• 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**	• Describe the **changes as humans develop to old age - Puberty** • **Reproduction** in plants and animals	• 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
Living things and their habitats	**EYFS**	**Year 1**	**Year 2 Summer Term**	**Year 3**	**Year 4 Autumn 1**	**Year 5 Autumn 1**	**Year 6 Autumn 1**
Knowledge (Biology) 
 Concepts Function Variation Adaptation Cause and effect Process	• Local walks around school and the area observing the natural world around them and its features. • Comment and discuss how they can care for their environment and living things	**• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans) • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans) • Observe changes across the four seasons. (Y1 - Seasonal change)**	• Explore and compare the differences between things that are **living, dead, and things that have never been alive** • Identify that most living things live in **habitats to which they are suited** and **describe** how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a **variety of plants and animals in their habitats,** including **micro-habitats** • Describe how animals obtain their food from plants and other animals, using the idea of a **simple food chain**, and identify and **name different sources of food**	**• Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)**	• 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 • Recognise that **environments can change** and that this can sometimes pose dangers and have an impact on living things **Links to Plants**	• 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	• Describe **how living things are classified** into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals • Give reasons for **classifying plants and animals based on specific characteristics** **Links to Plants**
Plants - EY - Year 3 Evolution and Inheritance - Y6	**EYFS**	**Year 1 Plants - Spring 2**	**Year 2 Plants - Spring 2**	**Year 3 Plants - Spring 2 & Summer 1**	**Year 4**	**Year 5**	**Year 6 Evolution & Inheritance - Spring 2**
Knowledge (Biology) 	• Show care and concern for living things and the environment • Observe changes over time • Develop an understanding of growth	• **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	• 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	• 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	**(Y4 - Living things and their habitats) Links to Biology**	**(Reproduction in plants see above) (Y5 - Living things and their habitats) Describe the life process of reproduction in some plants and animals.**	• 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

Plants **Concepts** Structure Function Variation Growth ----------  **Evolution and Inheritance**	• Make observations of plants and explain why some things occur, and talk about changes.	flowering plants, including trees		• **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			• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution **Concepts** Adaptation Variation Changes Evolution Growth Similarity and Difference
Seasonal Change - Throughout the Year	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Knowledge  **Concepts** Changes Cause and Effect Similarity and Difference	• Seasonal walks around the local area observing the changes in the leaves, trees.	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies	• *Observe changes over the four seasons and make comparisons with seasons around the world.* • *Are seasons the same in each continent*	**(Seasonal changes during plant topic)** **· Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)** **Links to seasons**		**· Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. (Y5 - Earth and space)** **Links to seasons**	

STRAND - CHEMISTRY

Materials and States of Matter	**EYFS**	**Year 1** **Materials - Summer Term**	**Year 2** **Materials - Autumn 2 & Spring 1**	**Year 3** **Rocks - Spring 1**	**Year 4** **States of Matter - Spring Term**	**Year 5** **Properties & Changes to Materials - Summer Term**	**Year 6**
Knowledge (Chemistry)  **Concepts** Structure Function Cause and effect Similarity and Difference	• Learn the differences in properties of materials • Understand why some materials are chosen • Observing the similarities and differences between 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	• Identify and **compare** the **suitability** of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • **Describe** how the shapes of **solid objects** made from some materials **can be changed** by squashing, bending, twisting and stretching **(using a force)**	• 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 **Links to Materials and states**	• Compare and **group materials** together, according to whether they are **solids, liquids or gases** • Observe that some materials **change state** when they are **heated or cooled**, and measure or research the **temperature** at which this happens in degrees Celsius (°C) • Identify the part played by **evaporation and condensation in the water cycle** and associate the rate of evaporation with temperature	• 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** • Recognise 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	

STRAND - PHYSICS

Light - Year 3 & 6 **Earth & Space Year 5**	**EYFS**	**Year One**	**Year Two**	**Year Three** **Light - Summer 2**	**Year Four**	**Year Five** **Earth & Space - Spring 1**	**Year Six** **Light - Spring 2**
Knowledge **(Physics)**  **Light - Year 3 & 6** **Concepts** Cause and effect  **Earth & Space Year 5** **Concepts** Changes Similarity and Difference	• Observe changes over time – looking at the differences between light and dark • Provision in areas allow children to access torches • Natural word – hot and cold • Moon Links to language and continuous Provision	(Moon Zoom Topic - linked to language and materials - famous person (Mae Jemison) **• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) •**	**Describe the simple physical properties of a variety of everyday materials. (Y1 & 2 - Materials)**	• Recognise that he/she needs **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 eyes • Find **patterns** in the way that the **size of shadows change**		• 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	• Recognise that light appears to travel in straight lines • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Electricity	**EYFS**	**Year One**	**Year Two**	**Year Three**	**Year Four** **Summer 2**	**Year Five**	**Year Six** **Summer Term**
Knowledge **(Physics)**  **Concepts** Cause and effect Energy	• exploring electronic toys • being safe around electricity • exploring everyday materials	• Exploring toys using batteries - bee bots • Using resources using that need electricity	• looking at properties of materials and how they are used	• describing a variety of everyday materials, based on magnetism	• 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		• **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 • CREATIVE PROJECT - STEAM SKILLS
Sound	**EYFS** Sound	**Year One**	**Year Two**	**Year Three** **Forces & Magnets - Spring 1**	**Year Four** **Sound - Summer 1**	**Year Five** **Forces - Spring 1**	**Year Six**
Knowledge **(Physics)**  **Sound** **Concepts** Cause and effect Changes  **Forces and Magnets** **Concepts** Cause and effect Similarity and difference	• Explore the different sounds of instruments • Experiment ways in which sound can be changed	**• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)** **Links to sound / hearing**	**Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)** **Links to forces**	• Compare **how things move** on **different surfaces** • Notice that some forces **need contact** between two objects, but **magnetic forces** can act at a distance • **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,** depending on which poles are facing	• 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	• 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	