

Year 4 Science Sequence
Living things and their habitats

National Curriculum Objective	Key Learning	I Can...
- 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 to living things.	- Living things can be grouped (classified) in different ways according to their features. - Classification keys can be used to identify and name living things. - Living things live in a habitat which provides an environment to which they are suited (Year 2 learning). - These environments may change naturally e.g. through flooding, fire, earthquakes etc. - Humans also cause the environment to change. This can be in a good way (i.e. positive human impact, such as setting up nature reserves) or in a bad way (i.e. negative human impact, such as littering). - These environments also change with the seasons; different living things can be found in a habitat at different times of the year	- I can explore different ways living things can be grouped. - I can use a classification key to sort and organise living things. - I can investigate how humans can cause change to environments - I can investigate how seasonal change effects habitats
Key Vocabulary: Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate End of unit assessment: TAPS YR 4: Local Environment Survey		
Example evidence for 'Secure'		
- Observe plants and animals in different habitats throughout the year. - Compare and contrast the living things observed. - Use classification keys to name unknown living things. - Classify living things found in different habitats based on their features. - Create a simple identification key based on observable features. - Use fieldwork 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 positive and negative, on environments		

Year 4 Science Sequence
Animals including humans

National Curriculum Objective	Key Learning	I Can...
- 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.	- Food enters the body through the mouth. Digestion starts when the teeth start to break the food down. - Saliva is added and the tongue rolls the food into a ball. The food is swallowed and passes down the oesophagus to the stomach. Here the food is broken down further by being churned around and other chemicals are added. - The food passes into the small intestine. Here nutrients are removed from the food and leave the digestive system to be used elsewhere in the body. The rest of the food then passes into the large intestine. - Here the water is removed for use elsewhere in the body. What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet. - Humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing). - Living things can be classified as producers, predators and prey according to their place in the food chain.	- I can explain how the human digestive system works - I can identify the different types of human teeth and explain their functions - I can explain the structure of a tooth. - I can explain how we can look after our teeth - I can create a food chain and explain what it shows - I can create a food web and explain what it shows
Key Vocabulary: Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain End of unit assessment: TAPS YR 4: Teeth (eggs) in Liquid		
Example evidence for 'Secure'		
- Research the function of the parts of the digestive system. - Create a model of the digestive system using household objects. - Explore eating different types of food to identify which teeth are being used for cutting, tearing and grinding (chewing). - Classify animals as herbivores, carnivores or omnivores according to the type of teeth they have in their skulls. - Use food chains to identify producers, predators and prey within a habitat. - Use secondary sources to identify animals in a habitat and find out what they eat		

Year 4 Science Sequence
States of Matter

National Curriculum Objective	Key Learning	I Can...
• 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.	• A solid keeps its shape and has a fixed volume. • A liquid has a fixed volume but changes in shape to fit the container. A liquid can be poured and keeps a level, horizontal surface. • A gas fills all available space; it has no fixed shape or volume. Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped. • Each individual grain demonstrates the properties of a solid. • Melting is a state change from solid to liquid. • Freezing is a state change from liquid to solid. The freezing point of water is 0oC. • Boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid. Water boils when it is heated to 100oC. • Evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy. • Condensation is the change back from a gas to a liquid caused by cooling. • Water at the surface of seas, rivers etc. evaporates into water vapour (a gas). • This rises, cools and condenses back into a liquid forming clouds. • When too much water has condensed, the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc • This is known as precipitation. <i>This is the water cycle.</i>	• I can group substances according to whether they are solid, liquids or gases • I can explain how materials change state. • I can research the melting and boiling points of different materials • I can investigate how effective different materials are as thermal insulators • I can explain the water cycle • I can investigate how temperature affects evaporation rates

Key Vocabulary: Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle

End of unit assessment:

TAPS YR 4: Drying materials

Example evidence for 'Secure'

- Observe closely and classify a range of solids. Observe closely and classify a range of liquids.
- Explore making gases visible e.g. squeezing sponges under water to see bubbles, and showing their effect e.g. using straws to blow objects, trees moving in the wind.
- Classify materials according to whether they are solids, liquids and gases.
- Observe a range of materials melting e.g. ice, chocolate, butter.
- Investigate how to melt ice more quickly.
- Observe the changes when making rocky road cakes or ice-cream.
- Investigate the melting point of different materials e.g. ice, margarine, butter and chocolate.
- Explore freezing different liquids e.g. tomato ketchup, oil, shampoo.
- Use a thermometer to measure temperatures e.g. icy water (melting), tap water, hot water, boiling water (demonstration).
- Observe water evaporating and condensing e.g. on cups of icy water and hot water.
- Set up investigations to explore changing the rate of evaporation e.g. washing, puddles, handprints on paper towels, liquids in containers.
- Use secondary sources to find out about the water cycle.



Year 4 Science Sequence
Sound

National Curriculum Objective	Key Learning	I Can...
- 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.	- A sound produces vibrations which travel through a medium from the source to our ears. - Different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter). - The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. - The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. - A sound insulator is a material which blocks sound effectively. - Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.	- I can investigate how well sound travels through different materials. - I can place different sounds in order of pitch and volume. - I can investigate how distance affects how well we can hear a sound - I can investigate the relationship between distance and volume on sound.
Key Vocabulary: Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation		
End of unit assessment: TAPS: YR 4 Investigating Pitch		
Example evidence for 'Secure'		
- Classify sound sources. - Explore making sounds with a range of objects, such as musical instruments and other household objects. - Explore how string telephones or ear gongs work. - Explore altering the pitch or volume of objects, such as the length of a guitar string, amount of water in bottles, size of tuning forks. - Measure sounds over different distances. - Measure sounds through different insulation materials.		

Year 4 Science Sequence
Electricity

National Curriculum Objective	Key Learning	I Can...
- 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.	- Many household devices and appliances run on electricity. - Some plug in to the mains and others run on batteries. - An electrical circuit consists of a cell or battery connected to a component using wires. - If there is a break in the circuit, a loose connection or a short circuit, the component will not work. - A switch can be added to the circuit to turn the component on and off. - Metals are good conductors so they can be used as wires in a circuit. - Non-metallic solids are insulators except for graphite (pencil lead). - Water, if not completely pure, also conducts electricity.	- I can identify machines which need electricity to work. - I can create a simple electrical circuit - I can explain how an electrical switch works - I can predict whether a circuit will work and how it can be fixed. - I can investigate which objects are conductors and which are insulators. - I can identify situations when electricity can be dangerous.
Key Vocabulary: Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol End of unit assessment: TAPS: YR 4: Does it Conduct Electricity?		
Example evidence for 'Secure'		
- Construct a range of circuits. - Explore which materials can be used instead of wires to make a circuit. - Classify the materials that were suitable/not suitable for wires. - Explore how to connect a range of different switches and investigate how they function in different ways. - Choose switches to add to circuits to solve particular problems, such as a pressure switch for a burglar alarm. - Apply their knowledge of conductors and insulators to design and make different types of switch. - Make circuits that can be controlled as part of a DT project		