Science Curriculum Overview Year 4

Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember
1	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.	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	I can **research** how to keep teeth healthy; plan and set up an investigation into tooth decay.  I can draw conclusions from an investigation about keeping teeth healthy and to **identify** and examine different types of teeth.  I can **research** the parts of the digestive system and their function.  I can **observe** the process of digestion.  I can construct food chains for different habitats and **research** findings using the correct scientific language.  I can **compare** the teeth of different animals and link this with their role in a food chain. 

Vocabulary

- Digestive system: digest, digestion, tongue, teeth, saliva, salivary glands, oesophagus, stomach, liver, pancreas, gallbladder, small intestine, duodenum, large intestine, rectum, anus, faeces, organ.
- Types of teeth and dental care: molar, premolar, incisor, canine, wisdom teeth, tooth decay, plaque, enamel, baby (milk) teeth.
- Food chains and animal diets: decomposer, food web.

Previously introduced vocabulary: producer, consumer, prey, predator, excretion, habitat.

Working towards | **End of unit assessment**
Working at | **Working above**

Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember
2	Electricity	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	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Report on findings from enquiries, including oral	I can **classify** and present data, **identifying** common appliances that run on electricity.  I can **identify** circuit components and build working circuits.  I can **fairly test** whether circuits are complete or incomplete.  I can **compare** which materials are electrical conductors or insulators. 

		associate metals with being good conductors.	and written explanations, displays or presentations of results and conclusions. *Ogden Trust Resource : Phizzi Electricity: Teaching Point 1 - Conductors and Insulators* *Ogden Trust Resource : Phizzi Electricity: Teaching Point 2 - Switching Circuits* *Ogden Trust Resource : Phizzi Electricity: Enquiry A - Circuit Analysts* *Ogden Trust Resource : Phizzi Electricity: Enquiry B - Buzz off!*	I can **research** how a switch works in a circuit, build switches to **compare** and report my findings.  I can **find patterns** and solve problems about electricity using reasoning skills. 

Vocabulary

- Electricity: mains-powered, battery-powered, mains electricity, plug, appliances, devices.
- Circuits: circuit, simple series circuit, complete circuit, incomplete circuit.
- Circuit parts: bulb, cell, wire, buzzer, switch, motor, battery.
- Materials: electrical conductor, electrical insulator.
- Other: safety.

Previously introduced vocabulary: names of materials.

Working towards	End of unit assessment Working at	Working above

Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember

3	States of matter	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.	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	I can **group** and describe materials.  I can **research** gases and explain their properties.  I can **observe** materials as they change state.  I can **observe** how water changes state.  I can **observe** how water evaporates.  I can **identify** and **research** the different stages of the water cycle.  

Vocabulary

- States of matter: solids, liquids, gases, particles.
- State change: evaporate, condense, melt, freeze, heat, cool, melting point, freezing point, boiling point, water vapour.
- Water cycle: precipitation, evaporation, condensation, ground run-off, collection, underground water, bodies of water (sea, river, stream), water droplets, hail.
- Other: atmosphere.

Previously introduced vocabulary: temperature, rain, cloud, snow, wind, sun, hot, cold, absorb, carbon dioxide

End of unit assessment

Working towards | **Working at** | **Working above**

Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember
4	Living things and their habitats	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.	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	I can **group** living things in a range of ways.  I can use a range of methods to **group** living things.  I can generate questions to use in a **classification** key.  I can **identify** vertebrates by **observing** their similarities and differences.   I can use a key to **identify** invertebrates.  I can use evidence to **identify** an invertebrate.  I can create a **classification** key.  I can **classify** the characteristics of living things in a table and a key.  I can **research** positive and negative changes to the local environment.

				 I can record my observations in different ways. I can **research** environmental dangers to endangered species.  I can present my findings orally and in writing.

Vocabulary

- Living things: organisms, specimen, species.
- Grouping living things: classification, classification keys, classify, characteristics.
- Names of invertebrate animals: snails and slugs, worms, spiders, insects.
- Invertebrate body parts: e.g. wing case, abdomen, thorax, antenna, segments, mandible, proboscis, prolegs.
- Environmental changes: environment, environmental dangers, adapt, natural changes, climate change, deforestation, pollution, urbanisation, invasive species, endangered species, extinct.

Previously introduced vocabulary: carbon dioxide, fish, bird, mammal, amphibian, reptile, skeleton, bone, vertebrate, invertebrate, backbone, names for animal body parts, names of common plants, photosynthesis.

End of unit assessment

Working towards | **Working at** | **Working above**

Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember

5	Sound	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.	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. *Ogden Trust Resource : Phizzi Light and Sound : Investigation G - Sound Circus* *Ogden Trust Resource : Phizzi Light and Sound : Investigation H - String Telephones* *Ogden Trust Resource : Phizzi Light and Sound : Investigation I - Investigating Pitch* *Ogden Trust Resource : Phizzi Light and Sound : Investigation J - Can you hear me?*	I can **observe**, **research** and explain sound sources.  I can **observe** how different sounds travel.  I can **compare** ways to change the pitch of a sound.  I can **compare** ways to absorb sound.  I can **fairly test** ways to make a musical instrument to play different sounds. 

Vocabulary

- Parts of the ear: eardrum.
- Making sound: vibration, vocal cords, particles.
- Measuring sound: pitch, volume, amplitude, sound wave, quiet, loud, high, low, travel, distance.
- Other: soundproof, absorb sound.

Working towards	End of unit assessment Working at	Working above

Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember
6	Scientists and inventors	Recognise that environments can change and that this can sometimes pose dangers to living things. Recognise that vibrations from sounds travel through a medium to the ear. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. 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	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	I can **research** deforestation and conservation in Madagascar.  I can set up an enquiry to **fairly test** soil erosion.  I can **research** Alexander Graham Bell and his inventions. I can present my findings about Alexander Graham Bell.  I can **fairly test** ways to build a solar oven and explain how the temperature changes inside it.  I can **compare** ways to build a traffic light using series circuits. 

		which this happens in degrees Celsius (°C). Identify common electrical appliances that run on electricity. Identify the different types of teeth in humans and their functions by finding out about the invention of toothpaste.		I can **research** the properties of oxygen gas.  I can **research** how oxygen was discovered.  I can **research** what Lord Kelvin called 'absolute zero'.  I can accurately use a thermometer. I can **research** the impact of electrical inventions by inventors such as Thomas Edison and Lewis Latimer.  I can **compare** ways to look after our teeth.  I can **research** the invention of toothpaste. 

Vocabulary

Recap of vocabulary covered over the year.

Conservationist, rainforest, deforestation,
species, erosion, nutrients, extinct, endangered
Sound, transmit, telephone, patent, speech, deaf, Alexander Graham Bell
Energy, electricity, solar, temperature, Celsius, sun, heat, renewable, fuel, energy source, pollution
Electricity, circuit, series, bulb, wire, switch, cell, battery, crocodile clips
Theory, phlogiston, gas, oxygen, burn, combust
Temperature, scale, absolute zero, cool, cold, particles, solid, liquid, gas, state
Electricity, appliance, generate, power, Thomas Edison, lightbulb,
carbon filament
Toothpaste, abrasive, teeth, dentist.

End of unit assessment		
Working towards	**Working at**	**Working above**