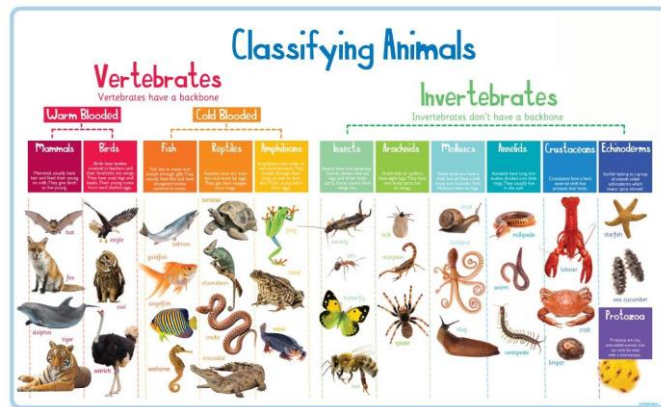




YEAR THREE / FOUR KNOWLEDGE ORGANISER SCIENCE: Living things and their habitats



KEY KNOWLEDGE

- Recognise that living things can be grouped in a variety of ways.
- Understand how animals can be classified as vertebrates and Invertebrates:
- Know that Vertebrates are classified as: reptile, mammal, amphibian, bird, fish and describe the characteristics of each
- Know that invertebrates can be classified as: Mollusc, arachnid, echinoderm, insect, annelids, protozoa
- 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.

KEY SCIENTISTS

1. Mark Bardsley
Geologist
2. Mike Linley
Zoologist and Wildlife
Filmmaker
3. Dr Ian Bedford
Entomologist

KEY VOCABULARY

Vertebrate:	Animals with a backbone
Mammal	
Reptile	
Amphibian	
Bird	
fish	
Invertebrate:	Animals without a backbone
Annelid	
Mollusc	
Insect	
Arachnid	
Protozoa	
Carnivore	Meat eater
Consumer	Eats prey
Herbivore	Plant eater
Omnivore	Eats meat and plants
Producer	First point of the food chain
Detritivore	Scavenger eats decaying matter

PRIOR LEARNING

Identify that most living things live in habitats to which they are suited

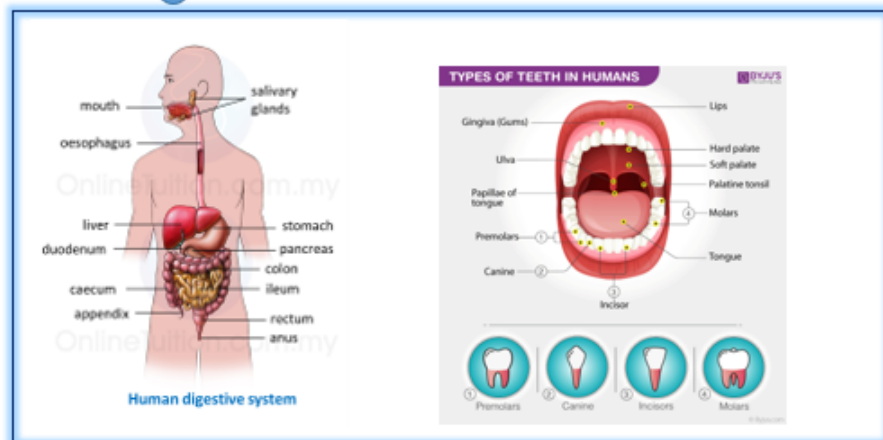
Identify and name a variety of plants and animals in their habitats

SUBJECT SPECIFIC SKILLS

- Identifying differences, similarities
- Asking relevant questions about animals and environments and using research and observations to answer them
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units.,
- Gathering, recording, classifying and presenting data in a variety of ways.
- Identifying differences, similarities or changes related to simple scientific ideas



YEAR THREE / FOUR KNOWLEDGE ORGANISER SCIENCE: Animals Including Humans



KEY KNOWLEDGE

- 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 how teeth and gums have to be cared for in order to keep them healthy.

KEY SCIENTISTS

- Alison Burns
Dog Trainer
- Dr Randhir Seewoodharry Buauth
Dental Surgeon
- Mike Linley
Zoologist and Wildlife Filmmaker
- Emily Norton
Farm Manager and Solicitor

KEY VOCABULARY

absorb	soak up or take in
canine	pointed teeth near the front of the mouth of humans and of some animals
carnivore	an animal that eats meat
decay	gradually destroyed by a natural process
digestion	breaking down ingested food material
enamel	the hard white substance that forms the outer part of a tooth
excretion	the process of eliminating faeces, urine, or sweat from the body
faeces	the solid waste substance that people and animals get rid of from their body by passing it through the anus
herbivore	an animal that only eats plants
incisor	the teeth at the front of your mouth which you use for biting into food
ingested	When animals or plants ingest a substance, they take it into themselves, for example by eating or absorbing it
intestines	the tubes in your body through which food passes when it has left your stomach
molar	the large, flat teeth towards the back of your mouth that you use for chewing food
muscles	something inside your body which connects two bones and which you use when you make a movement
nutrition	the process of taking food into the body and absorbing the nutrients in those foods
oesophagus	the part of your body that carries the food from the throat to the stomach
omnivore	person or animal eats all kinds of food, including both meat and plants
organ	a part of your body that has a particular purpose
plaque	a substance containing bacteria that forms on the surface of your teeth
premolar	two situated on each side of both jaws between the first molar and the canine
process	a series of actions used to produce something or reach a goal
saliva	the watery liquid that forms in your mouth and helps you to chew and digest food
stomach	the organ inside your body where food is digested before it moves into the intestines

PRIOR LEARNING

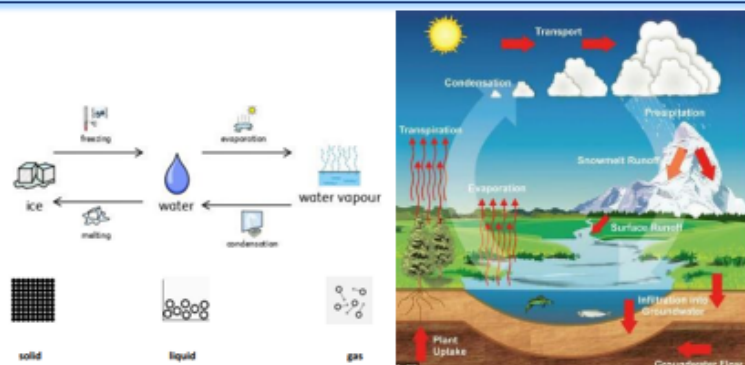
- Identify that humans and some other animals have skeletons and muscles for support, protection and movement
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.
- Identify and name a variety of common animals that are carnivores herbivores
- Or omnivores.

SUBJECT SPECIFIC SKILLS

- set-up simple practical investigations to explore the digestive process
- Make systematic and careful observations
- Identify differences, similarities or changes.
- Gather evidence to answer the scientific questions such as
Which drinks cause tooth decay?
- Record evidence using diagrams and tables
- Draw conclusions and use scientific language to explain findings



YEAR THREE / FOUR KNOWLEDGE ORGANISER SCIENCE: States of Matter



KEY KNOWLEDGE

- Classify and group materials together, according to whether they are solids, liquids or gases.
- Understand that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius ($^{\circ}\text{C}$).
- Understand that materials have a melting/freezing point and explain what this means in relation to the 3 states of matter

Understand the process of change state as: evaporation, condensation, freezing and melting

- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

KEY SCIENTISTS

- Ruth Norton
Dairy Manage
- Dr Sam Rowe
Chemist and Science Communicator
- Derek Grout
Distillery Owner and Entrepreneur
- Chris Bell
Meteorologist

KEY VOCABULARY

condensation	small drops of water which form when water vapour or steam touches a cold surface , such as a window
cooling	lowering the temperature of something
evaporation	to turn from liquid into gas; pass away in the form of vapour .
freezing	if a liquid or a substance containing a liquid freezes, it becomes solid because of low temperatures
freezing point	The freezing point of a particular substance is the temperature at which it freezes . The freezing point of water is 0°C .
gas	a form of matter that is neither liquid nor solid . A gas rapidly spreads out when it is warmed and contracts when it is cooled .
heating	raising the temperature of something
liquid	in a form that flows easily and is neither a solid nor a gas .
melting	to change from a solid to a liquid state through heat or pressure
melting point	The melting point of a particular substance is the temperature at which it melts .
particles	a tiny amount or small piece
precipitation	rain, snow, sleet, dew, etc, formed by condensation of water vapour in the atmosphere
process	a series of actions used to produce something or reach a goal.
properties	the ways in which an object behaves
solid	having a firm shape or form that can be measured in length, width, and height; not like a liquid or a gas
temperature	a measure of how hot or cold something is
vibrations	when something vibrates , it shakes with repeated small, quick movements
water cycle	the process by which water on the earth evaporates , then condenses in the atmosphere, and then returns to earth in the form of precipitation .
water vapour	water in the gaseous state, esp when due to evaporation at a temperature below the boiling point

PRIOR LEARNING

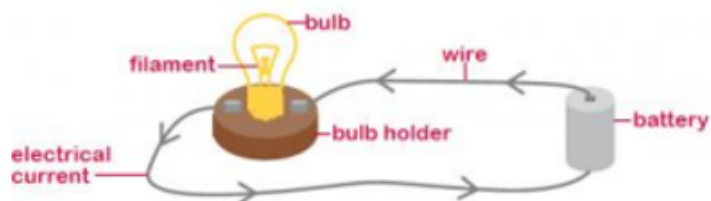
- Distinguish between an object and the material from which it is made
- Describe the simple physical properties of a variety of everyday materials
- Identify and name a variety of everyday materials, including wood, metal, plastic, glass, metal, water and rock.

SUBJECT SPECIFIC SKILLS

- To make systematic and careful observations
- To gather data recording, classifying and presenting in a variety of ways to help in answering questions
- To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- To report on findings from enquiries, including oral and written explanations,
- To use results to draw simple conclusions, make predictions suggest improvements and raise further questions



YEAR THREE / FOUR KNOWLEDGE ORGANISER SCIENCE: Electricity



KEY KNOWLEDGE

- Identify devices which use electricity
- Identify whether devices which are main or battery powered
- Understand that a battery is a source of electricity
- Identify the components in a simple series circuit
- Use electrical symbols to draw simple series circuits
- Understand how a circuit needs to be complete for a bulb/buzzer to work
- Identify which materials are insulators or conductors.
 - Make a simple switch by making a break in a simple series circuit.

KEY SCIENTISTS

- Katie Frost
General Manager for
Network Rail
- Emily Norton
Farm Manager and
Solicitor
- Phillip Mintey
Chief Helicopter Engineer
for the Royal Flight
- Jon Badgery
Physicist

PRIOR LEARNING

Understanding that objects need electricity to work.

May understand that a switch will turn something on or off.

KEY VOCABULARY

Electricity	A form of energy resulting from the existence of charged particles.
Circuit	A complete and closed path around which a circulating electric current can flow.
Battery	A container consisting of one or more cells where chemical energy is converted into electricity and used as a source of power.
Bulb	A glass bulb which provides light by passing an electrical current through a filament.
Buzzer	An electrical device that makes a buzzing noise and is used for signalling.
Cell	A device containing electrodes that is used for generating current.
Motor	A machine powered by electricity that supplies motive power for a vehicle or other moveable device.
Switch	A device for making and breaking the connection in an electric circuit
Wire	A long thin piece of metal that carries an electrical current often covered in plastic for safety.
Current	A flow of electricity which results from the ordered directional movement of electrically charged particles.
Voltage	An electrical force that makes electricity move through a wire, measured in volts.
Conductor	A material or device which allows heat or electricity to carry through.

SUBJECT SPECIFIC SKILLS

- Setting up simple practical enquiries, comparative and fair tests
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units.
- 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

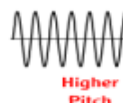
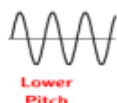


YEAR THREE / FOUR KNOWLEDGE ORGANISER SCIENCE: Sound and Hearing

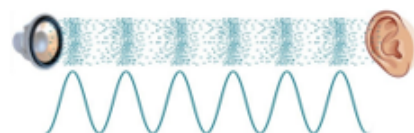
If an object is making a sound, a part of it is vibrating, even if you cannot see the vibrations



A squeak of mouse has a high pitch
A roar of a lion has a low pitch.



The sound waves travel to the ear and make the ear-drums vibrate. Messages are sent to the brain which recognises the vibrations as



KEY KNOWLEDGE

Children will know that:

- Sound is a type of energy.
- Sounds are created by vibrations the louder the sound the bigger the vibration
- The speed of the vibrations is called pitch. We hear this as high and low sounds
- Amplitude is the measurement of how loud a sound is (vibration size)
- We hear when vibrations travel through the air and into our ear, through the ear drum and turned into electrical signals which reaches our brain
- Sounds travel through solids better as the particles are closely packed together.

KEY SCIENTISTS

1. Mike Linley
Zoologist and Wildlife Filmmaker
2. Paul Usher
Assistant Headteacher
3. Heather Bingham
Science Writer and is an Environmental Scientist
4. Andy Usher
Chainsaw Artist

KEY VOCABULARY

amplitude	A measure of the strength of a sound wave. The size of the vibration
energy	Sound energy is a type of energy that we can hear
frequency	How many vibrations are made in one second
insulation	A material used to block sounds
medium	A material that allows the transfer of energy from one place to another, eg solids, liquids and gases
pitch	How high or low a sound is. It depends on the frequency of the sound
sound source	Where sound comes from. A sound source will produce vibrations
vibrations	Something moving backwards and forwards very quickly
volume	How loud or quiet a sound is. It depends on the amplitude of the sound wave
wave	A sound wave is an invisible wave which moves through different medium

PRIOR LEARNING

- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
- May have some understanding that objects make different sounds.
- Some understanding that they use their ears to hear sounds.

SUBJECT SPECIFIC SKILLS

- Setting up simple practical enquiries, comparative and fair tests
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units.
- 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