



Topic Vocabulary, Skills and Knowledge

Subject: Science

Year: 4

Curriculum leads: Mrs Barlow / Mrs Wakefield

**Vocabulary**

I can understand and use these words:

classification	key	environment	danger	habitat
identify	plants	animals	grouping	flowering
non-flowering	fish	amphibians	reptiles	birds
mammals	human impact	vertebrate	invertebrate	endanger
sound	volume	size	vibrate	vibration
strength (of vibrations)		thickness	ear	insulation
sound source	noise	pitch	distance	tune
travel	correlation	listen	hear	loud
quiet	muffle	soundwaves	particles	travel
amplitude	teeth	incisors	molars	canines
jaw	evidence	digestion	chew	saliva
digestive system	nutrition	mouth	stomach	tongue
oesophagus (gullet)		large intestine	small intestine	rectum
anus	faeces	diet	impact	
food chain	producer	predator	prey	consumer
omnivore	herbivore	carnivore	solid/solidify/solidifying/solidification	
gas	materials	heat	cooled	matter
melt/melting	ice	water	steam	oxygen
freeze/freezing	condense/condensing		degrees Celsius	boil
precipitation	state (matter)	water cycle	transpiration	evaporation
evaporating	evaporate	condensation	boiling point	vapour
particles	thermometer	liquid	temperature	cycle
plug	mains	simple circuit	battery	electricity
bulb(s)	electrical appliance		series circuit	electrical circuit
complete circuit	conductor	insulator	wires	buzzer
switch		lamp	cells	connection
metal	electrocute	safety	crocodile clip	current
energy	flow			

**Working Scientifically (KS2)**

**Skills:** I can:

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.	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
Use results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions.	Identify differences, similarities or changes related to simple scientific ideas and processes.	Use straightforward scientific evidence to answer questions or to support my findings.



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All Living Things

Skills: I can:	
Group living things in different ways.	Use classification keys to group, identify and name living things.
Create classification keys to group, identify and name living things (for others to use).	Describe how changes to an environment could endanger living things (e.g. food chains and climate change)

Knowledge I know:	
That living things can be grouped in various ways.	How to use a key to explore and identify animals and plants.
That classification keys can be used to help group, identify and name living things.	That habitats change through the year.
How environmental changes can affect living things (endangering).	

All Living Things (Greater Depth)

Sc4/2.1a recognise that living things can be grouped in a variety of ways	Sc4/2.1b explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	Sc4/2.1c recognise that environments can change and that this can sometimes pose dangers to living things.
<p>I can define the terms vertebrate and invertebrate</p> <p>I can identify characteristics of fish, amphibians, reptiles, birds and mammals</p> <p>I can reliably group vertebrates, invertebrates and plants</p>	<p>I can use a complex classification key to group, identify and name a variety of living things (e.g. a branching diagram with a larger number of items or with items that are similar in appearance)</p> <p>I can devise a complex classification key to group, identify and name a variety of living things (e.g. a branching diagram with a larger number of items or with items that are similar in appearance)</p>	<p>I can describe the possible long term outcome that a change might have on an environment (animal extinction)</p> <p>I can describe ways in which human and natural impact to an environment can be lessened or prevented</p> <p>I can explain how some 'natural' changes can be due to humans activity (e.g. flooding due to global warming)</p>

Sound

Skills: I can:	
Describe how sound is made.	Explain how sound travels from a source to our ears.
Explain the place of vibration in hearing.	Explore the correlation between pitch and the object producing a sound.
Explore the correlation between the volume of a sound and the strength of the vibrations that produced it.	Investigate and describe what happens to a sound as it travels away from its source.

Knowledge I know:	
Sound is made from vibrations.	That sound travels through a medium to the ear.
Vibrations are linked to hearing.	There are patterns between the pitch of a sound and the features of the object producing it.
There are patterns between the volume of a sound and the strength of the vibrations that produced it.	Sounds get fainter as the distance from the sound source increases.

Sound (Greater Depth)

Sc4/4.1a identify how sounds are made, associating some of them with something vibrating	Sc4/4.1b recognise that vibrations from sounds travel through a medium to the ear	Sc4/4.1c find patterns between the pitch of a sound and features of the object that produced it	Sc4/4.1d find patterns between the volume of a sound and the strength of the vibrations that produced it.	Sc4/4.1e recognise that sounds get fainter as the distance from the sound source increases
I can demonstrate and explain how sound is made, using scientific vocabulary including vibration, conduct, sound wave and material	<p>I can explain that without air, we would not hear any sound (e.g. in outer space)</p> <p>I know that we hear because the outer ear collects the sounds and carries them to the eardrum</p>	<p>I can explain the relationship between pitch and the feature of the object (e.g. the thinner the guitar string the higher the pitch of the note)</p> <p>I can show how sound waves can differ to create a different pitch.</p>	<p>I know that as volume increases the size of vibrations increase</p> <p>I can show how sound waves can differ to create a different volume</p>	I can explain why the volume of a sound heard changes depending on the distance from a sound source

Animals including humans

Skills: I can:	
Identify and name the parts of the human digestive system.	Describe the functions of the organs in the human digestive system.
Identify and describe the different types of teeth in humans.	Describe the functions of different human teeth.

Knowledge I know:	
How the digestive system works and the names of its different parts.	Why we have different types of teeth.
The structure of a food chain. (Always begins with a plant, producer.)	That a predator is an animal that eats another animal.



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Use food chains to identify producers, predators and prey.	Construct food chains using an arrow to represent 'is eaten by'

	That prey is an animal that gets eaten by another animal
Why we can sometimes become sick (linked to the Digestive System)	

Animals including humans (Greater Depth)

Sc4/2.2a describe the simple functions of the basic parts of the digestive system in humans	Sc4/2.2b identify the different types of teeth in humans and their simple functions	Sc4/2.2c construct and interpret a variety of food chains, identifying producers, predators and prey.
<p>I can explain how the human digestive system works</p> <p>I can name other organs associated with digestion (liver, gall bladder, pancreas)</p>	<p>I know that a child has 20 temporary teeth and an adult has 32 permanent teeth</p> <p>I know how many of each type of teeth an adult human has</p> <p>I can explain how teeth differ according to the species of animal and how this relates to diet (e.g. carnivores, herbivores)</p>	<p>I can construct food chains and identify producers, predators and prey accurately and confidently</p> <p>I know that the sun is the ultimate and constant source of energy</p> <p>I can use the terms herbivore, carnivore and omnivore accurately and confidently</p> <p>I know that some animals can be both prey and predator</p> <p>I know what an apex predator is</p> <p>I can explain why a food chain always starts with a plant</p> <p>I can create more complex food chains including food webs</p>

States of Matter

<b>Skills: I can:</b>	
Group materials based on their state of matter (solid, liquid, gas).	Describe how some materials can change state.
Explore how materials change state.	Measure the temperature at which materials change state.
Describe the water cycle.	Explain the part played by evaporation and condensation in the water cycle.

<b>Knowledge I know:</b>	
That materials can exist in different states of matter (solid, liquid, gas).	That heat and cooling can change a material based on its state of matter.
That water can exist in three different states of matter and how this happens.	That condensation is the cooling of a gas into a liquid (e.g. water).
That evaporation is the changing of a liquid into a gas through heating.	That the process of a liquid turning into a solid is called solidification.

States of Matter (Greater Depth)

Sc4/3.1a compare and group materials together, according to whether they are solids, liquids or gases	Sc4/3.1b 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)	Sc4/3.1c identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
<p>I can explain how materials are made up of particles and these are arranged in different ways in solids, liquids and gases</p> <p>I can observe, compare and sort more complex materials (e.g. shaving foam, sponge, talcum powder and jelly)</p> <p>I know that water can exist in three different states of matter and how this happens.</p>	<p>I can describe the effect of temperature on a range of different materials</p> <p>I recognise that some changes of state are reversible and some are not</p>	<p>I can use the correct terminology to explain concepts (e.g. the 'steam' on the window is condensation)</p> <p>I know that evaporation and condensation are reversible changes</p>

Electricity

<b>Skills: I can:</b>	
Identify and name appliances that require electricity to function.	Construct a series circuit.
Identify and name the components in a series circuit.	Draw a circuit diagram using electronic circuit symbols.
Predict and test whether a lamp will light within a circuit.	

<b>Knowledge I know:</b>	
That common appliances need electricity to function.	A circuit needs to be a complete loop to conduct electricity.
The names of the different parts of a circuit.	What is needed (equipment) to complete a circuit.
A switch will open and close a circuit and can test this with a bulb.	There are common conductors and insulators and that metals can be good conductors.



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**Electricity (Greater Depth)**

<p>Sc4/4.2b construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p>	<p>Sc4/4.2c 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</p>	<p>Sc4/4.2d recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p>	<p>Sc4/4.2e recognise some common conductors and insulators, and associate metals with being good conductors.</p>
<p>I can draw a circuit diagram using electronic circuit symbols.</p>	<p>I can recognise that if a circuit is complete then there may be other reasons why the bulb will not light (e.g. battery is flat or bulb has blown)</p>	<p>I recognise that switches exist in many appliances</p> <p>I understand why a switch is needed</p> <p>I can explain how a switch works</p>	<p>I can explain why/when you might need good conductors</p> <p>I can explain why/when you might need good insulators</p> <p>I can explain why electrical wires are encased in plastic</p> <p>I know that all metals are conductors but that some conduct better than others</p> <p>I know what a 'short' circuit is</p> <p>I can explain why electricity is dangerous</p> <p>I know that water and electricity are a dangerous combination and can use this to explain why there are not sockets or switches in UK bathrooms</p>