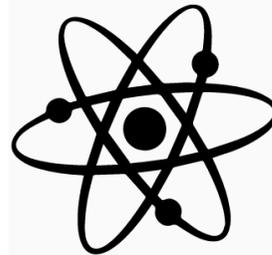
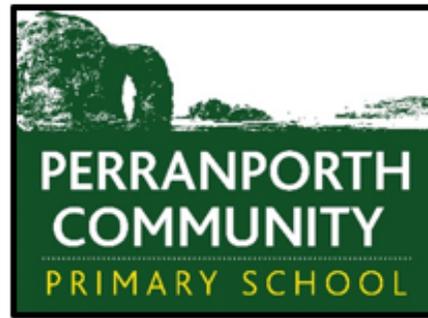




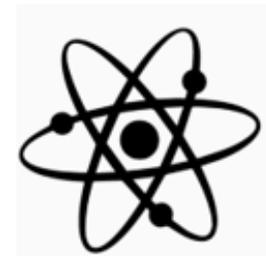
Science at Perranporth School

Developed by Stuart Harris, with support of the staff at Perranporth Community Primary School, 2021





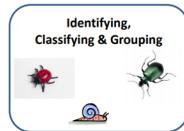
*Science...making sense of
the world we live in.*



Science at Perranporth

Intent

Science is all around us in everyday life and is, therefore, used to excite pupils' curiosity about the phenomena and events that occur in the world around them. Science teaching at Perranporth also focuses on Working Scientifically using five key investigation types (see images below). This focal point of science has been developed to increase children's ability to make predictions about scientific concepts and evaluate and amend them through analysing and interpreting data collected independently, with adult modelling as a guide. This enables our pupils to question and discuss science-based issues that may affect their own lives and the future of the world too! Our curriculum is designed so that children can use science learning to 'make sense of the world we live in.'



Implementation

Science is taught in combination with our Perranporth inspired curriculum projects, to ensure every child has access to the statutory requirements of the national curriculum. Where possible, Science is taught within and as part of our chosen projects, but if this is not feasible, teachers plan stand alone science lessons to ensure coverage of the expected objectives across the school. Science is taught weekly in each class with clear references made to the class topic when possible. The weekly sessions ensure the statutory coverage of science knowledge and skills for children across both key stages. In the Spring term, to coincide with Perranporth's Science Week, all classes complete Science inspired learning through science specific topics.

To further embed science learning for each child, each class participates in a whole school 'Working Scientifically' (WS), activity session at least once a term, to identify and assess children and moderate WS across key stages and the school as a whole. These activities are planned on a yearly timetable and address the three key areas of WS: *planning, doing and reviewing/concluding*. Evidence of these sessions can be found in the WS floor books in each Key Stage.

Impact

Focusing on a range of investigation types allows Perranporth children to develop excellent problem solving skills. These will be regularly referenced and supported through our termly, whole school WS investigation days and will also support our maths mastery teaching. Perranporth pupils will be knowledge rich and have an increasing ability to explain scientific concepts due to our core focus of scientific vocabulary and use of images to support their understanding. Furthermore, we believe our pupils will enjoy science learning and finding out about the world in which we live, ensuring they see science as not only an engaging lesson, but also as a potential future career.

Perranporth School recognises that the science curriculum is **vocabulary rich** and planned **exposure to** and **use of this vocabulary** impacts upon a child's scientific understanding and enjoyment. As a result, wherever possible, scientific vocabulary in our school is celebrated and **displayed clearly** with supportive **symbols or images**. Examples can be seen around school and are also shown below...



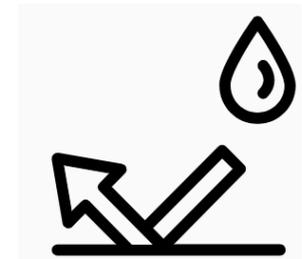
Push



Prehistoric



Absorbent



Waterproof

Perranporth School also ensures children have access to a range of investigation types so that they can investigate and work scientifically in the most efficient way. Our investigation types are broken down into five main types, as shown below, and are explained in more detail on the next few pages. Teachers signpost investigation types using an image from those posted below. Over the course of an academic year, children are exposed to a range of investigation types.

Observing over time



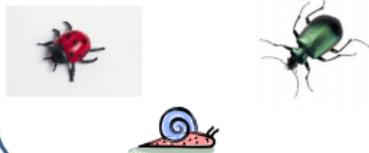
Pattern Seeking



Research Using Secondary Sources



Identifying, Classifying & Grouping



Comparative & Fair Testing

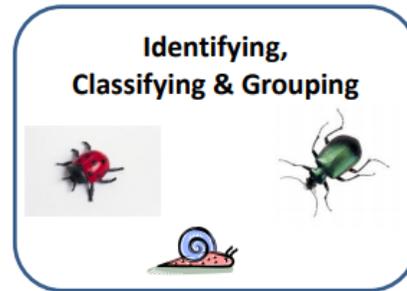


Observing over time



Making careful observations of objects or events and how they change over time. Example questions shown below:

- How do habitats change during the year?
- What happens to ice when it is heated up?
- How does exercise affect our pulse rates?
- How do our shadows change during a day?
- How does the shape of the moon change during a month?
- What happens to a puddle on a hot day?
- How does mould grow on different foods?



Identifying features that allow things to be organised into distinct groups. Recognise things as part of a specific group and name them. Example questions shown below:

- Is it a living thing or not?
- Can we identify everyone in our class by their fingerprints?
- Can we use keys to identify plants and animals?
- Which materials can be recycled?
- Can we identify which objects will float and which will sink?
- Can you sort the toys by how they are powered?

Pattern Seeking



Observing and recording natural phenomena, carrying out surveys or collecting data from secondary sources. Then looking to identify patterns in the data. Example questions shown below:

- Do taller plants grow from bigger seeds?
- Do tall people have bigger feet?
- Are older children in our class taller?
- Do different insects live in different places?
- Which months are wettest?
- Do bigger musical instruments always make deeper sounds?
- Are all magnetic objects good electrical conductors?

Comparative & Fair Testing



Observing or measuring the effect of changing one variable whilst keeping other potential variables constant. Example questions shown below:

- Which material makes the best parachutes?
- Which surface provides the least friction?
- How does the temperature of water affect the rate at which sugar dissolves?
- Which paper towel soaks up most water?
- What does a plant need to grow?
- How can we make the light bulb brighter?

Research Using Secondary Sources



Gathering and analysing scientific findings to answer a question or to provide background information to help explain observed events. Research can also show how scientists' ideas have changed over time as new evidence has been found. Example questions found below:

- What do different animals eat?
- How do we digest our food?
- How does blood travel round our bodies?
- Why does the moon change every night?
- How does an aeroplane fly?
- Where does glass come from and when did we start using it?
- What will happen to Earth as the sun dies?

Science Rolling Action Plan and checklist

Month	Task 1	Task 2	Task 3
September	Resource check and update	Review T and L with staff — changes/updates needed?	
October	Book Look 1	Pupil conferencing 1	Check/update communal science display
November	Learning Walk/Flash visit		Prep for whole school WS check
December	Data check	Data check follow up	Run and evaluate whole school WS check
January	Book Look 2	Pupil Conferencing 2 (identified)	Check/update communal sci-
February	Science Week Prep	Learning Walk/Flash visit	Prep for whole school WS
March	Science Week activities	Resource check and update	Run and evaluate whole school WS check
April	Data check	Data check follow up	
May	Learning Walk/Flash visit (identified from previous visits)	Pupil conferencing 3 (identified from data check)	Check/update communal science display
June	Book Look 3		Prep for whole school WS check
July	Resource check and update	Data check and follow up	Run and evaluate whole school WS check

Working Scientifically Assessment and Moderation Check Schedule

	Autumn	Spring	Summer
	Planning	Doing	Reviewing/Concluding
CYCLE 1	Ice cube observation - children given ice cube - Possible ideas - What will happen to the ice? What material(s) will stop them melting quickest? Where will the ice last longest?	Sorting sweets/objects - using Liquorice Allsorts (KS1) and assigning habitat spaces (KS2), children to work out a way of sorting the sweets/plants/insects - colour, size, shape, (taste!) - focus on how they sort, the language they use and how they present the information.	What material makes the best boat? Children given this question and junk model equipment with a range of materials that will/won't float. Focus on what they find out when testing their 'boats' and if they change their design/materials as a result. At UKS2, children asked to produce the fastest boat, or the boat that will take the most weight...
CYCLE 2	Balloon rocket. How high can yours fly? P:\SCIENCE\Working scientifically investigation ideas\WS idea - rocket investigation Science Fun at Home 13 Rocket Science.pdf	Paper aeroplane - design the plane that flies the longest/furthest (specify to KS1/LKS2) but allow UKS2 to develop their own investigation. How do they test? How do they know their results are valid?	Liquid viscosity investigation—we will need a variety of liquids... P:\SCIENCE\Working scientifically investigation ideas\WS investigation idea summer cycle 2 Science Fun at Home 15 Liquid Science.pdf
CYCLE 3	Sounds of science - P:\SCIENCE\Working scientifically investigation ideas\WS idea - sounds of science Science Fun at Home 12 Sounds of Science.pdf	Density of liquid/objects - float/sink - P:\SCIENCE\Working scientifically investigation ideas\WS float or sink - density Science Fun at Home 8 Water.pdf	Dissolve or not? P:\SCIENCE\Working scientifically investigation ideas\WS Dissolving - twinkl.pdf
CYCLE 4	Sycamore seed inspired investigation - P:\SCIENCE\Working scientifically investigation ideas\WS idea - sycamore seeds - 2. Spinning Science.pdf P:\SCIENCE\Working scientifically investigation ideas\WS idea - sycamore seeds - 2. Spinning Science - twinkl.pdf	Magnet Magic - P:\SCIENCE\Working scientifically investigation ideas\WS idea - Magnetic superhero twinkl.pdf	Save the Egg - P:\SCIENCE\Working scientifically investigation ideas\WS idea - Egg Drop Science Experiment - twinkl.pdf
CYCLE 5	Ewww, Mould! - P:\SCIENCE\Working scientifically investigation ideas\WS idea - Mould - mouldy-bread-experiment - twinkl.pdf	Keep me dry! P:\SCIENCE\Working scientifically investigation ideas\WS idea - waterproof shelters - Take It Outside Spring Stem Making A Waterproof Shelter Activity - twinkl.pdf	Chase the shadow - P:\SCIENCE\Working scientifically investigation ideas\WS idea - shadows - twinkl powerpoint.pptx
CYCLE 6	Which way, wind? P:\SCIENCE\Working scientifically investigation ideas\WS idea - planning - weather vanes - which direction is the wind and what affect does that have - temp, rain, etc....pdf	What materials make the best insulators and why?	How far can you sling it? P:\SCIENCE\Working scientifically investigation ideas\WS idea - catapults - need lolly sticks, elastic bands, spoons....pdf

The following pages identify the year group specific objectives and topic areas taught at Perranporth School in Key Stage 1 and 2. Working scientifically objectives and expected vocabulary progression are also shown in this section.

EYFS 'science' learning is identified separately in their UTW Planning, using the Ogden Trust Toolkit - Perranporth recognises the vital, practical platform this year gives our children in their knowledge and understanding of the world we live in.

For detailed, specific topic coverage and planning, please see our separate Science Schemes of Work for each year group.

KEY STAGE 1

Year 1

Animals, including humans



Everyday Materials



Animals, including humans



Plants



Everyday Materials



(Part one)

- 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

(Part one)

- 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

(Part two)

- 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.

- 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 flowering plants, including trees.

(Part two)

- 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

Seasonal Changes



Covered termly through the year.

→

- observe changes across the four seasons.
- observe and describe weather associated with the seasons and how day length varies.

→

⇒ Identifying and classifying

⇒ Using their observations and ideas to suggest answers to questions.

⇒ Identifying and classifying

⇒ Perform simple tests

⇒ Gather and record data to answer questions.

⇒ Identifying and classifying

⇒ Using their observations and ideas to suggest answers to questions.

⇒ Observing closely, using simple equipment

⇒ Perform simple tests

⇒ Gather and record data ...

↑

⇒ Asking simple questions, knowing they can be answered in different ways.

⇒ Gather and record data to help answer questions.

⇒ Identifying and classifying

⇒ Perform simple tests

⇒ Gather and record data to answer questions.

Animals, including humans



Everyday Materials



Animals, including humans



Plants



Everyday Materials



T1	T2	T3	T4	T5	T6

- Ask simple questions and recognise that they can be answered in different ways
 - Use simple equipment to observe closely
 - Perform simple tests
 - Identify and classify
- Use observations and ideas to suggest answers to questions
 - Gather and record data to help in answering questions

Seasonal Changes



Covered termly through the year.



- observe changes across the four seasons.
- observe and describe weather associated with the seasons and how day length varies.



KEY STAGE 1

Year 1

Scientific Vocabulary

Animals, including humans



Everyday Materials



Animals, including humans



Plants



Everyday Materials



Common animals
 Fish Amphibians
 Reptiles Birds
 Mammals Pets

Carnivores
 Meat Cat Dog
 Lion Tiger Fox
 Shark
 Killer Whale
 Eagle Hawk
 Snake
 Tyrannosaurus Rex

Herbivores
 Plants Cow
 Horse Mice
 Elephant Deer

Omnivores
 Meat and Plants
 Badger Human
 Bear Chicken

Material
 Wood plastic
 Glass metal
 Water rock
 Brick paper
 Fabrics elastic
 Foil

Properties
 Hard soft
 Stretchy stiff
 Shiny dull
 Rough smooth
 Bendy
 Not bendy
 Waterproof
 Not waterproof
 Absorbent
 Not absorbent

Compare
 Head Leg
 Eyes Neck
 Knees Hair
 Arms Face
 Mouth Elbows
 Ears Teeth

Senses
 Tongue taste
 Nose smell
 Eyes vision
 Skin touch
 Ears hearing

Common
 Wild plants
 Garden plants
 Deciduous
 Evergreen

Tree
 Deciduous
 Evergreen
 Trunk
 Branches
 Leaf
 Root

Plant
 Leaf leaves
 Root bud
 Flowers blossom
 Petals root
 Stem

Material
 Wood plastic
 Glass metal
 Water rock
 Brick paper
 Fabrics elastic
 Foil

Properties
 Hard soft
 Stretchy stiff
 Shiny dull
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 Not bendy
 Waterproof
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 Not absorbent

Seasonal Changes



Covered termly through the year.



Season	Autumn	Winter	Spring	Summer	Day	Daytime	Night	Night-time
Weather	Wind rain	snow hail	Sleet fog	Sun hot	Warm	cold		



KEY STAGE 1

Year 2

Everyday uses of materials



Everyday uses of materials



Living things and their habitats



Living things and their habitats



Plants



Animals, including humans



FULL TERM TOPIC

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.

- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.

- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

(Part One)

- 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 .

(Part two)

- 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.

- 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.

- notice that animals, including humans, have offspring which grow into adults
- find out about and 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.

⇒ **Identifying and classifying**

⇒ **Using their observations and ideas to suggest answers to questions.**

⇒ **Perform simple tests**

⇒ **Identify and classify**

⇒ **Using their observations and ideas to suggest answers to questions.**

⇒ **Perform simple tests**

⇒ **Identify and classify**

⇒ **Ask simple questions, recognising they can be answered in different ways**

⇒ **Gather and record data to answer questions**

⇒ **Identify and classify**

⇒ **Ask simple questions, recognising they can be answered in different ways**

⇒ **Gather and record data to answer questions**

⇒ **Perform simple tests**

⇒ **Observe closely, using simple equipment.**

⇒ **Gather and record data to answer questions**

⇒ **Ask simple questions, recognising they can be answered in different ways**

⇒ **Gather and record data to answer questions**

⇒ **Perform simple tests**

KEY STAGE 1

Year 2

Scientific Vocabulary

Everyday uses of materials



Everyday uses of materials



Living things and their habitats



Living things and their habitats



Plants



Animals, including humans



FULL TERM TOPIC

Materials

Wood metal plastic
Glass brick rock
Paper cardboard

Wood

Matches floors
telegraph poles tables chairs

Metal

Coins cans cars table legs
Knives forks spoons

Plastic

Spoons packaging single use
Recycling waste

John Dunlop

Rubber

Charles Macintosh

Waterproof fabric

John McAdam

macadamisation

Part one

Part two

Living Dead Never alive
Habitats Micro-habitats logs
Food Food chain
Sun Water air
Grass
Cow Human
Alive Healthy

Shelter Leaf litter Stony path
Under bushes Logs Seashore
Ocean Woodland Rainforest

Conditions

Hot warm cold
Dry damp wet
Bright shade
Dark

Common

Wild plants
Garden plants
Deciduous
Evergreen

Tree

Deciduous
Evergreen
Trunk
Branches
Leaf
Root

Plant

Leaf leaves
Root bud
Flowers blossom
Petals root
Stem

Fruit
Vegetables
Bulb
Seed

Suitable Conditions

Water
Light
Temperature
Healthy
Grow
Germinate
Reproduce

Survival

Water food
Air exercise
Hygiene

Offspring

Growth

Adults

Nutrition

Reproduce

Lifecycles

Egg chick chicken

Egg caterpillar

Pupa butterfly

Spaw tadpole

Frog

Lamb sheep

Baby toddler

Child teenager

Adult

Forces and magnets



- compare how things move on different surfaces
- observe how magnets attract or repel each other and attract some materials and not others.
- 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
- Notice that some forces need contact between two objects but magnetic forces can act at a distance
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.

- ⇒ asking relevant questions and using different types of scientific enquiries to answer them
- ⇒ setting up simple practical enquiries, comparative and fair tests
- ⇒ making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment
- ⇒ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- ⇒ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- ⇒ Using straightforward scientific evidence to answer questions or to support their findings
- ⇒ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Rocks



- 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.

- ⇒ 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

Animals, including humans



FULL TERM TOPIC

- 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.
- 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.

- ⇒ 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
- ⇒ identifying differences, similarities or changes related to simple scientific ideas and processes

Light



- recognise that they need 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 their eyes
- recognise that shadows are formed when the light from a light source is blocked by a solid object
- find patterns in the way that the size of shadows change

- ⇒ asking relevant questions and using different types of scientific enquiries to answer them
- ⇒ setting up simple practical enquiries, comparative and fair tests
- ⇒ Using straightforward scientific evidence to answer questions or to support their findings

Plants



- 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
- 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.

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Forces and magnets 

Force
 Push pull
 Repel
 Magnet
 Attract repel
 Magnetic
 Poles
 North South
 Opposites
 Surface(s)
 Air Resistance
 Gravity
 Friction
 Metal
 Non-metal
 hovercraft

Rocks 

Appearance
 Properties
 Grains crystals
 Hard soft
 Shiny dull
 Rough smooth
 Absorbent non absorbent
 Rock
 Soils
 Organic matter
 Fossils
 Sedimentary
 Human Made
 Natural
 Igneous
 Metamorphic

Animals, including humans 

FULL TERM TOPIC

Nutrition
 Nutrients carbohydrates Protein fats
 fibre water Vitamins minerals

Skeleton
 Support protection movement
 Endoskeleton exoskeleton
 Hydrostatic skeleton
 Vertebrate invertebrate bones

Joints
 Ball joint socket joint hinge joint
 Gliding joint

Muscles
 relax contract pairs

Animals, including hu- 

Light 

Light See
 Blocked Dark
 Reflect
 Surface(s)
 Natural
 Star
 Sun
 Moon
 Artificial
 Torch
 Candle
 Lamp
 Shadow block
 Sunlight
 Dangerous
 Protect eyes

Plants 

Common
 Wild plants
 Garden plants
 Deciduous
 Evergreen

Tree
 Deciduous
 Evergreen
 Trunk
 Branches
 Leaf
 Root

Plant
 Leaf leaves
 Root bud
 Flowers blossom
 Petals root
 Stem

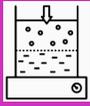
Fruit
 Vegetables
 Bulb
 Seed

Suitable Conditions
 Water
 Light
 Temperature
 Healthy
 Grow
 Germinate
 Reproduce

LOWER KEY STAGE 2

Year 4

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

- ⇒ asking relevant questions and using different types of scientific enquiries to answer them
- ⇒ setting up simple practical enquiries, comparative and fair tests
- ⇒ making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment
- ⇒ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
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- ⇒ Using straightforward scientific evidence to answer questions or to support their findings
- ⇒ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

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 associate metals with being good conductors

- ⇒ asking relevant questions and using different types of scientific enquiries to answer them
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- ⇒ making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment
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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

- ⇒ asking relevant questions and using different types of scientific enquiries to answer them
- ⇒ 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

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.

- ⇒ asking relevant questions and using different types of scientific enquiries to answer them
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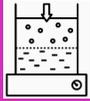
Living things and their habitats



- 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.

- ⇒ asking relevant questions and using different types of scientific enquiries to answer them
- ⇒ 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

States of matter



States
 Solid liquid
 Gas

Processes
 Melt freeze
 Evaporate
 Condense
 Heat heated
 Cool cooled
 Evaporation
 Condensation
 Melting
 Warm cool
 Solidify

Water Cycle
 Changing state
 Container (shape)
 Thermometer
 Degrees Celsius (°C)
 Measurement

Electricity



Appliances
 Mains powered
 Battery powered
 Electricity
 Electrical circuit
 Electrical safety
 Danger
 Signs

Components
 Cell
 Wire
 Bulb
 Buzzer

Switches
 Open closed

Insulators
 Wood rubber
 Plastic glass

Conductors
 Metal Water

Animals, including humans



Human Digestive System
 Digestion mouth
 Tongue - mixes moistens
 Saliva
 Oesophagus transports
 Stomach acid
 Enzymes
 Small intestine absorbs water
 Vitamins
 Large intestine compacts
 Colon

Teeth
 Incisors cutting slicing
 Canines ripping tearing
 Molars grinding chewing
 Floss brush

Food Chain
 Sun
 Primary secondary
 Producers
 consumers
 Prey
 Predators
 Carnivore
 Herbivore
 Omnivore

Sound



FULL TERM TOPIC

Vibrate vibration vibrating

Air (or other medium)

Travel distance volume pitch

Ear hear sound

Insulate conduct

Faint fainter loud louder

Instruments
 String percussion woodwind
 Brass

Sound



Living things and their habitats



Environment
 Flowering
 Non-flowering
 Plants
 Animals
 Environment
 Dangers!

Vertebrates
 Fish amphibians
 Reptiles birds
 Mammals (humans)

Invertebrates
 Snails slugs worms
 Spiders insects

Plants
 Flowering plants (including grasses)
 Non-flowering plants (including mosses and ferns)

Human Impact
Positive
 Nature reserves
 Ecological planning
 Wild gardens and garden ponds

Negative
 Population development
 Litter deforestation
 Single use plastics
 Throw away culture

UPPER KEY STAGE 2

Year 5

Properties and changes of materials



(Part one)

- 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
- know 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

- ⇒ **planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary**
- ⇒ **taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate**
- ⇒ **recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs**
- ⇒ **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.**
- ⇒ **using test results to make predictions to set up further comparative and fair tests.**

Properties and changes of materials



(Part two)

- 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.

Earth and Space



- 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

- ⇒ **recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs**
- ⇒ **identifying scientific evidence that has been used to support or refute ideas or arguments**

Living things and their habitats



- 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

- ⇒ **recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs**
- ⇒ **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.**

Forces



- 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.

- ⇒ **planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary**
- ⇒ **taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate**
- ⇒ **recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs**
- ⇒ **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.**
- ⇒ **using test results to make predictions to set up further comparative and fair tests.**

Animals, including humans



- describe the changes as humans develop to old age

- ⇒ **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.**

Properties and changes of materials



Properties and changes of materials



Earth and Space



Living things and their habitats



Forces



Animals, including humans



	T1	T2	T3	T4	T5	T6
<ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 						
<ul style="list-style-type: none"> Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate 						
<ul style="list-style-type: none"> Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 						
<ul style="list-style-type: none"> Use test results to make predictions to set up further comparative and fair tests 						
<ul style="list-style-type: none"> Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms, such as displays and other presentations. 						
<ul style="list-style-type: none"> Identify scientific evidence that has been used to support or refute ideas or arguments 						

Properties and changes of materials



Properties and changes of materials



Earth and Space



Living things and their habitats



Forces



Animals, including humans



Part one	Part two
properties hardness solubility transparency electrical conductor thermal conductor response to magnets dissolve solution separate separating solids liquids gases evaporating reversible changes dissolving mixing evaporation filtering sieving melting irreversible new material burning rusting magnetism electricity chemists Spencer Silver Ruth Benerito quantitative measurements conductivity insulation chemical	

Earth	Sun
Moon	
Moons	Planets
Stars	
Solar System	
Mercury	Venus
Mars	Jupiter
Saturn	Uranus
Neptune	Pluto*
Rotate	Spin
Orbit	Axis
Tilt	spherical
Heliocentric	
Geocentric	
Day	Night
Hemisphere	
Season	
Aristotle	Ptolemy
Galileo	Copernicus
Brahe	Alhazen

life cycles mammal amphibian insect bird
life process of reproduction plants animals vegetable garden flower border
animal naturalists David Attenborough
animal behaviourist Jane Goodall
reproduction plants: sexual, asexual animals: sexual
lifecycles around the world rainforest oceans desert prehistoric similarities differences

Gravity
Air resistance
Water resistance
Friction
Surface force
Effect move
Accelerate
Decelerate stop
Change direction
Brake
Mechanism
Pulley
Gear
Spring
Theory of gravitation
Galileo Galilei
Isaac Newton

puberty
life cycle
gestation
growth
reproduce
foetus
baby
fertilisation
toddler
child
teenager
adult
old age
life expectancy
adolescence
adulthood
early adulthood
middle adulthood
late adulthood
childhood

UPPER KEY STAGE 2

Year 6

Electricity



- 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 in a circuit diagram

⇒ **planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary**

⇒ **taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate**

⇒ **recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs**

⇒ **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.**

⇒ **using test results to make predictions to set up further comparative and fair tests.**

Evolution and inheritance



- 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
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

⇒ **recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs**

⇒ **identifying scientific evidence that has been used to support or refute ideas or arguments**

Animals, including humans



- 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

⇒ **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.**

⇒ **identifying scientific evidence that has been used to support or refute ideas or arguments**

Light



- 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.

⇒ **planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary**

⇒ **taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate**

⇒ **recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs**

⇒ **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.**

⇒ **using test results to make predictions to set up further comparative and fair tests.**

Living things and their habitats



- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
- give reasons for classifying plants and animals based on specific characteristics

⇒ **recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs**

⇒ **identifying scientific evidence that has been used to support or refute ideas or arguments**

Transition projects



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⇒

UPPER KEY STAGE 2

Year 6

Scientific Vocabulary

Electricity



voltage
brightness
volume
switches
danger
series circuit
working safely
with
electricity
electrical safety
sign
circuit diagram
recognised
symbols
Components
switch
bulb
buzzer
motor

Problem solve
Electrical insulator
Electrical conductor

Evolution and inheritance



evolution
adaption
inherited traits
adaptive traits
natural selection
inheritance
Charles Darwin
Alfred Wallace
DNA
genes
variation
parent
offspring
fossil
environment
habitat
fossilisation
plants
animals
living things

Animals, including humans



internal organs
heart
lungs
liver
kidney
brain
skeletal
skeleton
muscle
muscular
digest
digestion
digestive
circulatory system
heart
blood vessels
blood
impact
diet
exercise
drugs
lifestyle
nutrients
water
damage
drugs
alcohol
substances

Light



light
travels
straight
reflect
reflection
Refract
Refraction
light source
object
shadows
mirrors
periscope
rainbow
filters

Living things and their habitats



classify
compare
Linnaean
Carl Linnaeus
classification
domain
kingdom
phylum
class
order
family
genus
species
characteristics
vertebrates
invertebrates
microorganisms
organism
flowering
non-flowering

Transition projects



Science Assessment

Teachers at Perranporth use the whole school, termly Working Scientifically (WS) investigations as a base judgement of their children's WS attainment, alongside in-class investigations.

Teachers also use the whole school assessment system, Target Tracker, to identify those children Working Below, Working At, Working Above and with Mastery of Age Expected Expectations.

Useful websites

<https://www.stem.org.uk/primary-science>

<https://explorify.wellcome.ac.uk/en/activities>

<https://pstt.org.uk/resources>

<https://edu.rsc.org/resources/curriculum-support/primary-curriculum-topics>

<https://www.ogdentrust.com/resources-cpd/resources>

BBC Bitesize:

<https://www.bbc.co.uk/bitesize/subjects/z6svr82>

<https://www.bbc.co.uk/bitesize/subjects/z2pfb9q>

<https://www.nexus-education.com/find-help-support-primary-science/>

<https://www.pzaz.online/>