

St. Peter's CE Primary, Farnworth



'Learn, Sparkle & Shine.'

SCIENCE CURRICULUM: YEAR 1
2025-2026

Psalm 111:2: "Great are the works of the Lord, studied by all who delight in them".



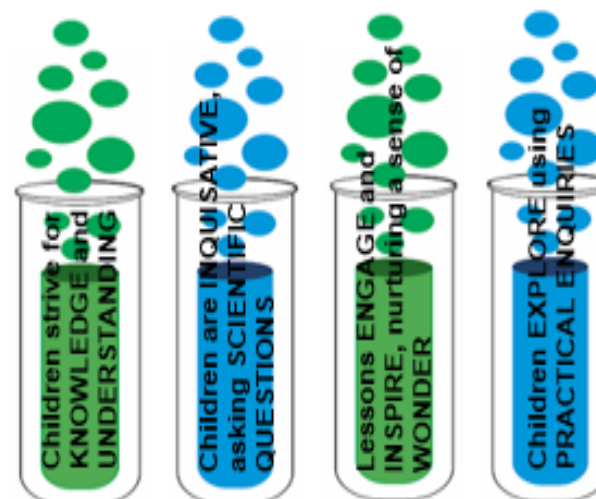
St Peter's C of E Primary School

Our Vision...

- Children at St Peter's **understand** what Science is, what it is for and why we do it. They acquire **knowledge capital**.
- They are **inquisitive**, and they are encouraged to **question** and **investigate**.
- They can explain the importance of science in the world. They have **aspiration** for the future.
- Children demonstrate an **enjoyment** of Science, being able to **talk** and **discuss** their thoughts, feelings and opinions using scientific **vocabulary**.
- The use of explicit **modelling** of concepts features prominently within **progressive** sequences of lessons.
- The children **engage** in science and **demonstrate working scientifically skills** through the **five strands of enquiry**.
- At St Peter's it is understood that **working scientifically** skills are taught alongside the **knowledge content** of the curriculum.

Principles...

Science 'Learns, Sparkles and Shines' at St. Peter's when...



Proverbs 18:15: "An intelligent heart acquires knowledge, and the ear of the wise seeks knowledge".

Curriculum Overview:

	Autumn 1 (Note: to be revisited each term – Autumn, Spring, Summer)	Autumn 2 – Spring 1	Spring 2 – Summer 1	Summer 2
Unit of Study and Key objectives (Substantive Knowledge)	PHYSICS: Seasonal Changes - Observe changes across the 4 seasons. Revisit throughout the year-spring and summer terms. - Observe and describe weather associated with the seasons and how day length varies.	BIOLOGY: Animals, Including Humans (Senses) - Identify and name a variety of common animals' incl fish amphibians, retiles, birds, mammals. - Identify and name a variety of common animals that are carnivores, herbivores and omnivores. - Describe and compare the structure of a variety of common animals. - Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. - Animals to study: <i>Snakes, lizard, gold fish, clown fish, horse, humans, chicken, seagull, frog, salamander.</i> <i>Tiger, hedgehog, cow, caterpillar, pig fox.</i>	CHEMISTRY: Everyday Materials - 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 material on the basis of their simple physical properties.	BIOLOGY: Plants - 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. - Plants to study: <i>daisy, daffodil, buttercup, sunflower, dandelion, bean, sycamore and cherry tree, ash, silver birch, elderflower, holly, fir and pine trees.</i>

Definitions within Science:

Science: the systematic study of the structure and behaviour of the physical and natural world through observation, experimentation and the testing of theories against evidence obtained.

Physics: the science of matter, energy and their interactions.

Chemistry: the science of explaining the composition, structure and properties of substances and the transformations they undergo.

Biology: the science explaining living organisms and their vital processes.

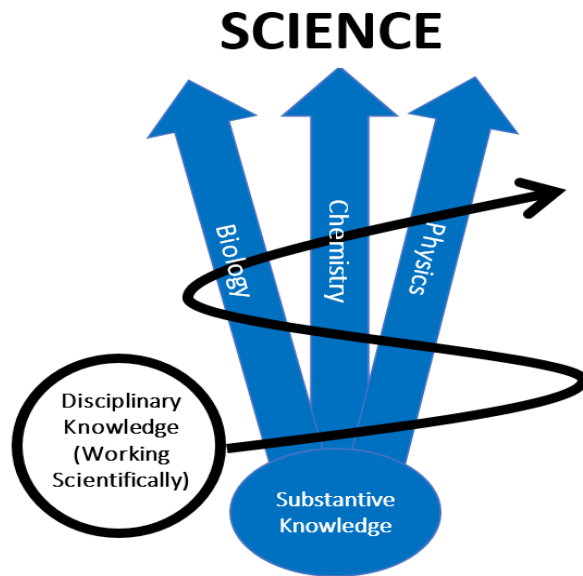
Geology*: the science that deals with the Earth's physical structure and substance, its history, and the processes that act on it.

Working Scientifically: the understanding of the nature, processes and methods of science. Includes the five strands of science enquiry: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing; and researching using secondary sources.

Scientific Enquiry: the processes of studying and investigating scientific ideas using the five strands of enquiry.

*Note: Geology is not identified as a separate strand of Science within the National Curriculum (2014). Geology is taught as part of the subject of Geography, but has significant Science overlap (Examples: the water cycle, rock formation etc.).

Disciplinary Knowledge: Key Stage 1



Working scientifically is an integral strand of scientific learning within the Primary Science national Curriculum (2014). It is integrated throughout the wider substantive knowledge strands of **Biology**, **Chemistry** and **Physics**, rather than being discrete and separate from them. The Curriculum at St. Peter's CE Primary School reflects this.

How we 'work scientifically':

Asking questions

Asking questions that can be answered using a scientific enquiry.



Making predictions

Using prior knowledge to suggest what will happen in an enquiry.



Setting up tests

Deciding on the method and equipment to use to carry out an enquiry.



Observing and measuring

Using senses and measuring equipment to make observations about the enquiry.



Recording data

Using tables, drawings and other means to note observations and measurements.



Interpreting and communicating results

Using information from the data to say what you found out.



Evaluating

Reflecting on the success of the enquiry approach and identifying further questions for enquiry.



Working Scientifically Objectives (Y1-2):

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely, using simple equipment.
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.
- Gathering and recording data to help in answering questions.

The National Curriculum: Non-Statutory Guidance

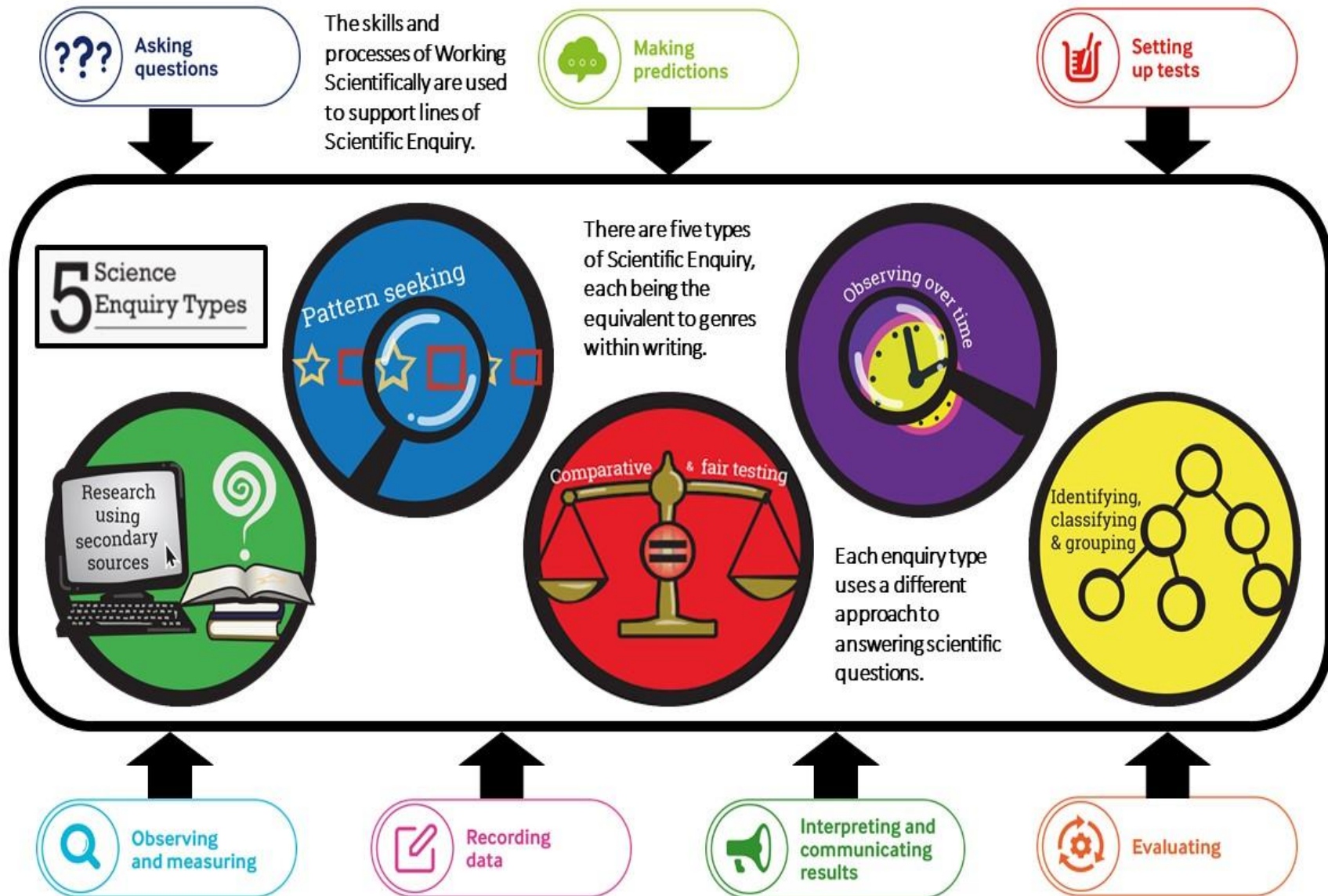
End of EYFS (YR)	Key Stage 1 (Y1/2)	Lower Key Stage 2 (Y3/4)	Upper Key Stage 2 (Y5/6)
Understanding the World ELG: The natural World Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	The principal focus of science teaching in Key Stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly - constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. 'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.	The principal focus of science teaching in Lower Key Stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.	The principal focus of science teaching in Upper Key Stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At Upper Key Stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. 'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read, spell and pronounce scientific vocabulary correctly.

Year 1 Working Scientifically Objectives Breakdown:

	Plan		Do		Record	Review		
Year1	Asking questions	Plan an enquiry	Making observations	Take measurements/using equipment	Gathering and presenting Evidence	Drawing conclusions	Explaining Evidence	Evaluating outcomes
	With support children can recognise what a question is i.e. Question vs statement. Beginning to develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions.	The children begin to answer questions developed with the teacher often through a scenario. The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.	Explore the world around them. Make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. Begin to take measurements, initially by comparisons, then using non-standard units.	With support, use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. (5 types of enquiry.).	Record observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. Record their measurements in a way appropriate to the year group. Eg. Simple table or block graph. Classify using simple prepared tables and sorting rings.	Use their experiences of the world around them to suggest appropriate answers to questions.	They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources. Explaining recognise 'biggest and smallest', 'best and worst' etc. from their data.	With teacher support, review their work and recognise some difficulties they encountered if any.

Scientific Enquiry Types:

There are five types of scientific enquiry, which are used to support the scientific process. There should be a balance of enquiry types used within the Science Curriculum. **Note:** 'Comparative and Fair Testing' does not feature heavily within KS1 Science, with the focus primarily being on the other four enquiry types.



Key Vocabulary (Based on PLAN Documentation):

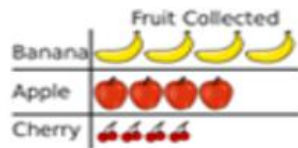
Year 1			
Physics: Seasonal Change	Biology: Animals, Including Humans (Senses)	Chemistry: Everyday Materials	Biology: Plants
season, spring, summer, autumn, winter, day, night, weather Additional: cold, sleet, hail, snow, weather forecast, weather symbols	mammal, fish, reptile, bird, amphibian, herbivore, carnivore, omnivore, nocturnal, human, pet, senses	rough, property, smooth, material, object, hard, soft, stretchy, shiny, dull, waterproof, bendy, stiff, absorbent	plant, deciduous, evergreen, trunk, root, branch, twig, stem, seed, blossom, wild plants, garden plants, weeds, flowers, fruit, bulb, leaf / leaves

Mathematics within Science: Measuring, Recording and Representing Data

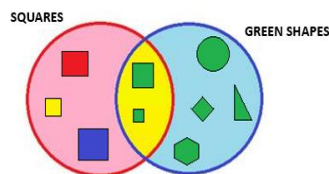
'... Scientific process is infused with maths; maths changes the look of science in a way that one cannot separate it from the other. So if maths is the language of science, then is science the reason for maths?' (Primary Science 124 Sept/Oct 2012)

Maths is an integral aspect of science as it is necessary in order to provide empirical evidence to support or refute scientific questions. Therefore, working scientifically and the scientific process requires children to be able to apply mathematical skills and concepts learned within the Primary Mathematics National Curriculum. Scientific investigation will require the use of measures (length, mass, volume, angles, time etc.) and subsequently, will require the representation of recorded data in the form of tables and charts/graphs. The type of graph required depends upon the type of data compiled: discrete or continuous numerical data. This in turn influences the choice of representation required (discrete: tally, bar, pie chart) or continuous (line, scatter graph). The selection of data representation should be in line with their age related expectations in Maths (Statistics).

Discrete Data Representation



Favorite Pets		
Pet	Tally Marks	Number
		10
		4
		6



Pictogram: Number of things shown as pictures.

Tally Chart: A way of recording the number of things seen using lines.

Venn Diagram: Used to sort according to properties.

Continuous Data Representation

Water temperature (°C)	Time taken for sugar to dissolve (seconds)
20	55
30	41
40	27

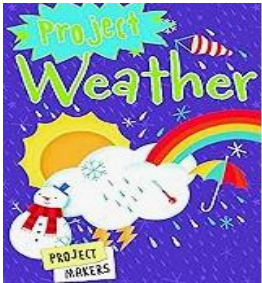
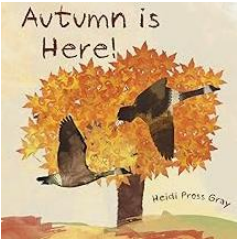
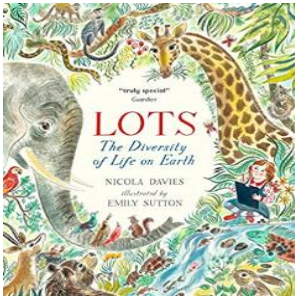
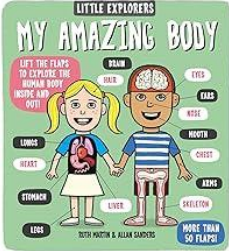
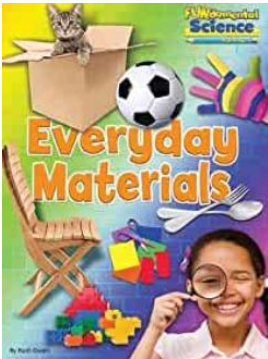
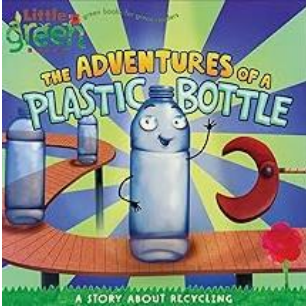
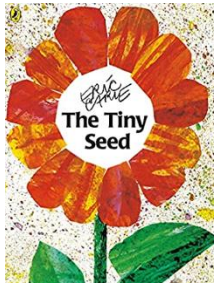
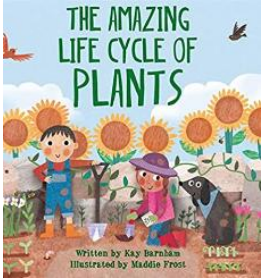
Table: Boxes where data (numbers) can be looked at.

Reading within Science:

Reading is a vital delivery mechanism for the teaching and learning of Science. Consequently, it is fully integrated into the Science Curriculum, using key Reading skills / strands based upon 'Are You Really Reading?' (Identified on the unit overviews below). **Note:** the incorporation of reading within Science is to consolidate practicing those strands, whilst using them to deliver Science objectives. Therefore, the focus remains scientific.

All units of study have been allocated a key text (linked to the non-fiction reading spine – Science). These are as follow:

Key Texts:

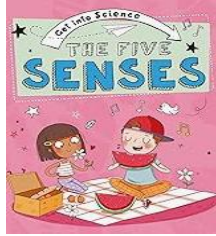
Physics: Seasonal Change	Biology: Animals, Including Humans (Senses)	Chemistry: Everyday Materials	Biology: Plants
 	 	 	 



Project Weather (Philip Steele)

Autumn is Here! (Heidi Pross Gray)

A Stroll Through the Seasons (Look and Wonder) (Kay Barnham & Maddie Frost)



Lots: The Diversity of Life on Earth (Nicola Davies & Emily Sutton)

Little Explorers: My Amazing Body (Ruth Martin & Allan Sanders)

The Five Senses (Get Into Science) (Jane Lacey & Sernur Isik)

Fundamental Science Key Stage 1: Everyday Materials 2016 (Fundamental Science KS1) (Ruth Owen)

The Adventures of a Plastic Bottle: A Story About Recycling (Little Green Books) (Alison Inches)

The Tiny Seed (Eric Carle)

The Amazing Plant Life Cycle Story (Look and Wonder) (Kay Barnham)

Science Capital – Key Scientist Studies:

Science capital is vital in broadening the children's wider understanding of Science and the role it plays within their wider lives. This includes understanding the contributions famous scientists have made in furthering knowledge and understanding in their respective disciplines. Whilst historically, there is a gender imbalance, where possible, the range of scientists linked to specific units of study better reflect modern attitudes towards Science and STEM. Linked scientist biographical studies are identified within the unit overviews below.

The **KS1 Science Parents' Guide** contains additional information regarding what Science Capital is, why it is important for science education and provides lists of possible places to visit to enhance interest and understanding within the subject.

Unit of Study:	Physics: Seasonal Change	Biology: Animals, Including Humans (Senses)	Chemistry: Everyday Materials	Biology: Plants
Linked Scientists:	<u>Other:</u> Robert Fitzroy (1805-1865) (Royal Navy officer and captain of HMS Beagle. Worked on weather and established the Met Office)	<u>Biographical Study:</u> Steve Irwin (1962-2006) (Australian naturalist and conservationist who died in 2006 due to a stingray barb to the heart. Nicknamed: 'The Crocodile Hunter', he was a TV personality and owner of 'Australia Zoo', Queensland.)	<u>Other</u> Charles Macintosh (1766-1843) (Scottish chemist and inventor of the modern waterproof raincoat – 'the Mackintosh').	<u>Other:</u> Beatrix Potter (1866-1943) (English writer, illustrator and naturalist who observed and painted plants and fungi of the Lake District)



SCIENCE CURRICULUM GUIDANCE: YEAR 1

'Learn, Sparkle & Shine.'

Year Group: 1	Unit of Study:	Science Branch:
Term: Autumn 1 (Revisited in Spring and Summer)	Seasonal Change	Physics
Composite (The Big Idea): Each year, the UK has four different seasons: spring, summer, autumn and winter. Each season has different weather patterns, temperatures and daylight lengths, which affect the lives of plants and animals in different ways.	Context: This unit follows on from work in Reception where pupils study the names of the four seasons and look at some of the changes to trees and plants during these times. In Year 1, children they begin to learn more about the four seasons, including the months that fall into each season and the weather patterns that they follow. They will learn about the changes to the Earth's light patterns through the seasons and how the seasons affect animals and plants. Children also learn how the seasons affect people, including the clothing that they wear. This unit comes before Year 2's Plants unit, where children learn to understand what plants need to grow best, thus linking with changes in plants throughout the seasons. Pupils also learn why some trees (deciduous) lose their leaves in Autumn and why others are evergreen (Year 1 Plants).	
Prior Learning Requirements: • The names of the 4 seasons. • The weather changes with the season. • Some trees and plants change with the seasons.	Common Misconceptions (PLAN): Some children may think: • It always snows in winter. • It is always sunny in the summer. • There are only flowers in spring and summer. • It rains most in the winter.	

Biographical Study - Scientist: Possible Mention: Robert Fitzroy (1805-1865) (Royal Navy officer and captain of HMS Beagle. Worked on weather and established the Met Office) <i>(Note: Will link to Y6 Evolution and Charles Darwin's voyage aboard HMS Beagle)</i>	Key Vocabulary (Linked to PLAN) (Full list on Vocabulary progression document): • Season: Different times of the year, where weather patterns change along with temperature. The seasons are spring, summer, autumn and winter. • Spring: The time of year between March and May. There is usually lots of signs of new growth in Spring. • Summer: The hottest season in the UK. It happens between June and August. • Autumn: Leaves fall off of trees, the days become shorter and it begins to get colder and wetter. • Winter: The coldest season in the UK. Usually have snow in this season. Occurs between December and February. • Day: The time where sunlight can be seen. • Night: Between sunrise and sunset, where it is dark. • Weather: Weather is what the sky and the air outside are like, such as cold and cloudy.
NC Objectives (Substantive Knowledge): • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	Working Scientifically (Disciplinary Knowledge): • Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions. Key enquiry types: • Observations Over Time (Weather and daylight changes) • Pattern Seeking (Plant and animal changes during seasons; ice linked to cold weather etc.) • Research Using Secondary Sources of Information (Books about weather and seasons) • Classifying and Sorting (Clothing during each season – linked to why they are needed)

Maths Links:

Venn Diagram – sorting clothing, sorting images linked to specific seasons etc.
Tables to record information.

ATRR Reading Links:

Strand 1: Timeline (Seasons throughout the year)

Strand 2: Six-Word Summary (Describe the four seasons)

Strand 3: Emoji (How do the seasons / does the weather make them feel and why?)

Strand 4: Impression and Evidence (Images linked to reason. Example: Why are they wearing a hat? It is cold as there is ice on the ground).

Linked Texts:

- Project Weather (Philip Steele)
- Autumn is Here! (Heidi Pross Gray)
- A Stroll Through the Seasons (Look and Wonder) (Kay Barnham & Maddie Frost)

**(Components) Lesson Sequence:**

- LC1: Can you name the four seasons? (Ensure cyclic)
- LC2: What is the weather like in different seasons? (Include basic weather symbols)
- LC3: What clothes should we wear in each season?
- LC4: What plants can be seen in each season? (Refer specifically to deciduous / evergreen trees)
- LC5: How does a deciduous tree change throughout the seasons?
- LC6: Why is it sometimes dark and sometimes light when I go to bed?
- LC7: Is the weather the same every day? (Include basic weather symbols and refer to Robert Fitzroy and the Met Office) (Consider creating a weather book to record the daily weather)

Undertake a focus lesson on each season at the appropriate time of year:

- LC: What is autumn like?
- LC: What is winter like?
- LC: What is spring like?
- LC: What is summer like?

In all cases, look at the types of plants and animals which can be seen / identified at these times of year.

Prior Learning (Can you still?):

Write questions from within this unit once taught. For example:

- What is the weather like in autumn?
- What is the weather like in winter?
- What is the weather like in spring?
- What is the weather like in summer?
- At what time of the year would you wear a woolly hat and gloves?
- At what time of the year would you wear sunglasses?
- In which season do leaves fall off deciduous trees?
- What can change about the weather? (hot/cold, rainfall, wind)
- What happens to daylight in different seasons?

Year Group: 1	Unit of Study: Animals, Including Humans (Senses)	Science Branch: Biology
Term: Autumn 2 & Spring 1		
Composite (The Big Idea): Animals are a type of living things, which are found almost everywhere in the world. There are many different types, coming in many shapes and sizes. Some are wild, whilst others have been domesticated and kept as pets or farmed.	Context: This unit is the first of six units where pupils study Animals, Including Humans, as part of the discipline of biology - the study of living organisms. From Reception, pupils can name common domestic and wild animals and their babies. Pupils also know that animals that live in particular habitats and know some common mini-beasts. In Year 1, pupils further develop their knowledge of animals as they are introduced to the concept of 'families' and how animals are grouped according to their shared properties including fish, amphibians, reptiles, birds and mammals. Pupils learn the key basic features of each animal family, thus allowing them to be grouped accordingly. New learning includes identifying and naming a variety of common animals that are carnivores, herbivores and omnivores. Pupils identify, name, draw and label the basic parts of the human body and learn about the five human senses. This unit is the precursor to work studied in Year 2, where pupils learn about how animals, and humans, grow, change and stay healthy. Pupils will also study life cycles of humans and animals such as butterflies, chickens and frogs, building on knowledge acquired in Reception.	
Prior Learning Requirements: • The names of common farm animals and their young. • Animals need food, water, shelter .and warmth to keep • Healthy. • How chickens and frogs grow from eggs.	Common Misconceptions (PLAN): Some children may think: • Only four-legged mammals, such as pets, are animals. • Humans are not animals. • Insects are not animals. • All 'bugs' or 'creepy crawlies', such as spiders, are part of the insect group. • Amphibians and reptiles are the same.	

Biographical Study - Scientist: Steve Irwin (1962-2006) (Australian naturalist and conservationist who died in 2006 due to a stingray barb to the heart. Nicknamed: 'The Crocodile Hunter', he was a TV personality and owner of 'Australia Zoo', Queensland.)	Key Vocabulary (Linked to PLAN) (Full list on Vocabulary progression document): • Mammal: Warm-blooded creatures which have fur, breathe air and give birth to live young (no eggs). • Fish: A scaly skinned creature with a spine (back bone) which swims under water and breathes using gills. • Reptile: Cold-blooded animals which mostly lay eggs and have hard, dry scales covering their body. Most live on land, but some, such as the turtle, live in water. All reptiles breathe air. • Bird: Feathered animals which have warm-blooded and lay eggs. Most, but not all, species of birds can fly. • Amphibian: These creatures begin life in water as eggs, have a tadpole-like stage before spending most of their adult life on both land and in water. They have both lungs and gills. Example: Frog • Herbivore: Animals which only eat plants. • Carnivore: Animals which hunt and eat other animals (meat). • Omnivore: An animal which eats both meat and plants. • Nocturnal: Animals which spend most of their lives awake during the night and sleeping during the day. • Human: Another word for people. Humans belong to the group of animals called mammals. • Pet: An animal which lives with people in their homes. • Senses: We use our senses to discover what is around us. There are five senses – sight, hear, smell, taste and touch.
NC Objectives (Substantive Knowledge): • 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 carnivores, herbivores and omnivores • 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.	Working Scientifically (Disciplinary Knowledge): • Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions.

Key enquiry types:

- Sorting and Classifying (Types / families of animals; domestic/wild, carnivores/herbivores/omnivores)
- Research Using Secondary Sources of Information (Books researching animals and the human body – senses)
- Pattern Seeking (Similarities and differences in animals)

Maths Links:

- Venn Diagrams – sorting animals according to features (diet, domestic/wild, etc.)
- Measures – size of hand span in cm.

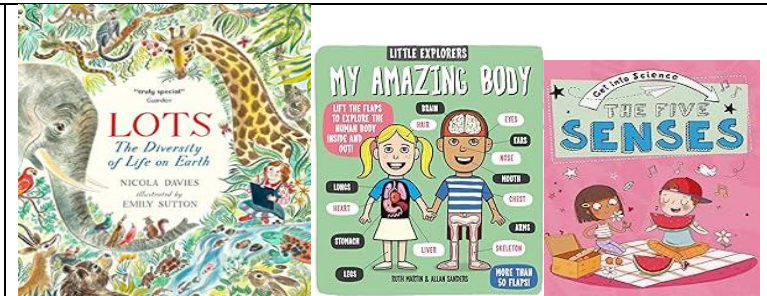
ATRR Reading Links:

Strand 2: Six-Word Summary – describe animals; using senses etc.

Strand 4: Impression and Evidence – observe animals and explain why. Example: Wolves are dangerous. They had sharp claws and big, sharp teeth. They eat meat and are carnivores.

Linked Texts:

- Lots: The Diversity of Life on Earth (Nicola Davies & Emily Sutton)
- Little Explorers: My Amazing Body (Ruth Martin & Allan Sanders)
- The Five Senses (Get Into Science) (Jane Lacey & Sernur Isik)

**(Components) Lesson Sequence:**

- LC1: How many different body parts can you name?
- LC2: (Investigation) Do the oldest people have the biggest hands in class?
- LC3: Can you name the five senses?
- LC4: What senses did I use today?
- LC5: How many different animals can you name? (Include insects, spiders, worms etc. as well as vertebrates).
- LC6: How can we classify animals into groups? (Mammals, fish, amphibians, birds and reptiles – include humans as mammals)
- LC7: Can we group animals according to what they eat? (Venn diagram – carnivores, herbivores, omnivores)
- LC8: Who was Steve Irwin?

Prior Learning (Can you still?):

Write questions from within this unit once taught. For example:

- Name a domestic animal.
- Name a wild animal that can be found in Britain.
- Tell me two things about mammals. Can you name one?
- Tell me two things about birds. Can you name one?
- Tell me two things about amphibians. Can you name one?
- Tell me two things about reptiles. Can you name one?
- Tell me two things about fish. Can you name one?
- Provide pupils with a Venn diagram and ask them to sort animals by families / types.
- What are the five senses?
- Which part of the body do we use for smell?
- Which part of the body do we use to hear?
- Which part of the body do we use to touch?
- Which part of the body do we use to taste?
- Which part of the body do we use to see?
- What does a carnivore eat?
- What does a herbivore eat?
- What does an omnivore eat?

Previous Unit (Seasonal Changes):

- What is the weather like in autumn?
- What is the weather like in winter?
- What is the weather like in spring?
- What is the weather like in summer?
- At what time of the year would you wear a woolly hat and gloves?
- At what time of the year would you wear sunglasses?
- In which season do leaves fall off deciduous trees?
- What can change about the weather? (hot/cold, rainfall, wind)
- What happens to daylight in different seasons?

Year Group: 1	Unit of Study: Everyday Materials	Science Branch: Chemistry
Term: Spring 2 & Summer 1		
Composite (The Big Idea): All things (objects) are made out of different materials. These materials all have properties that make them useful for making things. For example - glass is perfect for windows, as it is waterproof, hard and transparent (It lets light in). Different properties allow materials to be be grouped together.	Context: This unit is the first of five science units where pupils study materials as part of the discipline of chemistry - the identification of the properties a substance is made from. In this Year 1 unit, pupils identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Pupils distinguish between an object and the material from which it is made including if it is 'man-made' or 'natural'. New learning includes describing the simple physical properties of a variety of everyday materials. The knowledge acquired will help pupils at the end of the unit as they compare and group together a variety of everyday materials on the basis of their simple physical properties. This unit is the precursor to work in Year 2 as pupils compare the suitability of objects and compare how things move on different surfaces.	
Prior Learning Requirements: • Children know about similarities and differences in relation to places, objects, materials and living things. • They talk about the features of their own immediate environment and how environments might vary from one another. • They make observations of animals and plants and explain why some things occur and talk about changes. (Early Learning Goal)	Common Misconceptions (PLAN): Some children may think: • Only fabrics are materials • Only building materials are materials • Only writing materials are materials • The word 'rock' describes an object rather than a material • 'Solid' is another word for hard.	

Biographical Study - Scientist: Charles Macintosh (1766-1843) (Scottish chemist and inventor of the modern waterproof raincoat – ‘the Mackintosh’).	Key Vocabulary (Linked to PLAN) (Full list on Vocabulary progression document): • Rough: Something that feels and looks bumpy. • Property: How a material behaves. • Smooth: A flat surface that is not bumpy or rough. • Material: What an object (thing) is made out of. Example: metal, plastic, glass, wood. • Object: A thing made out of materials. • Hard: Not easily broken, bent or squashed. • Soft: Easy to cut, bend and fold. Its shape can be changed easily. • Stretchy: It can be made longer without snapping. • Dull: A surface which doesn't reflect light. It is not bright or shiny. • Waterproof: Water cannot go through the material. Things underneath stay dry. • Bendy: Can be bent side to side without snapping. • Stiff: Does not bend easily. • Shiny: light reflects from it. • Adsorbent: soaks up water.
NC Objectives (Substantive Knowledge): • 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.	Working Scientifically (Disciplinary Knowledge): • Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions. Key enquiry types: • Comparative and Fair Testing: Are all materials the same? • Pattern Seeking (Materials used for similar purposes) • Classifying and Sorting (Materials sorted based on their properties)

Maths Links:

- Venn diagrams – sorting materials, objects, properties etc.
- Tables to record results.

ATRR Reading Links:

Strand 2: Six-Word Summaries (Properties of materials)

Stand 4: Impression and Evidence: Material and uses.

Linked Texts:

- Fundamental Science Key Stage 1: Everyday Materials 2016 (Fundamental Science KS1) (Ruth Owen)
- The Adventures of a Plastic Bottle: A Story About Recycling (Little Green Books) (Alison Inches)

**(Components) Lesson Sequence:**

- LC1: What material is the object made out of?
- LC2: Is the material natural or manmade?
- LC3: What are materials good at? (Properties exploration, include opaque objects)
- LC4: (Investigation) Which material will clear up the puddle best? (Predict / Conclude)
- LC5: (Investigation) Which material will keep me dry in the rain? (Link to Charles Mackintosh)
- LC6: Which material should we use?
- LC7: Can we reduce, reuse and recycle?

Prior Learning (Can you still?):

Write questions from within this unit once taught. For example:

- What materials is this object made out of?
- Sorting task – materials
- Name a property of _____. (Insert material – rock, plastic, metal, wood etc.)
- Sorting task – manmade/natural materials
- What is recycling?
- What does opaque mean? (Substitute with other properties)

Previous Unit (Animals, Including Humans, Seasonal Changes):

- Name a domestic animal.
- Name a wild animal that can be found in Britain.
- Tell me two things about mammals. Can you name one?
- Tell me two things about birds. Can you name one?
- Tell me two things about amphibians. Can you name one?
- Tell me two things about reptiles. Can you name one?
- Tell me two things about fish. Can you name one?
- Provide pupils with a Venn diagram and ask them to sort animals by families / types.
- What are the five senses?
- Which part of the body do we use for smell?
- Which part of the body do we use to hear?
- Which part of the body do we use to touch?
- Which part of the body do we use to taste?
- Which part of the body do we use to see?
- What does a carnivore eat?
- What does a herbivore eat?
- What does an omnivore eat?
- What is the weather like in autumn?
- What is the weather like in winter?
- What is the weather like in spring?
- What is the weather like in summer?
- At what time of the year would you wear a woolly hat and gloves?
- At what time of the year would you wear sunglasses?
- In which season do leaves fall off deciduous trees?
- What can change about the weather? (hot/cold, rainfall, wind)
- What happens to daylight in different seasons?

Year Group: 1	Unit of Study: Plants	Science Branch: Biology
Term: Summer 2		
Composite (The Big Idea): Plants are living things, which need sunlight, water and air in order to grow. They usually have green leaves, roots, stems and often flowers. Plants grow from seeds and bulbs and some are very large, such as trees. Deciduous trees lose their leaves in autumn, whilst evergreen trees do not.	Context: This unit follows on from learning in Reception about the seasons and changes that happen to the plants during those seasons. They have also recognised some fruits and vegetables and named the basic parts of a plant (petals, stem, flower, roots) and have experiences of different seeds. In year 1, pupils learn about the names of common plants and trees and learn to identify them by their leaves. They learn about the terms 'evergreen' and 'deciduous' and how deciduous plants fit into the changing of the seasons. This unit is the precursor to work studied in Year 2 where pupils will recap common plants and trees studied in Year 1 before moving onto how plants grow (including germination), what they need to grow healthily and differences between bulbs and seeds. By Year 3, pupils learn about pollination and seed dispersal, alongside how plants grow under differing conditions. Children in Year 3 also explore how water and sugar are transported throughout the plant.	
Prior Learning Requirements: • For plants to grow they need water and light. • Plants can die. • Some plants are food for us. • Plants have roots, stem, leaves and flowers. • How to grow cress and bean plants.	Common Misconceptions (PLAN): Some children may think: • Plants are flowering plants grown in pots with coloured petals and leaves and a stem. • Trees are not plants. • All leaves are green. • All stems are green. • A trunk is not a stem. • Blossom is not a flower.	
Biographical Study - Scientist: Possible Mention: Beatrix Potter (1866-1943) (English writer, illustrator and naturalist who observed and painted plants and fungi of the Lake District)	Key Vocabulary (Linked to PLAN) (Full list on Vocabulary progression document): • Plant: A living thing which uses leaves to capture sunlight to make sugars. Example: trees, grass, daisy. • Deciduous: A tree or bush which loses its leaves in autumn each year. Example: oak tree.	

	• Evergreen: A tree or bush that keeps its leaves all year round, even during the winter months. Example: cedar. • Trunk: The thick, woody stem of a tree. They are covered in bark. • Root: Part of the plant which takes in water and nutrients from the soil. • Branch: The woody, bark-covered parts of trees which join leaves and twigs to the trunk. • Twig: A thin part of the branch, with leaves joined to the end. • Stem: These hold the plant up and join all parts of the plant together. They carry water, sugars and nutrients to all parts of the plant. • Seed: Seeds grow into new plants. Example: Sunflower. • Blossom: Small flowers which grow of bushes and trees. • Wild Plants: These plants grow wherever seeds fall. They do not need to be planted. • Garden Plants: Plants chosen and planted in a place by people. • Weeds: Wild plants growing where people don't want them to grow. • Flowers: Used to attract insects using brightly coloured petals. Fruits grow from flowers. • Fruit: These grow from flowers and contain the plant's seeds. They are often sweet tasting so that animals eat them. Example: apple. • Bulb: Bulbs are short, fat stems which grow into new plants. Example: Daffodils. • Leaf / Leaves: The part of a plant which captures sunlight.
NC Objectives (Substantive Knowledge): • 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.	Working Scientifically (Disciplinary Knowledge): • Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions. Key enquiry types: • Classifying and Sorting (Features and types of trees and plants, including leaves, bark, flowers, seeds etc.). • Pattern Seeking (Location of plant types; size of plants; plants found at different times of the year – links to Seasonal Changes unit). • Research Using Secondary Sources of Information (Books on plants and trees). • Observation (similarities and differences between flowers, leaves, bark, bulbs, seeds etc.).

Maths Links:

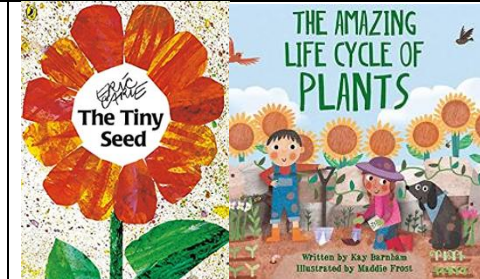
- Venn diagram – sorting plants and trees (including deciduous and evergreen trees)
- Tally charts / Pictographs – numbers of plant types found in local area.

ATRR Reading Links:

Strand 2: Six-Word Summary (Describe plant features; summarise what each part of a plant does)

Linked Texts:

- The Tiny Seed (Eric Carle)
- The Amazing Plant Life Cycle Story (Look and Wonder) (Kay Barnham)

**(Components) Lesson Sequence:**

- LC1: Can you name a flowering plant and its main parts?
- LC2: What does each part of a plant do?
- LC3: What plants can be found in our gardens? (Common plants native to the UK, including 'weeds').
- LC4: What are seeds and bulbs and are they all the same? (Observational drawing)
- LC5: Are all trees the same? (Similarities and differences between trees – include features of a tree, leaves, bark rubbings etc.)
- LC6: What trees can we find in our local area? (Include evergreen and deciduous species and the differences between them linked to seasons. Maths links – tally chart or pictogram).

Note: Flowers are a part of a plant, not a type of plant.

Prior Learning (Can you still?):

Write questions from within this unit once taught. For example:

- Label the parts of a plant.
- What do the roots do? (Substitute with other parts of the plant)
- Name a garden plant.
- Name a type of deciduous tree.
- Name a type of evergreen tree.
- What are seeds?
- What are bulbs?
- How do trees change throughout the different seasons?

Previous Unit (Everyday Materials, Animals, Including Humans, Seasonal Changes):

- What materials is this object made out of?
- Sorting task – materials
- Name a property of _____. (Insert material – rock, plastic, metal, wood etc.)
- Sorting task – manmade/natural materials
- What is recycling?
- What does opaque mean? (Substitute with other properties)
- Name a domestic animal.
- Name a wild animal that can be found in Britain.
- Tell me two things about mammals. Can you name one?
- Tell me two things about birds. Can you name one?
- Tell me two things about amphibians. Can you name one?
- Tell me two things about reptiles. Can you name one?
- Tell me two things about fish. Can you name one?
- Provide pupils with a Venn diagram and ask them to sort animals by families / types.
- What are the five senses?
- Which part of the body do we use for smell?
- Which part of the body do we use to hear?
- Which part of the body do we use to touch?
- Which part of the body do we use to taste?
- Which part of the body do we use to see?
- What does a carnivore eat?
- What does a herbivore eat?
- What does an omnivore eat?
- What is the weather like in autumn?
- What is the weather like in winter?
- What is the weather like in spring?
- What is the weather like in summer?
- At what time of the year would you wear a woolly hat and gloves?
- At what time of the year would you wear sunglasses?
- In which season do leaves fall off deciduous trees?
- What can change about the weather? (hot/cold, rainfall, wind)
- What happens to daylight in different seasons?

Appendix 1: Year 1 Unit Specific Substantive Knowledge Overviews

Seasonal Changes

- Know that there are four seasons - Autumn, Winter, Spring and Summer.
- Know that the seasons occur in a cycle and that they consist of months of the year.
- Know how the environment changes in each season.

- Autumn - Leaves change colour and fall from deciduous trees, harvest time, some birds migrate (e.g. swallows)
- Winter - Some animals including hedgehogs and tortoises hibernate throughout Winter (identify these animals) water freezes to ice. Many plants stop growing.
- Spring - Flowers begin to grow, associated with rebirth and growth, some baby animals are born (e.g. lambing season),
- Summer - Flowers and trees are in bloom.
- (Time-lapse video of seasons - <https://vimeo.com/2639782>)

- Know that the length of daylight varies, with Winter having the shortest number of daylight hours and Summer having the longest.
- Know that the Earth orbits the Sun with one orbit constituting a year of 365 days.
- Know the weather patterns associated with each season -
 - Autumn - Temperatures start to drop from Summer, overcast.
 - Winter - Coldest time of year, snow, frosty in the morning, sleet, blizzard, hail
 - Spring - Temperatures start to warm up.
 - Summer - Hottest time of the year, sunshine, generally dry weather but may be
- Thunderstorms.

Animals, Including Humans (Senses)

- Pupils will know that animals are grouped together in 'families' based on shared properties. They will name the groups fish, amphibians, reptiles, birds and mammals.
- Know that fish, amphibians, reptiles, birds and mammals are similar in that they have internal skeletons and organs; these are known as vertebrates, which means they are animals that have a backbone.

Mammals	Fish	Bird	Reptile	Amphibian
Mouse	Carp	House Sparrow	Common lizard	Common toad
Fox	Stickleback	Blackbird	Adder	Common frog
Badger		Magpie	Grass snake	Smooth newts
Squirrel	<u>Wider World</u>	Starling		
Hedgehog	Cod	Robin	<u>Wider World</u>	
	Tuna		Iguana	<u>Wider World</u>
<u>Wider World</u>	Salmon	<u>Wider World</u>	Chameleon	Poison dart frog
Elephant		Flamingo	Crocodile	
Tiger		Penguin	Alligator	
Gorilla		Macaw		
Lion		Pelican		
Orangutan		Emu		

- Know the features of a fish - gills, scales, fins, water dwelling
- Know the features of mammals - hair or fur, babies drink mother's milk, live on land or water
- Know the features of amphibians - live on land or water when adults, soft skin, lay eggs in water, live in water when young
- Know the features of reptiles - dry scaly skin, lay eggs on land
- Know the features of birds - wings, feathers, beak/bill, hatch from eggs, most can fly but some can't (e.g., ostrich, penguin, kiwi)

Parts of the human body

- Know that we have five senses - smell, taste, touch, sight, hearing
- Know and identify (labelling) the following body parts, linking them to the senses.

Sense	Part of the body
sight	eyes
smell	nose
touch	hands, feet, arms, legs etc
hearing	ears
taste	tongue

- Know why we need the following body parts - ears, mouth, eyes, nose, tongue.
- Know that the brain controls the body and is where you think and remember things.
- Know the location of the brain.

Carnivores, herbivores & Omnivores:

- Know that animals must eat and drink in order to survive.
- Understand that some animals only eat meat – carnivores (Identify / sort examples).
- Understand that some animals only eat plants – herbivores (Identify / sort examples).
- Understand that some animals eat both plants and meat – omnivores (Identify/sort examples).
- Introduce the children to basic food chains (Links to Y4 Animals, Including Humans (Digestion)).

Biography: Steve Irwin

- Australian naturalist and conservationist.
- Born: 1962; Died: 2006 (Stingray barb to the heart).
- Nicknamed: 'The Crocodile Hunter'.
- TV personality and owner of 'Australia Zoo', Queensland.

Everyday Materials

- Know that matter (stuff) is made from tiny building blocks. This comes in three forms - solids, liquids and gases.
- Solids include glass, plastic and stone.
- Liquids include water, blood, milk.
- Gas includes air that we breathe.
- Know that many materials are solid and have different properties.
- Know that objects are made of different materials

- Know that some materials are natural and others are man-made.
- Natural materials come from materials found in nature and man-made materials are those which humans make.
- Natural materials: iron, gold, silver, silk, cotton, leather, wood, water and rock. (know that iron, gold, silver are collectively known as metals)
- Man-made materials: plastic, glass (know that glass is heated sand), brick, paper, concrete, rubber and some metals like steel.

- Identify different objects and name what material or materials they are made from. e.g. Canoe: wood or plastic. Car: metal and rubber tyres.

- Recognise that objects are made of different materials.
- Know that some objects float in water, while others sink.

Plants

- Know the names of the following common plants - daisy, white clover, poppy, nettle, ivy, bramble and locate some in the local environment (also dandelion and grass).
- Know the names of the following common trees - oak, elm, maple, silver birch, sycamore, horse chestnut.
- Know how to identify them from their leaves, fruit and shape.
- Know how to identify some of the trees in the grounds of Red Lane Primary School
- Know the term deciduous - a tree that sheds its leaves annually - this means every year the tree loses its leaves. The leaves of deciduous trees are often large and thin.
- Know the term Evergreen - a tree that has green leaves all year. These leaves are usually, waxy, thick, narrow and small.
- Know that oak, birch and sycamore are deciduous
- Know that holly and pine are evergreen.

- Know the names of the basic parts of a plant and their function - leaves, flower, stem, roots, petals

part	function
leaves	collect energy from the sun to help the plant grow
flower	creates seeds
stem	holds the flower and leaves up high and transports water
root	collects nutrients and water from the soil to help the plant grow
petals	the coloured part of a flower that attracts insects

- Know how to draw a diagram showing the parts of a plant.
- Know the names and function of parts of a tree - roots, trunk, branches, leaves.
- Know that a tree trunk is a type of stem.
- Know that flowers on a tree are often called 'blossom'.
- Know that fruit often grows on trees including - apples, oranges, cherries, lemons, bananas, mangoes, pears and plums.
- Know that the fleshy part of the fruit generally protects the seeds within.
- Recognise examples of seeds and pips found in apples, oranges, peaches and cherries. Know that seeds are buried in the ground (or planted) and grow into new plants.
- Know that bulbs are short stems with leaves built up around it.
- They are planted in the ground and new plants can grow.
Know that onions are an example of a bulb that we can eat.