

## Year 2 Science Curriculum

### Plants

#### Prior learning:

Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)

Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)

#### Common misconceptions

Some children may think:

- plants are not alive as they cannot be seen to move
- seeds are not alive
- all plants start out as seeds
- seeds and bulbs need sunlight to germinate.

#### Reading Opportunities

The Tin Forest - Helen Ward

Jack and the Beanstalk - Richard Walker






Ten Seeds - Ruth Brown

A Seed Is Sleepy - Dianna Aston

#### Vocabulary

light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling

## Year 2 - Plants

National Curriculum Principles	Knowledge and key Vocabulary	Working scientifically
<p>Observe and describe how seeds and bulbs grow into mature plants</p>	<p>Plants may grow from seeds or bulbs.</p>	<p>Children to make close observations of bulbs and seeds and produce observational drawings</p>
		<p>Children to classify and sort bulbs and seeds into groups - what is the same? What is different? </p>
		<p>Soak a bean/pea seeds overnight. Rub seed coat off and explain that the seed coat protects the seed. Ch cut open seed. Teach ch how to use magnifying glass. Observe inside seed with magnifying glass. Draw inside of seed.</p>
	<p>Seeds and bulbs need water and air to germinate</p>	<p>Children to plant beans in plastic bags to observe germination and growth of roots and stem. Measure growth in cms. </p>
	<p>Seeds and bulbs need to be planted at particular times of year and they will germinate and grow at different rates</p>	<p>Research and explain when different seeds and bulbs need to be planted. </p>
<p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p>	<p>Some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy.</p>	<p>Children to help plan how to investigate what conditions plants need to grow (not germinate). </p>
		<p>Children to set up and carry out the investigation </p>

## Living things and their habitats

### Prior learning:

Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)

Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)

Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans)

Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans)

Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals, including humans)

Observe changes across the four seasons. (Y1 - Seasonal changes)

### Common misconceptions

Some children may think:

- an animal's habitat is like its 'home'
- plants and seeds are not alive as they cannot be seen to move
- fire is living
- arrows in a food chain mean 'eats'.

### Reading Opportunities

The Gruffalo - Julia Donaldson






Meerkat Mail - Emily Gravett

No Place Like Home - Jonathon Emmett

### Vocabulary

living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, field, forest, under logs, in bushes, conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied

## Living Things

National Curriculum Principles	Knowledge and key Vocabulary	Working scientifically
Explore and compare the differences between things that are living, dead, and things that have never been alive	All objects are either living, dead or have never been alive. Living things are plants (including seeds) and animals. Dead things include dead animals and plants and parts of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers An object made of wood is classed as dead. Objects made of rock, metal and plastic have never been alive.	Explore the outdoor environment to find items and classify them as living, dead or have never been alive. 
Identify that most living things live in habitats to which they are suited. Describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other	Animals and plants live in a habitat to which they are suited, which means that animals have suitable features that help them move and find food and plants have suitable features that help them to grow well. The habitat provides the basic needs of the animals and plants - shelter, food and water	Observe plants and animals in the school grounds and produce observational drawings.
		Mini beast hunt in school grounds - observe and identify using a picture identification sheet. Create a pictogram to show different numbers of mini beasts found. 
		Research and explain why a plant or animal is suited to its habitat 
Identify and name a variety of plants and animals in their habitats, including micro-habitats	Within a habitat there are different micro-habitats e.g. in a woodland - in the leaf litter, on the bark of trees, on the leaves. These micro-habitats have different conditions e.g. light or dark, damp or dry. These conditions affect which plants and animals live there.	Identify and name things in: <ul style="list-style-type: none"> <li>• woodland - oak tree, grass, bluebell, owl, rabbit, fox and mouse</li> <li>• Desert - cacti, camel, scorpion, lizards,</li> <li>• Ice - penguin, seals, whales, plankton</li> <li>• Ocean - seaweed, crabs, fish, dolphin, sharks, whales</li> <li>• Micro habitat - under log - worm, woodlouse, beetle, slug</li> </ul> 
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.	The plants and animals in a habitat depend on each other for food and shelter etc. The way that animals obtain their food from plants and other animals can be shown in a food chain.	Use research and observation to create simple food chains. 
		Explain what animals eat using a food chain.

## Animals inc humans

### Prior Learning

- Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans)
- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)

### Common misconceptions

Some children may think:

- an animal's habitat is like its 'home'
- all animals that live in the sea are fish
- respiration is breathing
- breathing is respiration.

### Reading Opportunities

Tadpole's Promise - Jeanne Willis and Tony Ross







Meerkat Mail - Emily Gravett

Once there were giants - Martin Waddell and Penny Dale

### Vocabulary

offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/hen, kitten/cat, caterpillar/butterfly), survive, survival, water food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)

## Animals including humans

National Curriculum Principles	Knowledge and activities	Working scientifically
<p>To notice that animals, including humans, have offspring that grow into adults</p>	<p>Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be young, such as babies or kittens, that grow into adults. In other animals, such as chickens or insects, there may be eggs laid that hatch to young or other stages which then grow to adults. The young of some animals do not look like their parents e.g. tadpoles.</p>	<p>Match pictures of adult animals to pictures of their offspring </p>
		<p>Research and simply explain the life cycle of a butterfly, chicken, frog and human </p>
		<p>Label diagrams of animal life cycles</p>
		<p>Investigation - is the oldest child the tallest in the class? Focus: planning an investigation </p>
<p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p>	<p>All animals, including humans, have the basic needs of feeding, drinking and breathing that must be satisfied in order to survive.</p>	<p>Research and produce a guide about how to look after a pet. </p>
<p>Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene</p>	<p>To grow into healthy adults, they also need the right amounts and types of food and exercise. Good hygiene is also important in preventing infections and illnesses.</p>	<p>Explore how different exercises affect the body. Record results in a table.</p>
		<p>Sort food in a variety of ways </p>
		<p>Ch to generate questions about hygiene in school. Carry out learning walk to answer questions. </p>

## Uses of Everyday Materials

### **Prior learning:**

Distinguish between an object and the material from which it is made. (Y1 - Everyday materials)

Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)

Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)

Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)

## Common Misconceptions

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.
- . Smooth is the same as soft

## Reading Opportunities

The Tin Forest - Helen Ward

Traction Man - Mini Grey

Three Little Pigs - Lesley Sims




## Vocabulary

Names of materials - wood, metal, plastic, glass, brick, rock, paper, cardboard

Properties of materials - as for Year 1 plus opaque, transparent and translucent, reflective, non- reflective, flexible, rigid

Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching

## Uses of everyday materials

National Curriculum Principles	Knowledge and activities	Working scientifically
<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p>	<p>All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. For example, a water bottle is made of plastic because it is transparent allowing you to see the drink inside and waterproof so that it holds the water. When choosing what to make an object from, the properties needed are compared with the properties of the possible materials, identified through simple tests and classifying activities. A material can be suitable for different purposes and an object can be made of different materials.</p>	<p>Classify materials using a range of properties </p>
		<p>Children to take photos and label the materials used to make different objects and explain why each material is used. Evaluate how suitable each material is for different purposes.</p>
		<p>Children to use properties of materials to explain why objects should and should not be made of certain materials.</p>
		<p>Think of alternative materials for a purpose and explain why this is a good choice</p>
		<p>Test the properties of materials for particular uses. E.g. Comparative test to select most appropriate material for rain hat. Ch begin to choose appropriate .method </p>
<p>Use test evidence to select the appropriate materials for a purpose. </p>		
<p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. For example, clay can be shaped by squashing, stretching, rolling, pressing etc. This can be a property of the material or depend on how the material has been processed e.g. thickness.</p>	<p>Manipulate playdoh and photograph the shape it makes when it is squashed, pulled, bent, twisted and stretched. Label photographs with correct action word.</p>
		<p>Test other materials to show how they can be manipulated and present results in a table. Use photographs/videos to show results.</p>



## **Working Scientifically in Years 1 and 2**

### **Asking questions**

Children 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.

The children answer questions developed with the teacher often through a scenario.

### **Observing**

Children explore the world around them. They 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. They begin to take measurements, initially by comparisons, then using non-standard units.

### **Plan and carry out simple tests**

Plan as a class with the teacher and start to contribute their own ideas

The children are involved in planning how to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.

The children 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.

### **Identify and classify**

Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting. • They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing.

### **Gather and record data**

The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. • They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. • They classify using simple prepared tables and sorting rings.

### **Interpret and report**

Children 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.

The children recognise 'biggest and smallest', 'best and worst' etc. from their data.

## Working Scientifically Skills



## Science Enquiry Types

Comparative and fair testing	
Research	
Observation over time	
Pattern seeking	
Identifying and classifying	
Problem solving	

