

Programme of Study



Sheep Dip Lane
Academy

KS2 Cycle A
Year 3 & 4

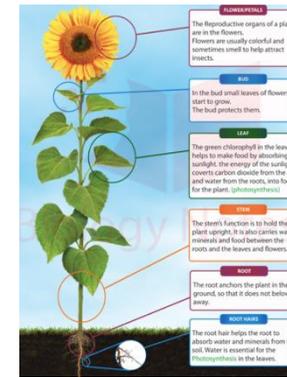
Plants and Animals

SCIENCE

Main Strand/Concepts	<p>Biology</p> <p>B1: Living things are special collections of matter that make copies of themselves, use energy and grow.</p> <p>B2: Living things on Earth come in a huge variety of different forms that are <u>all related</u> because they all came from the same starting point 4.5 billion years ago.</p> <p>B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.</p>
Links to Prior Learning	<p>In KS1 pupils were taught to:</p> <ul style="list-style-type: none"> ♣ 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. ♣ 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. <ul style="list-style-type: none"> ♣ 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) ♣ 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. <p>notice that animals, including humans, have offspring which grow into adults</p>
Main enquiry question/s	<p>Do all plants and animals need exactly the same thing?</p> <p>Are some animals more alike than others?</p>
Programme of Study NC Requirements	<p>Plants</p> <p>Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do. They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction. Note: Pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens. Pupils might work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.</p>

	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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. <p>Animals</p> <p>Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out.</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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. 	
Learning Objective	<p>Pre-Learning Expectations Enquiry question: What do we know about plants and animals?</p>	
<p>1st Concept To recall knowledge about plants and animals.</p>	<p>Children to recap on KS1 knowledge of plants and animals.</p> <p>https://www.bbc.co.uk/bitesize/topics/zy66fg8/articles/zcjmp39 (What is a plant?)</p>	
Subject Specific Vocabulary	Core Knowledge - What do we want the children to know?	Suggested learning activities – What key experiences?
<p>Plant Animal Living thing Deciduous Evergreen Bird Insect Amphibian Reptile fish</p>	<p>To know plants and animals are living things.</p> <p>To know the basic needs of plants and animals for survival.</p>	<p>Pre-assessment:</p> <ul style="list-style-type: none"> - Which of the following trees are not deciduous? (circle) - Complete chart – wild plants, flowering plants, deciduous and evergreen trees – add 3 to each column. - Complete chart on (bird, mammal, insect, amphibian, reptile and fish) and life processes i.e. reproduction, excretion, nutrition (including omnivore, carnivore, herbivore or producer) respiration (breathing – lungs/gills etc.) <p>Y3-5 create chart following MRS NERG and identify how plants, birds, mammals, insects, amphibians, reptiles and fish do these.</p>
Assessment questions	How do we know if a tree is deciduous or evergreen?	Resources

	<p>What does a plant need for growth and survival? Where do plants get their food from?</p>	<p>https://www.youtube.com/watch?v=PAyyDuk6xAg (needs of animals)</p> <p>https://www.youtube.com/watch?v=gIRR-VdIP1M (needs of plants)</p>
Learning Objective	Enquiry question: What are the functions of the parts of a plant?	
	Pre-Learning Expectations	
<p>2nd Concept To identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p>	<p>What are the functions of different parts of a flowering plant:</p> <p>Flower – to attract insects, also contains reproductive organs</p> <p>Bud – protects the small leaves of flowers before a flower opens</p> <p>Leaf – the green chlorophyll in the leaves helps to make food by absorbing sunlight. The energy of the sunlight converts CO₂ from the air and water from the roots into food for the plant – this is called photosynthesis.</p> <p>Stem – the function of the stem is to hold the plant upright, it also carries water, minerals and food between the roots, leaves and flowers. (Transpiration)</p> <p>Root (tap root – y4/5) – the root anchors the plant in the ground</p> <p>Root hairs (fibrous roots – y4/5) – these help the root to absorb water</p> <p>Children to recall main parts of a plant – root, stem/trunk, flower and leaf and what each part is used for.</p> <p>https://www.bbc.co.uk/bitesize/topics/zpxnyrd/articles/zxxsyrd (What do plants need to grow?)</p> <p>Discuss and create definitions for each part in order to understand the function of each part.</p>	
Subject Specific Vocabulary	Core Knowledge - What do we want the children to know?	Suggested learning activities – What key experiences?
<p>Root Stem/trunk Leaf flower</p>	<p>To identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>To know that plants grow in different habitats. To know that not all plants need soil to grow.</p>	<p>Draw and label a basic plant.</p> <p>Complete glossary of each part stating purpose of each plant part.</p>
Assessment questions	<p>Why are roots important? Do plants need soil to grow?</p>	Resources:



<https://www.bbc.co.uk/bitesize/topics/zy66fg8/articles/zcjp39> (functions of different parts of a plant)

<https://kids.britannica.com/kids/article/root/400166> (parts of a plant)

Learning Objective	Enquiry question: Why are flowers important? Pre-Learning Expectations	
3 rd Concept To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	<p>Recap know knowledge of basic plant parts.</p> <p>Explain we are know going to look deep inside and flower to find out why they are important.</p> <p>Model drawing and labelling.</p> <p>Co-construct definitions.</p>	
Subject Specific Vocabulary	Core Knowledge - What do we want the children to know?	Suggested learning activities – What key experiences?
Pollination Insect, wind, animal Seed Seed dispersal Life cycle Petal	<p>To know flowers play an important part in the life cycle of flowering plants.</p> <p>To know that petals attract insects.</p> <p>How do plants make more plants?</p>	<p>Draw and label a cross section of a flowering plant. (petal, anther, stigma, stamen, ovary).</p> <p>Y3 – petal, anther, stamen, ovary Y4/5 – Y3 + filament, stigma, style, carpel, sepal, ovule, receptacle</p>

Anther Stigma Stamen Ovary	Do animals help plants to make more plants?	Label a simple life cycle of a flowering plant. Complete glossary for each part Grow a plant – snapdragon, marigold, sunflower
Assessment questions	How can seeds be spread from place to another? What is pollination? 	Resources https://www.bbc.co.uk/bitesize/topics/zgssgk7/articles/zyv3jty https://www.bbc.co.uk/teach/class-clips-video/science-ks1-ks2-ivys-plant-workshop-what-is-pollination-and-how-does-it-work/zv4df4j (pollination and flowering plants and their lifecycle)
Learning Objective	Enquiry question: How do plants get the water they need? Pre-Learning Expectations	
4 th Concept To investigate the way in which water is transported within plants	Discuss and recap purpose of roots	
Subject Specific Vocabulary	Core Knowledge - What do we want the children to know?	Suggested learning activities – What key experiences?
Water Transpiration Travels	<i>To know how water is transported in plants.</i> <i>To know that transpiration is the movement of water and nutrients through a plant.</i>	Celery Experiment – to show transpiration (coloured water) Daffodils and food colouring Hypothesis: Daffodil petals will turn blue if a daffodil is placed in a container of coloured water – from this children will formulate a question, make a basic prediction, method and record results at points in time. Following this children will make a valid conclusion, explaining why results have occurred
Assessment questions	How does water get from the soil to a plants leaves?	https://www.bbc.co.uk/bitesize/topics/zy66fg8/articles/zcxh4qt
Learning Objective	Enquiry Question: Pre-Learning Expectations	
5 th Concept	What do cress seeds need to be able to grow into healthy plants?	

<p>To 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</p>	<p>Cress investigation:</p> <p>Fair test: same amount of seeds, same amount of water, same dark place, same light place.</p>	
<p>Subject Specific Vocabulary</p>	<p>Core Knowledge - What do we want the children to know?</p>	<p>Suggested learning activities – What key experiences?</p>
	<p>To know that plants make their own food in the their leaves using CO₂ and water – this is called photosynthesis.</p> <p>Chlorophyll is a pigment food in leaves which makes them green,</p> <p>Independent variable (changed – light/dark, water/no water)</p> <p>Control variable – things that are kept the same when carrying out an investigation.</p> <p>Dependent variable (what is measured – long leggy yellow plants growing towards the light, no growth with no water)</p>	
<p>Assessment questions</p>	<p>Where do plants get their food from?</p> <p>Do all plants need the same amunt of water and nutrients?</p>	<p>Resources:</p> <p>The rose of Jericho – resurrection plant - model</p>
<p>Learning Objective</p>	<p>Enquiry Question:</p> <p>Pre-Learning Expectations</p>	
<p>5th Concept</p> <p>To identify that animals, including humans, need the right types and</p>	<p>What do we know about nutrition?</p> <p>Explain that animals, including humans cannot make their own food and they get nutrition from what they eat.</p> <p>https://www.bbc.co.uk/bitesize/clips/ztr3cdm (Food needed by the human body)</p>	

<p>amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p>		
<p>Subject Specific Vocabulary</p>	<p>Core Knowledge - What do we want the children to know?</p>	<p>Suggested learning activities – What key experiences?</p>
<p>Balanced diet Protein Carbohydrate Fats Fibre Vitamins Minerals</p>	<p>To know a balanced diet is needed to be healthy. To know carbohydrates are needed for energy. To know protein is needed for muscle growth and repair. To know fibre is needed to support digestion and excretion.</p>	<p>Design a balanced diet plate – year 3, 3/4 Design a menu for a day – year 4/5 Fact file – food groups (carbohydrate, protein, fibre, fat, vitamin, minerals)</p>
<p>Assessment questions</p>	<p>Is fat good or bad for you? Is it ok to eat sweets?</p>	<p>Resources: - Foods for sorting (food groups / good/bad)</p>
<p>Learning Objective</p>	<p>Enquiry Question: Pre-Learning Expectations</p>	
<p>6th Concept To identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>What do we know about skeletons? Thought shower. Share: https://www.bbc.co.uk/bitesize/topics/z9339j6/articles/zqfdpbk (What does your skeleton do?) Create Definitions: Skeleton - A skeleton is a structural frame that supports an animal body. Exoskeleton - An exoskeleton is the external skeleton that supports and protects an animal's body, in contrast to the internal skeleton of, for example, a human. In usage, some of the larger kinds of exoskeletons are known as "shells". Endoskeleton - An endoskeleton is an internal support structure of an animal, composed of mineralized tissue.</p>	

Subject Specific Vocabulary	Core Knowledge - What do we want the children to know?	Suggested learning activities – What key experiences?
<p>Skeleton Bones Muscles Tendons Ligaments Joints</p>	<p>To know a skeleton is a structural frame that supports an animal body.</p> <p>To know there are several different skeletal types: the exoskeleton, which is the stable outer shell of an organism, the endoskeleton, which forms the support structure inside the body.</p> <p>The human skeleton is made of bones and grows as we grow.</p> <p>Our skull protects our brain and our ribs protect our heart and lungs.</p> <p>The skeleton bends at joints such as knees and ankles. Joints are where two or more bones join together.</p> <p>To know muscles are attached to bones by tendons and help them to move.</p> <p>To know when a muscle contracts (bunches up), it gets shorter and so pulls on the bone it is attached to. When a muscle relaxes, it goes back to its normal size.</p> <p>To know muscles can only pull and cannot push. Therefore muscles have to work in pairs to move a joint. One muscle will contract and pull a joint one way and another muscle will contract and pull it the other.</p>	<p>Task 1 – human skeleton collage (natural materials) and label key bones –</p> <p>Task 2 – label a human skeleton – skull, collar bone (clavicle), spine, pelvis, rib cage, humerus, radius, ulna, pelvis, femur, tibia, fibula, tarsels, metatarsels, phalanges</p> <p>Task 3 – Why is a skelton important? Children to explain why the skull and rib cage are important as well as knowing that the skeleton gives a body support.</p> <p>How does a skelton help us to move? Children to explain that the skeleton bends at joints and joints are where 2 or more bones are joined together.</p> <p>Share - https://www.bbc.co.uk/bitesize/topics/z9339j6/articles/zpbxb82 (How do your muscles work?)</p> <p>Task 4 – Draw and label a pair of muscles (arrows to show muscles working in pairs) – summarise: when a muscle contracts it gets shorter and pulls on the bone it is attached to.</p> <p>: when a muscle relaxes, it gets longer and goes back to its normal size.</p> <p>Year 3: Explain 2 ways we could make our muscles stronger and healthier?</p> <p>Year 4: How does the muscular system link to the skeletal system?</p>
<p>Assessment questions</p>	<p>What would happen if we had no skeleton? Why are muscles important?</p>	<p>Resources: Natural resources for creating the skeleton. Stretch band – for showing how muscles move.</p>