



## Year I – Animals including humans

### National Curriculum Objectives:

- 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.

Pupils should use the local environment throughout the year to explore and answer questions about animals in their habitat. They should understand how to take care of animals taken from their local environment and the need to return them safely after study. Pupils should become familiar with the common names of some fish, amphibians, reptiles, birds and mammals, including those that are kept as pets.

Pupils should have plenty of opportunities to learn the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes. Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells.

### Key Ideas

- There are many different animals with different characteristics.
- Animals have senses to help individuals survive. When animals sense things they are able to respond.
- Animals need food to survive.
- Animals need a variety of food to help them grow, repair their bodies, be active and stay healthy.

### Assessment:

- Can they identify some of the differences between different animals?
- Can they identify living and non-living things?
- Can they identify and name a variety of common animals?
- Can they describe how an animal is suited to its environment?
- Can they explain what they have found out?
- Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores?
- Can they identify and classify things they observe?
- Can they give a simple reason for their answers?
- Can they discuss what they can see, touch, smell, hear or taste?

### Greater Depth

- Can they begin to classify animals according to a number of given criteria?
- Can they point out differences between living and non-living things

Prior Learning	Being Scientists	Vocabulary
<p><b>In Early Years:</b></p> <ul style="list-style-type: none"> <li>Children should be able to identify different parts of their body.</li> <li>Have some understanding of growth and change.</li> <li>Can talk about things they have observed including animals.</li> <li>Understand the key features of the life cycle of a plant and an animal</li> <li>Know and talk about the different factors that support overall health and wellbeing: regular physical activity, healthy eating, tooth brushing, sensible amounts of screen time, having a good sleep routine, being a safe pedestrian</li> <li>Manage their own basic hygiene and personal needs understanding the importance of healthy food choices. (ELG Managing self)</li> </ul>	<ul style="list-style-type: none"> <li>Hunt for snails in the school grounds describing / photographing where they were found and what other plants and animals were also there. Predict from this what snails might eat and test predictions. • Children keep food diaries for themselves and a pet to tackle the question: "Do all animals eat the same food?" Use what they find to predict what hyenas (dogs) and tigers (cats) and field mice (hamsters) might eat</li> </ul> <p>Show short videos of animals hunting or trying to avoid being predated. Children describe how predators and prey move similarly and differently. Then show some unknown animals and children predict if they think they are predators or prey.</p> <ul style="list-style-type: none"> <li>Explore habitats in the local environment identifying the plants and minibeasts that live there. Children predict what might eat what and why they think that. Check their ideas through Internet research and construct a simple food chain from what is found. (An excellent longitudinal study would investigate how populations in these food chains vary as a result of the seasons)</li> <li>Which of our senses is the most accurate at identifying food? Make different coloured and flavoured jellies (make sure the colour does not match the flavour), they then test each jelly using their sight, taste and smell separately.</li> <li>Spiders prey on woodlice, what senses do woodlice use to detect the spiders and how do they avoid being eaten (they could test their ideas).</li> <li>Children take photos of a part of the school grounds and make a camouflage coat that a teddy could wear to protect from being eaten by the great teddy bear eating monster.</li> </ul>	<p>Amphibians, birds, fish, mammals, reptiles, carnivores, herbivore, omnivore, sight, hearing, touch, taste, smell, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow</p>
<p><b>In Year 2:</b></p> <ul style="list-style-type: none"> <li>Know that animals, including humans, have offspring which grow into adults</li> <li>Know the basic stages in a life cycle for animals, including humans.</li> <li>Find out and describe the basic needs of animals, including humans, for survival (water, food and air).</li> <li>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ul>		

## Year 2 – Animals including humans

### National Curriculum Objectives

- Know that animals, including humans, have offspring which grow into adults
- Know the basic stages in a life cycle for animals, including humans.
- Find out 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.

Pupils should be introduced to the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans. They should also be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs. The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep. Growing into adults can include reference to baby, toddler, child, teenager, adult. Pupils might work scientifically by: observing, through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions

### Key Ideas

- Animals move in order to survive.
- Different animals move in different ways to help them survive.
- Exercise keeps animal's bodies in good condition and increases survival chances.
- All animals eventually die.
- Animals reproduce new animals when they reach maturity.
- Animals grow until maturity and then don't grow any larger

### Assessment:

- Can they describe what animals need to survive? Can they explain that animals grow and reproduce?
- Can they explain why animals have offspring which grow into adults?
- Can they describe the life cycle of some living things? (e.g. egg, chick, chicken)
- Can they explain the basic needs of animals, including humans for survival? (water, food, air)
- Can they describe why exercise, balanced diet and hygiene are important for humans? Can they suggest how to find things out?
- Can they use prompts to find things out?
- Finding things out using secondary sources of information

### Greater Depth

- Can they explain that animals reproduce in different ways?

Prior Learning	Being scientists	Vocabulary
<p><b>In Year 1:</b></p> <p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <ul style="list-style-type: none"> <li>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</li> </ul>	<ul style="list-style-type: none"> <li>Construct a large bar chart for the wall of person's height against ages. Add in details of the class, teachers, parents and grand parents. Children use this to try and work out at what age people typically stop growing and relate this to when they are able to reproduce and why humans need to be big in order to have babies</li> <li>Create a large time line on the wall from 0-100 years.</li> <li>Children bring in pictures of pets their parents had when they were younger with information about how old the pet was when it died. Hang the pets on the time line at the age they were when they died.</li> <li>Do the same for great grandparents (or a relative that died long before the child was born). → Children use the time line to try and spot any patterns for how long animals live (e.g. do bigger animals live longer?).</li> <li>Show children some examples of animals they don't know (e.g. whale, elephant, desert mice, chimpanzees) and ask them to predict how long they might live for.</li> <li>Repeat the time line process with the age at which the pet or relative had their first baby. Encourage children to use the time line to come up with questions and look for patterns.</li> </ul>	<p>Living, dead, never alive, habitats, micro-habitats, food, food chain, leaf litter, shelter, sea shore, woodland, ocean, rainforest, conditions, desert, damp, shade</p>
<p><b>In Year 3:</b></p> <ul style="list-style-type: none"> <li>Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat.</li> <li>Know how nutrients, water and oxygen are transported within animals and humans.</li> <li>Know about the importance of a nutritious, balanced diet.</li> <li>Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Know about the skeletal and muscular system of a human.</li> </ul>		

## Year 3 Animals including humans

### National Curriculum Objectives:

Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat.

- Know how nutrients, water and oxygen are transported within animals and humans.
- Know about the importance of a nutritious, balanced diet.
- Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Know about the skeletal and muscular system of a human.

Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions. 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.

### Key Ideas

- Different animals are adapted to eat different foods.
- Many animals have skeletons to support their bodies and protect vital organs.
- Muscles are connected to bones and move them when they contract.
- Movable joints connect bones

### Assessment:

- Can they explain the importance of a nutritionally balanced diet?
- Can they describe how nutrients, water and oxygen are transported within animals and humans?
- Can they identify that animals, including humans, cannot make their own food: they get nutrition from what they eat?
- Can they describe and explain the skeletal system of a human?
- Can they describe and explain the muscular system of a human?
- Can they describe what they have found using scientific language?
- Can they describe what they have found out using secondary sources?

### Greater Depth

- Can they explain how the muscular and skeletal systems work together to create movement?
- Can they classify living things and non-living things by a number of characteristics that they have thought of?
- Can they explain how people, weather and the environment can affect living things?
- Can they explain how certain living things depend on one another to survive?

Prior Learning	Being scientists	Vocabulary
<p><b>In Year 2:</b></p> <ul style="list-style-type: none"> <li>• Know that animals, including humans, have offspring which grow into adults</li> <li>• Know the basic stages in a life cycle for animals, including humans.</li> <li>• Find out and describe the basic needs of animals, including humans, for survival (water, food and air).</li> <li>• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ul>	<ul style="list-style-type: none"> <li>• Compare X-rays and skeletons of animals looking for similarities and differences and predicting where vital organs are</li> </ul> <p>Look at X rays to identify broken and healed bones.</p> <ul style="list-style-type: none"> <li>• How does the length of a bone affect its bending strength and compressional strength? (You could use paper tubes)</li> <li>• How does the diameter of a bone affect its bending strength and compressional strength? (You could use paper tubes)</li> <li>• Consider why some bones need to be stronger than others and then get them to predict relative size of bones from some animals based on how they move.</li> </ul> <p>Give children a large empty torso where they sketch in pencil what they think the skeleton is like. Get them to move in a variety of ways and feel how they move and adapt their skeleton. Show a real or model skeleton and ask them to identify similarities and differences.</p> <ul style="list-style-type: none"> <li>• Children draw round their own hands, they feel their hands and look at how it can move and draw in where they think there are bones and put circles wherever they think there are joints, they then compare their ideas with a picture of a real hand.</li> <li>• Give children some bones from a chicken skeleton that is not assembled. They try and identify what each bone does and justify their choices, they again compare with a complete chicken skeleton. •</li> </ul> <p>Make a model arm from pieces of wood, string, sellotape (provide other materials including elastic, does the opposite of a muscle because it contracts when relaxed.).</p> <ul style="list-style-type: none"> <li>• Look at X rays to identify broken and healed bones. Investigate if the length of a bone affects its strength using card tubes. Or could compare thicker real chicken bones. Consider why some bones need to be stronger than others and then get them to predict relative size of bones from some animals based on how they move.</li> <li>• Compare X rays of animals and predict how they moved.</li> <li>• Show some video footage of an animal moving and children predict what the skeleton of that animal may be like.</li> <li>• Look at a cleaned chicken leg to see how it moves and then let children remove the skin from another one to see how muscles are attached.</li> </ul>	<p>Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax,</p>

**In Year 4:**

- 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

## Year 4 – Animals Including Humans

### National Curriculum Objectives:

- 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.

Pupils should be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions. Pupils might work scientifically by: comparing the teeth of carnivores and herbivores, and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images

### Key Ideas

- Animals have teeth to help them eat. Different types of teeth do different jobs.
- Food is broken down by the teeth and further in the stomach and intestines where nutrients go into the blood. The blood takes nutrients around the body.
- Nutrients produced by plants move to primary consumers then to secondary consumers through food chains

### Assessment:

- Can they identify, name and describe the functions of the basic parts of the digestive system in humans?
- Can they identify the simple function of different types of teeth in humans?
- Can they compare the teeth of herbivores and carnivores?
- Can they identify, construct and interpret a variety of food chains, identifying producers, predators and prey?
- Can they identify differences, similarities or changes related to simple scientific ideas or processes?

### Greater Depth:

- Can they classify living things and non-living things by a number of characteristics that they have thought of?
- Can they explain how people, weather and the environment can affect living things?
- Can they explain how certain living things depend on one another to survive?



Prior Learning	Being scientists	Vocabulary
<p><b>In Year 3:</b></p> <ul style="list-style-type: none"> <li>Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat.</li> <li>Know how nutrients, water and oxygen are transported within animals and humans.</li> <li>Know about the importance of a nutritious, balanced diet.</li> <li>Identify that humans and some other animals have skeletons and muscles for support, protection and movement: Know about the skeletal and muscular system of a human.</li> </ul>	<p>Provide children with a variety of different foods and they predict what nutrients they provide. Show them the food labels to check their ideas.</p> <p>Children keep a food diary for a day and then check tally up how much of each food group was in their diet. How does this compare with a healthy diet?</p> <p>Compare the diets of athletes with different demands e.g. cyclists and sprinters, marathon runners and weightlifters. How are they different and why?</p> <ul style="list-style-type: none"> <li>Give information about the poor diet of someone who is trying to be super skinny, predict the effects on the persons health and body</li> </ul> <p>Children keep a food diary for what they ate the previous day. Provide a large torso outline and ask children to annotate what has happened to the food they ate the previous afternoon and evening.</p> <ul style="list-style-type: none"> <li>After washing hands children feel their teeth, describe what they are like, then look in a mirror and draw them. They then eat a variety of foods; identifying which teeth they use and hypothesise which teeth do which job.</li> <li>Show pictures or fossils of animals teeth and jaws, predict what the animal eat.</li> <li>What liquids make teeth rot? (Use marble chips rather than eggshells as they fizz gently in lemon juice and acid). (This is interesting because sugar does not corrode teeth, only acids do. Sugar does result in tooth decay because bacteria in the mouth eat sugar and excrete acid; it is this acid that corrodes teeth).</li> <li>Construct a food chain from animals teeth found in the local area (or ones you have bought!)</li> <li>Bread is a carbohydrate and so provides our muscles with energy, but it needs to dissolve in the blood before it can be transported to the muscles. Where in the body does this happen? Does chewing make it dissolve? Does chewing with saliva make it dissolve? Does mixing with acid make it dissolve? They can test all of these things. The point is that one of these things causes bread to dissolve, this happens in the intestines. (They don't need to know how it happens just that this is where it does)</li> </ul>	<p>Herbivore, Carnivore, Digestive system, tongue, mouth, teeth, oesophagus, stomach, gall bladder, small intestine, pancreas, large intestine, liver, tooth, canine, incisor, molar, premolar, producer, consumer.</p>
<p><b>In Year 5:</b></p> <ul style="list-style-type: none"> <li>Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird.</li> <li>Know the differences between different life cycles.</li> <li>Know the process of reproduction in plants.</li> <li>Know the process of reproduction in animals.</li> </ul>		

## Year 5 – Animals including humans

### National Curriculum Objectives:

- Describe the changes as humans develop to old age.
- Describe the life process of reproduction in some animals
- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.

Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.

### Key Ideas

- Different animals mature at different rates and live to different ages

### Assessment:

- Can they describe the changes as humans develop to old age?
- Can they use basic ideas of inheritance, variation and adaptation to describe how living things have changed over time?
- Can they use a graph to answer scientific questions?
- Can they present a report of their findings through writing, display and presentation?

### Greater Depth:

- Can they create a timeline to indicate stages of growth in certain animals, such as frogs and butterflies?
- Can they describe the changes experienced in puberty?
- Can they draw a timeline to indicate stages in the growth and development of humans?

Prior Learning	Being scientists	Vocabulary
<p><b>In Year 4:</b></p> <ul style="list-style-type: none"> <li>• Describe the simple functions of the basic parts of the digestive system in humans.</li> <li>• Identify the different types of teeth in humans and their simple functions.</li> <li>• Construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul>	<p>Study images of different humans. What are the similarities and differences? Children explore images of what they looked like as babies, toddlers and children. How have they changed? How are they similar / different etc?</p> <p>Compare the lifecycles of different mammals, amphibians and birds. Study an animal in the classroom and track how it changes over time. Compare different plant life cycles.</p>	<p>Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty</p>
<p><b>In Year 6:</b></p> <ul style="list-style-type: none"> <li>• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> <li>• Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li>• Describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>		

## Year 6 – Animals including humans

### National Curriculum Objectives:

- 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.

Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function. Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body. Pupils might work scientifically by: exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.

### Key Ideas

- The heart pumps blood around the body.
- Oxygen is breathed into the lungs where it is absorbed by the blood.
- Muscles need oxygen to release energy from food to do work. (Oxygen is taken into the blood in the lungs; the heart pumps the blood through blood vessels to the muscles; the muscles take oxygen and nutrients from the blood.)

### Assessment:

- Can they identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood?
- Can they recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function?
- Can they describe the ways in which nutrients and water are transported within animals and plants, including humans?
- Can they explain, in simple terms, a scientific idea and the evidence which supports it?

### Greater Depth:

- Can they compare the organ systems of humans to other animals?
- Can they make a diagram of the human body and explain how different parts work and depend on one another?
- Can they name and locate the major organs in the human body?

Prior Learning	Being scientists	Vocabulary
<p><b>In Year 5:</b></p> <ul style="list-style-type: none"> <li>Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird.</li> <li>Know the differences between different life cycles.</li> <li>Know the process of reproduction in plants.</li> <li>Know the process of reproduction in animals</li> </ul>	<p>How does the size of a person affect their lung capacity?</p> <ul style="list-style-type: none"> <li>Candles need oxygen to burn. How is the time a candle burns for affected by the amount of times I have breathed in and out the air that it burns in?</li> </ul> <p>How does the size of the muscle we exercise affect our pulse rate?</p> <ul style="list-style-type: none"> <li>How does sustained, gentle exercise affect our pulse rate?</li> <li>Use the model to predict the body wide symptoms of: 1. A disease that reduces the lungs ability to transfer oxygen to the blood. 2. A disease that restricts the amount of blood that can flow around the body.</li> <li>How might the circulatory system be different for an elephant or a humming bird?</li> <li>Does your exhaled air always contain the same amount of oxygen or does exercise change this? (Use the burning candles in jars test)</li> <li>How might doing exercise at the top of a mountain affect the body (less air at altitude)</li> </ul>	<p>Oxygenated, Deoxygenated, Valve, Exercise, Respiration Circulatory system, heart, lungs, blood vessels, blood, artery, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco.</p>
<p>In KS3:</p> <p>Cells and organisation:</p> <ul style="list-style-type: none"> <li>cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope</li> <li>the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts</li> <li>the similarities and differences between plant and animal cells</li> <li>the role of diffusion in the movement of materials in and between cells</li> <li>the structural adaptations of some unicellular organisms</li> <li>the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms.</li> </ul> <p>The skeletal and muscular systems:</p> <ul style="list-style-type: none"> <li>the structure and functions of the human skeleton, to include support, protection, movement and making blood cells</li> <li>biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles</li> <li>the function of muscles and examples of antagonistic muscles.</li> </ul> <p>Nutrition and digestion:</p> <ul style="list-style-type: none"> <li>content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed</li> <li>calculations of energy requirements in a healthy daily diet</li> </ul>		

- the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases
- the tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)
- the importance of bacteria in the human digestive system
- plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots.