

Year 4 – Animals, including Humans

National Curriculum Objectives	Sticky Knowledge	Vocabulary	
<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	Herbivore, Carnivore, Digestive system, tongue, mouth, teeth, oesophagus, stomach, gall bladder, small intestine, pancreas, large intestine, liver, tooth, canine, incisor, molar, premolar, producer, consumer.	
		Key Scientists	Linked Texts
		Ivan Pavlov (Digestive System Mechanisms)	<i>Human Body Odyssey</i> (Werner Holzwarth)
		Joseph Lister (Discovered Antiseptics)	<i>Crocodiles Don't Brush Their Teeth</i> (Colin Fancy)
			Wolves (Emily Gravett)
Prior Learning	Key Question(s):	Future Learning	
In Year 3 children should: <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> What different types of food are there? Why do we need a variety of different foods? Do all organisms eat the same things? Why do some people need different diets? (weightlifter vs marathon runner) Why are teeth important? What happens to our food? What is our digestive system? How does our food turn into poo and wee? 	In Year 5 children will: <ul style="list-style-type: none"> Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird. Know the differences between different life cycles. Know the process of reproduction in plants. Know the process of reproduction in animals 	

- Identify that humans and some other animals have skeletons and muscles for support, protection and movement:

Teaching Ideas

<u>Comparative tests</u>	<u>Identify & Classify</u>	<u>Observation over time</u>	<u>Pattern Seeking</u>	<u>Research</u>	<u>BIG Question – Assessment Opportunity</u>
In our class, are omnivores taller than vegetarians?	<p>What are the names for all the organs involved in the digestive system?</p> <p>How can we organise teeth into groups?</p>	How does an egg shell change when it is left in cola?	Are foods that are high in energy always high in sugar?	How do dentists fix broken teeth?	What do our bodies do with the food we eat?

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<ul style="list-style-type: none"> ● 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: 	<ul style="list-style-type: none"> ● 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. 	Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax,	
		Key Scientists	Linked Texts
		Adelle Davis (20 th Century Nutritionist) Marie Curie (Radiation / X-Rays)	<i>The Story of Frog Belly Rat Bone</i> (Timothy Basil Ering) <i>Funnybones</i> (Janet and Allan Ahlberg) <i>I Will Never Not Ever Eat a Tomato</i> (Lauren Child) <i>Goldilocks and the Three Bears</i> (Samantha Berger)
<p align="center">Prior Learning</p>	<p align="center">Key Question(s):</p>	<p align="center">Future Learning</p>	
<p>In Year 2 children should:</p> <ul style="list-style-type: none"> ● Know that animals, including humans, have offspring which grow into adults ● Know the basic stages in a life cycle for animals, including humans. 	<ul style="list-style-type: none"> ● Why do we need a skeleton? ● What types of skeleton are there? ● Are all skeletons the same? ● Can something survive without a skeleton? ● What happens if we break a bone? ● How do we move? 	<p>In Year 4 children will:</p> <ul style="list-style-type: none"> ● 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 	

- 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.

- Are bones that are bigger, stronger?
- Why do we need joints?
- Why do muscles get tired?
- Can we 'break' muscles?

Teaching Ideas

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<p>How does the angle that your elbow/knee is bent affect the circumference of your upper arm/thigh?</p> <p>How does the skull circumference of a girl compare with that of a boy?</p>	How do the skeletons of different animals compare?	How does our skeleton change over time? (from birth to death)	Do male humans have larger skulls than female humans?	Why do different types of vitamins keep us healthy and which foods can we find them in?	<p>Why do animals have skeletons?</p> <p>What is a healthy diet and why is it important?</p>

Year 4 – Electricity

National Curriculum Objectives	Sticky Knowledge	Vocabulary	
<ul style="list-style-type: none"> • Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. • Recognise that a switch opens and closes the circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors. • Know the difference between a conductor and an insulator; giving examples of each. • Safety when using electricity. 	<ul style="list-style-type: none"> • A source of electricity (mains or battery) is needed for electrical devices to work. • Electricity sources push electricity round a circuit. • More batteries will push the electricity round the circuit faster. • Devices work harder when more electricity goes through them. • A complete circuit is needed for electricity to flow and devices to work. • Some materials allow electricity to flow easily and these are called conductors. Materials that don't allow electricity to flow easily are called insulators. 	Electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component.	
		Key Scientists	Linked Texts
		Thomas Edison (First Working Lightbulb) Joseph Swan (Incandescent Light Bulb)	Until I Met Dudley (Roger McGough) Oscar and the Bird: A Book about Electricity (Geoff Waring) Electrical Wizard: How Nikola Tesla Lit Up the World (Elizabeth Rusch)
Prior Learning	Key Question(s):	Future Learning	

<p>In Early Years children:</p> <ul style="list-style-type: none"> • May have some understanding that objects need electricity to work. • May understand that a switch will turn something on or off. 	<ul style="list-style-type: none"> • What would life be like without electricity? • What sorts of things use/need electricity? • What electricity do I use? • In which ways can we 'get' electricity? (mains/plugs/batteries/wireless) • How do we make electricity? • How do batteries work? • How quickly can batteries run out? Does this make a difference depending on number of components? • How does the number of batteries added to the circuit affect a device? • What materials can carry electricity? (conductors/insulators) 	<p>In Year 6 children will:</p> <ul style="list-style-type: none"> • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. • Use recognised symbols when representing a simple circuit in a diagram.
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Teaching Ideas

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<p>How does the thickness of a conducting material affect how bright the lamp is?</p> <p>Which metal is the best conductor of electricity?</p>	<p>How would you group these electrical devices based on where the electricity comes from?</p>	<p>How long does a battery light a torch for?</p>	<p>Which room has the most electrical sockets in a house?</p>	<p>How has electricity changed the way we live?</p> <p>How does a light bulb work?</p>	<p>What can we do with electricity?</p>

Year 4 – Materials (Mixtures & Separation)

National Curriculum Objectives	Sticky Knowledge	Vocabulary											
<ul style="list-style-type: none"> Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids, and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. 	<ul style="list-style-type: none"> When two or more substances are mixed and remain present the mixture can be separated. Some changes can be reversed and some can't. Materials change state by heating and cooling. <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th style="font-size: small;">Separating technique</th> <th style="font-size: small;">Difference in property required</th> </tr> </thead> <tbody> <tr> <td style="font-size: small;">Filtration and sieving</td> <td style="font-size: small;">A solid that does not dissolve in a liquid. Different sized solid bits</td> </tr> <tr> <td style="font-size: small;">Magnets</td> <td style="font-size: small;">Some materials magnetic others not</td> </tr> <tr> <td style="font-size: small;">Evaporation</td> <td style="font-size: small;">A solid dissolved in water and the solid has a high boiling temperature</td> </tr> <tr> <td style="font-size: small;">Floating</td> <td style="font-size: small;">Some materials float and other sink</td> </tr> </tbody> </table>	Separating technique	Difference in property required	Filtration and sieving	A solid that does not dissolve in a liquid. Different sized solid bits	Magnets	Some materials magnetic others not	Evaporation	A solid dissolved in water and the solid has a high boiling temperature	Floating	Some materials float and other sink	Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection,	
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		Key Scientists Spencer Silver, Arthur Fry and Alan Amron (Post-It Notes) Ruth Benerito (Wrinkle-Free Cotton)	Linked Texts <i>Itch</i> (Simon Mayo) <i>Kensuke's Kingdom</i> (Michael Morpurgo) <i>The BFG</i> (Roald Dahl)										
Prior Learning	Key Question(s):	Future Learning											
In KS1 children should: <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> What are mixtures? What does dissolving mean? Which of the following dissolve in water: sugar, bicarbonate of soda, oil, chocolate, coffees, dark vinegar and wax? How does the amount of water used affect how much sugar will dissolve in it? Which sweets dissolve in water? How can we separate mixtures? How can we clean our dirty water? 	In Year 5 children will: <ul style="list-style-type: none"> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including wood, metals and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. 											

- Compare and group together a variety of everyday materials on the basis of their simple physical properties.
- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

- Explain that some changes result in the formation of new materials, and this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda

Teaching Ideas

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<p>How does the temperature of tea affect how long it takes for a sugar cube to dissolve?</p> <p>Which type of sugar dissolves the fastest?</p>	Can you group these materials based on whether they are transparent or not?	<p>How does a container of salt water change over time?</p> <p>How does a sugar cube change as it is put in a glass of water?</p>	<p>Do all stretchy materials stretch in the same way?</p> <p>How does temperature affect how much solute we can dissolve?</p>	What are microplastics and why are they harming the planet?	How can we separate a mixture of water, iron filings, salt and sand?

Plants – how they make their food