

# Human body

## Explorify planning support



Curriculum statements	Explorify activities	Suggested use / taking it further
<b>NUTRITION</b>		
Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) (England)	<a href="#">Fuel up</a> <span>ooo</span>	Bananas, spaghetti, cereal bar: foods athletes consume for energy and minerals – contrasting the refined sugar in the cereal bar. <a href="#">Food a fact of life</a> has food and farming related information and activity packs, and the <a href="#">Eatwell guide</a> which shows food groups.
Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene (England)	<a href="#">Brown shapes</a> <span>ZIZO</span>	Zoom in on apple pips and out to a core. Would start a discussion about fruit and vegetables in our diet and where they're grown. Links to a further OOO called <a href="#">Types of apple</a> .
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 (England)	<a href="#">Bonkers bubbles</a> <span>ZIZO</span>	Zooms in on the holes inside a loaf of wholemeal bread. While this might offer a way to start a discussion about micro-organisms, it could just as easily be bread itself that's discussed. The process of grinding flour to make bread at an ancient watermill is shown in our activity <a href="#">Turning teeth</a> . Bread can be baked by a class of children over the course of a day, or you can invite in a company such as <a href="#">Warburtons</a> to run a workshop.
Recognise the impact of diet... on the way their bodies function (England)	<a href="#">Bumpy eyes</a> <span>ZIZO</span>	A pineapple – a tropical fruit which makes a healthy snack. Children could learn <a href="#">how</a> to grow a pineapple plant from a cut-off crown. They could compare other fruits and make a smoothie or fruit salad.

<p><b>By investigating some body systems and potential problems which they may develop, I can make informed decisions to help me to maintain my health and wellbeing.</b> (Scotland)</p> <p><b>I can describe how living things compete for specific resources and depend on each other for survival.</b> (Wales)</p>	<a href="#">Baking cookies</a>	WGO	Watch cookies bake on a tray in the oven. This one was designed to demonstrate an irreversible change but could equally lead to a discussion about food and how heat transforms it. <i>Why do we cook food?</i>
	<a href="#">Top of the pops</a>	WGO	We watch popcorn pop in a pan. While we could look at how the corn is transformed by this process, we might also consider unsweetened popcorn as a healthy snack. Cooked in a microwave, it does not even require oil (unlike in the video).
	<a href="#">Have you ever been told to eat more fruit and vegetables?</a>	HYE	Start your topic with this relatable question, encouraging children to share their own experiences and be the experts. Fruit and vegetables are an important part of a balanced diet. You could carry out a class survey of favourite types of fruit and vegetable or invite parents and carers or the school chef to discuss how they include them in meals.
	<a href="#">What if humans lived on Mars?</a>	WI	Follow up this question by thinking of Positive, Minus, Interesting outcomes. As well as considering the temperature extremes, social confinement, and the need to wear spacesuits all the time, children could consider how there would be a need to farm food there. There's a Martian farmers recruitment poster available <a href="#">here</a> from NASA. In 2016, schools nationwide and the RHS collaborated with Tim Peake's International Space Station mission to grow and compare two packets of rocket seeds, one of which had been to space. Tim and the team discuss the process <a href="#">here</a> – great for Working Scientifically, but also interesting in considering whether food for humans could be produced away from Earth.
	<a href="#">What if an astronaut gets thirsty?</a>	WI	Interesting when considering how much water we need to drink. On the International Space Station, most of the water astronauts drink has been recycled as Chris Hadfield explains <a href="#">here</a> . Might lead to a discussion of the water cycle and water treatment here on Earth. The Take It Further for this activity suggests an experiment to purify 'astronaut wee' made with food colouring.

	<a href="#">What if you only ate chips?</a>	WI	The perfect gateway for a discussion with children about what makes for a balanced diet. BBC Bitesize have information about balanced diets <a href="#">here</a> .
	<a href="#">What if we had no teeth?</a>	WI	The shape of our teeth (incisors, molars, canines) suits an omnivorous diet. You might also consider why our ancestors had healthier teeth? <i>How has our diet changed?</i>
	<a href="#">How many vegetables should I eat?</a>	TBQ	The discussion arising from this question might include the nature of a balanced diet and the ethical, religious, and environmental reasons people have for choosing particular diets. This BBC Bitesize film discusses different teeth, human and animal, for different diets.
	<a href="#">Which breakfast is best?</a>	TBQ	The illustration that accompanies this question shows a boiled egg and 'soldiers'. A discussion could lead to considering which foods are eaten for energy, and which for growth.
	<a href="#">How can you help someone dance for 24 hours?</a>	TBQ	This question delves into the link between food and exercise. It encourages children to think widely about the preparations that would be necessary if someone were to take on this challenge. Links are suggested in Take It Further to the <a href="#">City Science Stars</a> football-themed science resources produced by PSTT.
	<a href="#">Does colour affect how we taste things?</a>	TBQ	This question invites us to consider the role of taste in the food we eat. It's suggested in the Take It Further that you could go on to use the <a href="#">BBC's Terrific Scientific resources</a> , including What can I taste with my tongue? in which children count the tiny bumps on their tongues in search of a 'super taster'.
	<a href="#">Why do animals eat different things?</a>	TBQ	The question is posed beside an image of a gorilla eating raw vegetables. The teeth and digestive system of an animal (including a human) is adapted to its diet - herbivore, carnivore, or omnivore. Those terms are explained in <a href="#">this</a> BBC Bitesize clip.

	<a href="#">What if everything tasted the same?</a>	WI	This activity encourages discussion about the link between a healthy, balanced diet and our enjoyment of food. As a further activity, it's suggested that you bring in a bag of shopping (or empty packets) for children to sort using the <a href="#">Eatwell</a> guide.
	<a href="#">What is a balanced diet for us and the planet?</a>	TBQ	<b>This is one of our Climate Challenge activities.</b> In discussing this Big Question, children learn that the choices we make about where our food comes from and how it is produced have global consequences and are complicated.
	<a href="#">What impact do our choices have on habitats?</a>	TBQ	<b>This is one of our Climate Challenge activities.</b> This Big Question acknowledges the concerns of scientists about the pressures to provide food, clothing and homes for a global population that could reach 9.7 billion by 2050 and homes in on the small, positive actions we can make locally.
	<a href="#">What if we ate insects?</a>	WI	<b>This is one of our Climate Challenge activities.</b> This activity invites children to discuss the value of finding alternative sources of protein, taking into account an increasing world population.
	<a href="#">Family meal</a>	WGO	<b>This is one of our Climate Challenge activities.</b> This activity considers the small, positive changes we might make in the light of global warming and its effects on creatures such as the family of polar bears we see in this film.
	<a href="#">Healthy Drinks</a>	OOO	This activity helps children decide whether or not a drink is healthy. It encourages them to consider the meaning of 'healthy' as it includes thinking about the effect on teeth as well as the whole body, and to explore how much sugar is in different drinks.
	<a href="#">What's for dinner?</a>	OOO	Showing the children three different sources of protein helps to remind them of the importance of protein in our diets and where we can get this from. There is also an opportunity to link these ideas to food chains.

# TEETH

<p><b>Identify the different types of teeth in humans and their simple functions</b> <i>Year 4 (England)</i></p> <p><b>Biological systems: By researching, I can describe the position and function of the skeleton and... discuss what I need to do to keep them healthy.</b> <i>SCN 1-12a (Scotland)</i></p> <p><b>Biological systems: By investigating some body systems and potential problems which they may develop, I can make informed decisions to help me to maintain my health and wellbeing.</b> <i>SCN 2-12a (Scotland)</i></p> <p><b>I can explain the role of different organs and systems that enable... animals to live and grow.</b> <i>Progression step 3 (new Wales)</i></p> <p><b>Where the major organs are located in the body</b></p>	<a href="#">Have you ever been to the dentist and had your teeth checked?</a>	<b>HYE</b>	Here's a good intro to the topic of teeth and digestion, as children are asked to draw on their own experiences and become the experts.
	<a href="#">Hidden away</a>	<b>ZIZO</b>	An X-ray image allows us to see both baby and adult teeth in a child's skull. The NHS provide guidance on tooth care <a href="#">here</a> . This advice could be turned into posters or presentations.
	<a href="#">Smile please</a>	<b>OOO</b>	Compare three animals with very different teeth: a cat, a horse, and a viper. Children could explore how their own teeth work, by eating an apple, for instance.
	<a href="#">Pearly tips</a>	<b>ZIZO</b>	A close-up look at the head of an electric toothbrush. Schools often have a giant set of teeth with brush which can be used to demonstrate the correct way to clean.
	<a href="#">What if you had teeth like a snake?</a>	<b>WI</b>	A snake's teeth aren't designed for chewing. Some can separate their jaws; some have fangs (hollow teeth) for injecting venom. <a href="#">This</a> film shows a snake bite in slow-mo.
	<a href="#">What if toothbrushes didn't exist?</a>	<b>WI</b>	A useful opener for discussing plaque, cavities, acid, tartar and gum disease. You can <a href="#">investigate</a> what might happen to unbrushed teeth using eggs in their shells and fizzy drink. <a href="#">This</a> BBC film shows astronaut Chris Hadfield brushing his teeth in space.
	<a href="#">Baffling bristles</a>	<b>ZIZO</b>	We close in on a very old toothbrush, from 1870-1920. Invite a dentist or dental hygienist into school. They might offer the opportunity to try disclosing tablets. You could even make your own toothpaste with <a href="#">this</a> STEM activity.
	<a href="#">Why do we have different teeth?</a>	<b>TBQ</b>	A picture of an open mouth showing clean, white teeth might lead to identifying which are canines, incisors, or molars. Children can make large models of a particular type of tooth. There's information on types of teeth <a href="#">here</a> at BBC Bitesize.
	<a href="#">Sparkling smiles</a>	<b>MB</b>	Fill your mystery bag with objects used to keep teeth healthy and spark a discussion.

KS2 (Northern Ireland)	<a href="#">Tiny teeth</a>	ZIZO	Tadpoles have teeth! Who knew? Children might bring in shark teeth or even their own lost teeth which could be examined under a digital microscope.
	<a href="#">Say cheese</a>	OOO	Compare the teeth of a cat, dolphin, and horse: a carnivore's teeth in the case of the cat and herbivore in the horse. Model the teeth of different animals using Plasticine. Use sort cards to match the teeth to the diet. Discuss what happens to our teeth over the course of our lifetime.
	<a href="#">What if we had no teeth?</a>	WI	<b>See above (Nutrition).</b> This one considers changing diets and how the shape of our teeth is suited to an omnivorous diet. Teeth are the gateway to our digestive system and play a role in cutting, grinding and mashing food.
	<a href="#">Bite, rip, mash</a>	OOO	The mechanical process of digestion begins in the mouth, with the teeth, and this Odd One Out focuses on the particular roles of different teeth-types by comparing how we eat an apple, a breadstick and a chicken leg.
	<a href="#">Disappearing eggshells</a>	WGO	The video uses egg shells to represent tooth enamel and shows that in vinegar the eggshells go floppy and begin to disintegrate when removed from the contain.
	<a href="#">What would they eat?</a>	OOO	This Odd One Out compares the skulls of an herbivore, omnivore and carnivore: a zebra, a fox and a sabre-toothed cat. The clue is in the teeth.
	<a href="#">Strange snack</a>	ZIZO	Take a close look at the teeth of a beaver by examining the marks left on a tree by them. Children could go on to compare their own diet - and (using mirrors) their teeth - to different animals.
	<a href="#">Bared: an alter ego</a>	SWA	Take a look at an amusing artwork that features a moving set of cardboard teeth, but will the children spot any irregularities compared to a real, adult set of teeth.

DIGESTION		
<p><b>Describe the simple functions of the basic parts of the digestive system in humans</b> <i>Year 4 (England)</i></p> <p><b>Describe the ways in which nutrients and water are transported within animals, including humans</b> <i>Year 6 (England)</i></p> <p><b>Biological systems: I have contributed to investigations into the role of microorganisms in producing and breaking down some materials.</b> <i>SCN 2-13a (Scotland)</i></p> <p><b>Biological systems: By researching, I can describe the position and function of... major organs of the human body and discuss what I need to do to keep them healthy.</b> <i>SCN 1-12a (Scotland)</i></p>	<p><a href="#">It takes more than guts</a>      <b>OOO</b></p>	<p>The images show a tooth, a heart, and intestines, parts of the body – in addition to the stomach - involved in the process of digestion.</p>
	<p><a href="#">Dropping by!</a>      <b>OOO</b></p>	<p>Three images of animals and their poo: an elephant, a dog, and a rabbit. We might think how scientists can learn a lot about an animal from its droppings. Identification sheets by the <a href="#">Wildlife Trust</a> and the <a href="#">Woodland Trust</a> are signposted in the Take It Further along with an interactive RSPB identification game called <a href="#">Whose poo?</a></p>
	<p><a href="#">What food helps to keep us healthy?</a>      <b>TBQ</b></p>	<p>We see a bowl of porridge with blueberries, strawberries, raspberries, and banana. This might lead you to teach the children about the two types of fibre needed to improve health: soluble, which dissolves in water, and insoluble, which doesn't. The need to drink enough water should also be mentioned.</p>
	<p><a href="#">Totally potty</a>      <b>LWCYH</b></p>	<p>This activity is simply a sound: the sound of a toilet flushing. As well as being a fun way to focus the children's attention at the start of the lesson, it might lead to a discussion about what happens to the food we have eaten.</p>
	<p><a href="#">How long is the gut?</a>      <b>TBQ</b></p>	<p>This activity invites children to estimate the length of their gut, from mouth to anus. They might use a length of string to help with this task, eventually comparing their lengths to a pre-cut 9m string representing the gut of an average man. A diagram like <a href="#">this</a> would give them more to work with, and there's also a fun activity suggested in which children construct a digestive system using a plastic bag and pair of tights.</p>



<b>I can explain the role of different organs and systems that enable... animals to live and grow.</b> <i>Progression step 3 (new Wales)</i>  <b>Where the major organs are located in the body</b> <i>KS2 (Northern Ireland)</i>	<a href="#">Our digestive organs</a>	OOO	Children compare three different organs in the digestive system by considering what happens in each of them. This encourages them to think about the differences between mechanical and chemical digestion.
	<a href="#">What if we had four stomachs like a cow?</a>	WI	This activity helps children to recognise that animals have different digestive systems depending on what they eat, and that each part of the digestive system has a specific function.
	<a href="#">How are these linked to digestion?</a>	OOO	The pictures in this activity (foot pump, pestle and mortar and tea strainer) represent three parts of the digestive system (stomach, molar teeth and small intestine walls respectively). Children suggest which part of the digestive system could be represented by each of the objects and they can consider how well the objects mimic what happens in the digestive system.

## FOOD CHAINS

<b>Construct and interpret a variety of food chains, identifying producers, predators and prey</b> <i>(England)</i>	<a href="#">Have you ever seen an animal search for food?</a>	HYE	Use these two activities to start a discussion about who eats what in your class.
	<a href="#">What's for dinner?</a>	OOO	
	<a href="#">Different homes</a>	OOO	These three images show different habitats that children might explore in the context of the food chains linking plants and animals found there: a river, urban and woodland habitat.
	<a href="#">Food chain challenge</a>	OOO	Compare three images that form either the beginning or end of different food chains: hazelnuts, blackberries and a hawk
	<a href="#">Tasty web</a>	OOO	Compare three images that make a food chain: a strawberry, house sparrow and fox, then challenge the children to think of a food chain for each.
	<a href="#">Lunchtime</a>	OOO	One of the three images shows an omnivore, the other two are herbivores. Compare a zebra, snail and a field mouse.
	<a href="#">Green producers</a>	OOO	Photosynthesis happens on land and in water and, in this activity, children compare grass with oak leaves and algae.



	<a href="#">Hunter or hunted</a>	000	In this activity, we compare predators and prey: a common frog, a wild mouse and a harbour seal.
	<a href="#">Muddy meal</a>	WGO	Watch an egret hunting for food in the muddy shallows.
	<a href="#">Takeaway dinner</a>	WGO	The bearded vulture's diet is almost exclusively bone and in this short film we see it drop bones from a height to smash on the rocks below, enabling it to access the nutritious marrow.

## S K E L E T O N

<p><b>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</b> <i>Year 3 (England)</i></p> <p><b>Biological systems: By researching, I can describe the position and function of the skeleton...</b> <i>SCN 1-12a (Scotland)</i></p> <p><b>I can describe the features of organisms and recognise how they allow them to live, grow and reproduce for survival in their environment.</b> <i>Progression step 3 (new Wales)</i></p> <p><b>That humans have skeletons to protect major organs, support their bodies and help them move</b> <i>KS2 (Northern Ireland)</i></p>	<a href="#">Funny bones</a>	000	This Odd One Out shows three skeletons: a bird's, a snake's, and an elephant's. Children will enjoy guessing the animals these skeletons belong to, and a discussion could lead to how skeletons allow animals to grow bigger and provide protection for internal organs.
	<a href="#">Get a backbone</a>	000	This Odd One Out contrasts a mouse, crab, and octopus: a vertebrate, an invertebrate with an exoskeleton, and an invertebrate with no exoskeleton – the octopus. The Take It Further suggests looking at X-ray images of animal skeletons, such as <a href="#">these</a> , and modelling skeletons using pasta shapes.
	<a href="#">Legs eleven</a>	000	An earwig, a woodlouse and a common house spider. Each has an exoskeleton (skeleton on the outside) as opposed to an endoskeleton (skeleton on the inside). While this does provide a handy context for practising classification, with a branching database for instance, children will be interested to learn about the <a href="#">invertebrate species</a> that have no backbone or skeleton, such as jellyfish, worms or the giant squid. Children could design suitable 'suit of armour' exoskeletons for these creatures.
	<a href="#">Animal fossils</a>	000	When a fossil is formed, the soft parts of an animal have usually decomposed leaving only the hard parts – the skeleton. Here we see the fossilized skeletons of a pterosaur (or pterodactyl), an Iguanodon and an Ichthyosaur. There are artists' impressions of what these animals may have looked like in the Background Science. Children could draw their own artists' impressions based on fossilized skeletons.
	<a href="#">Brilliant brain case</a>	000	The skull of a <i>Homo sapiens</i> is contrasted with two of its extinct ancestors. Children will be interested to learn more about our

		ancestors (who they sometimes mistakenly refer to as monkeys) and could use details, such as those found <a href="#">here</a> at NHM, to construct a life-size <i>Homo erectus</i> cut-out.
	<a href="#">Light as air</a> ZIZO	The skeleton of a bird – in this case a pink-footed goose – is an interesting contrast to that of a human or other land-based animal, being lighter and having more neck vertebrae. Measure the wingspans of different bird species in Maths or examine a collection of found feathers under a microscope and their strong yet hollow structure could be demonstrated by <a href="#">testing the strength of paper tubes</a> .
	<a href="#">Born to dance</a> WGO	This film compares the coordination, flexibility, and balance of dancers of different ages, with different proportions of head size to body and limb length. A baby's head is quarter of its body length, while an adult's is an eighth. This links to drawing using proportions in <a href="#">Art</a> . Or investigate the link between arm span and height <a href="#">here</a> .
	<a href="#">Bladerunner</a> WGO	A runner attaches a prosthetic blade then demonstrates a sprint. Thinking about what we might use to replace a missing part of our body and skeleton allows us to consider the qualities needed, from strength to flexibility and spring.
	<a href="#">Have you ever broken a bone?</a> HYE	Give children the opportunity to become experts and share their experiences with the rest of the class. Ask them how their broken bone was treated and how long it took to repair. Children might go on to make skeleton shadow puppets, perhaps putting words to a familiar tune (e.g. London's Burning) that demonstrate their knowledge of bones, muscles and tendons.
	<a href="#">What if my bones were bendy?</a> WI	The question is posed alongside an X-ray image of a hand. There are 27 bones and 34 muscles in a human hand along with tendons, ligaments, nerves, and blood vessels. Create a ' <a href="#">bionic hand</a> ' replicating these component parts with straw, rubber bands, string and cardboard skin.
	<a href="#">What is in a handshake?</a> OOO	Compare the hands of a human, a primate, and a robot.

ABBREVIATIONS AND DESCRIPTIONS OF THE DIFFERENT EXPLORIFY ACTIVITY TYPES		
<b>ZIZO</b>	Zoom In, Zoom Out	Visually engaging close-up photos
<b>OOO</b>	Odd One Out	Find similarities and differences
<b>WGO</b>	What's Going On?	Short, distraction-free videos
<b>HYE</b>	Have You Ever?	Activities linked to everyday experiences
<b>WI</b>	What If?	Explore ideas in new contexts
<b>TBQ</b>	The Big Question	Plan an investigation
<b>PS</b>	Problem Solvers	Think critically and creatively
<b>MS</b>	Mission Survive	Fun, imaginative hands-on challenges
<b>MB</b>	Mystery Bag	Use senses to work out contents in a bag
<b>LWCYH</b>	Listen What Can You Hear?	Recordings of familiar sounds
<b>SWA</b>	Start With Art	Using artworks to prompt science discussion
<b>WJH</b>	What Just Happened?	Observing changes over time
<b>WHO</b>	Who Is?	Learn about a diverse range of scientists

**Other recommended resources to support planning:**

[PLAN primary science assessment resources \(planassessment.com\)](https://planassessment.com)

[Assessment \(TAPS\) - Curriculum Materials | Primary Science Teaching Trust \(pstt.org.uk\)](https://pstt.org.uk)

[The Great Science Share](#) - see videos on Scientific Enquiry under the tab "Great Science Skills".

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