

**National Curriculum Objectives:**

*(Statutory Requirements)*

- 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.

**Experimental and investigative work focuses on:**

<u>Planning an investigation:</u>	<u>Obtaining and evaluating evidence:</u>
<p>-Ask/raise relevant questions about the world around them.</p> <p>-Use/ make decisions about the most appropriate type of scientific enquiry to use to answer the question:</p> <ul style="list-style-type: none"> <li>▪ Comparing differences and changes</li> <li>▪ Describing in order to classify</li> <li>▪ Surveying to identify patterns and support classification.</li> <li>▪ Describing the effect of changing things</li> <li>▪ Looking for relationships between variables (patterns) and becoming confident with fair testing.</li> <li>▪ Using secondary resources including the internet and 'experts'.</li> </ul> <p>-Recognise when a simple fair test is necessary and help to decide how to set it up, making decisions about what observations to make, for how long and using what equipment.</p> <p>-Recognise that factors other than those that we are changing may have an effect and seek to control these factors.</p>	<p><u>Gathering evidence:</u></p> <p>-Set up simple practical enquires.</p> <p>-Make systematic and careful observations</p> <p>-Take measurements using standard units using a range of equipment (including force meters, data loggers, thermometers etc.)</p> <p><u>Interpreting and explaining evidence:</u></p> <p>-Report on findings in a range of ways (oral and written explanations, displays and presentations of results and conclusions)</p> <p>-Use results to draw simple conclusions, make predictions for new values, and raise further questions.</p> <p>--use scientific evidence to answer questions or support their findings.</p> <p>-identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p><u>Evaluating procedures:</u></p> <p>-Use results to suggest improvements.</p>

**Most children will:**

- **Understand** that food is digested.
- **Identify** the parts of the digestive system.
- **Identify** the different teeth.
- **Understand** how to make an enquiry fair.
- **Predict** what will happen to the eggshell in different liquids and explain why.
- **Combine** simple food chains to create food webs.
- **Understand** the importance of plants to life on Earth

**Some will progress less and will:**

- **Understand** that humans have both milk and permanent teeth.
- **Predict** what will happen to the eggshell in different liquids

**Others will progress further and will also:**

- **Explain** how the digestive system works.
- **Explain** the functions of the different teeth

**Key vocabulary:**

**Previously taught:** carnivore, herbivore, omnivore, survival, senses, alive, not alive, growth, healthy, healthy diet, salt, sugar, fat, water, exercise

**New:** feeding, incisor, molar, canine, decay, mouth, tongue, oesophagus, stomach, small intestine, large intestine, digest, absorb, nutrients, energy, repair

Session	Learning Objectives	Introduction	Main activity	Application and review	Resources
1	I know the organs used in my digestive system	<p>Recap on what the muscles of our body are used for. Focus specifically on smooth muscles – muscles in our digestive system. Why would we have to have muscles in our digestive system?</p> <p>Ask what we mean by digestion – the act of softening &amp; changing food so that the body can absorb it to use for energy &amp; growth. Children are fascinated to learn about how food is processed during digestion. Ask them to swallow and trace down their throat to where they think their stomach is.</p> <p>Show children a diagram of our digestive system and reveal the name of each organ – have they heard of these before? Point to where they think these are in their body. Children to stick in blank diagram of digestive system and label each part</p>	<p><b>Activity 1</b> Children to stick in blank sheet showing digestive system – emerging and expected to have word bank to help; exceeding to label without word bank.</p> <p><b>Activity 2</b> In pairs, children to use different coloured wool to make the digestive system. How long do they think each part is?</p> <p>Show children the actual length of the digestive system (using coloured wool already prepared) – explain:</p> <ul style="list-style-type: none"> <li>• Oesophagus (25.4cm)</li> <li>• Stomach (20.32cm)</li> <li>• Small Intestine (698.5cm)</li> <li>• Large Intestine (152.4cm)</li> </ul> <p>How does it all fit into our body?! Discuss!!</p> <p>Children to draw a picture of the digestive system (obviously not using exact measurements!), label and put on measurements in their book.</p> <p>Ensure that children understand that if food is not digested it is not absorbed and animals cannot use this to give them energy, grow and repair damage.</p>	<p>In pairs, come up with some ideas as to how the digestive system actually works. Then watch a video showing how it actually works – how close were their ideas to the explanation on the video? <a href="https://www.youtube.com/watch?v=VwrsL-ICZYo">https://www.youtube.com/watch?v=VwrsL-ICZYo</a></p>	<p>Digestive system sheet (blank)</p> <p>Digestive system sheet (with words)</p> <p>4 varieties of coloured wool</p> <p>2 examples of the actual length of the digestive system</p>

2	I know how my digestive system works	<p>Watch following video:  <a href="http://kitses.com/animation/swfs/digestion.swf">http://kitses.com/animation/swfs/digestion.swf</a></p> <p>Discuss the digestive system – write up key words on paper flipchart to do with digestion. Explain that they will be using these words later on in the lesson to help with their writing.</p> <p><b>With Jackalberry, carry out the following investigation (either Miss P to do investigation and Mr M to bullet point key parts, or the other way round) –</b></p> <ol style="list-style-type: none"> <li>Mix food in a bowl with a fork to demonstrate how teeth grind up food.</li> <li>Create a thick paste by adding a little water to the bowl to show that the saliva mixes with the food. What does "saliva" do to the food?</li> <li>Add 1-2 tablespoons of vinegar in a Ziploc® bag.</li> <li>Pour the mixture from the bowl through the paper towel tube, which represents the oesophagus, into the Ziploc® bag, which represents the stomach. Seal the bag.</li> <li>Mash the food in the Ziploc® bag. What is the "stomach acid" (vinegar) doing to the food?</li> <li>Snip one corner of the bag and squeeze the mixture out into the rolled paper towel, which represents the small intestine and the colon.</li> <li>Describe what is happening to the food as it passes through the</li> </ol>	<p>Success Criteria as to how to write an explanation (time connectives, paragraphs, technical language). Using pictures of each part of the experiment (these will have already have been taken prior to lesson), children to write an explanation of how the digestive system works.</p> <p><b>Emerging and Expected</b> – sentence starters to help with writing (visual clues)</p> <p><b>Exceeding</b> – with visual clues, write an explanation as to how the digestive system works. Vocab box to be provided to help with explanation.</p>	<p>Swap books with somebody else in the class – can they follow their explanation so far?</p> <p>Visit a year 3 class and read out some of their explanations to inform younger children of how their food is digested.</p>	<p>Glass bowl</p> <p>Fork</p> <p>Slices of bread</p> <p>Water</p> <p>Vinegar</p> <p>Ziploc bag</p> <p>Inner tube from kitchen roll x2</p> <p>Kitchen paper</p> <p>Plate</p> <p>Success Criteria sheet</p> <p>Visual clues for exper</p>

		<p>intestines. (The liquid passes into the paper towel just as liquid nutrients are passed into the blood stream. The solid food goes out the end of the rolled paper towel as waste, just as the solid food goes out of the colon as waste in the digestive system.)</p> <p>8. Are there ways to move food more effectively through the digestive system? (Drink sufficient amounts of water, eat fibre daily and engage in physical activity).</p>			
Session	Learning Objectives	Introduction	Main activity	Application and review	Resources
3	To Identify the different types of teeth in humans/ animals and their simple functions	<p>Give chn mirrors and allow time for looking at and feeling their own teeth. Ask <i>How many teeth have they got? How many new ones (permanent teeth)? How many baby teeth (milk teeth)? Why do they lose their milk teeth? Can they count their teeth?</i> Chn have 20 teeth: 8 incisors, 4 canines and 8 molars. Adults have 32 teeth including wisdom teeth. Babies' jaws are too small to hold all those big teeth.</p> <p>Show chn a variety of animal teeth on flipchart. Many other mammals have two sets of teeth too, e.g. cats, dogs. Perhaps chn have (had) a kitten or a puppy &amp; have witnessed them losing milk teeth &amp; growing their adult permanent ones (though they usually just swallow them, so you may miss it!)? Other animals grow new teeth all through their lives, e.g. a shark, and some animals have no teeth at all, e.g.</p>	<p>Write the words <b>incisors</b>, <b>canines</b>, (<b>premolars</b>) and <b>molars</b> on flip chart. Look at pictures of the different kinds of teeth.</p> <p>Explain the function of each of these. Ask chn to feel their teeth and guess what each type is designed for (its function or use). Incisors for snipping and cutting food (remember by relating to word scissors), molars for grinding and chewing and canines for ripping and tearing.</p> <p>On netbooks (or computer suite if available) children explore the activity at <a href="http://www.bbc.co.uk/schools/scienceclips/ages/7_8/teeth_eating.shtml">http://www.bbc.co.uk/schools/scienceclips/ages/7_8/teeth_eating.shtml</a> (point out that chn should click on the magnifying glasses too).</p> <p>tackle the harder challenge at (children will need headphones) <a href="http://www.bbc.co.uk/bitesize/ks2/science/living_things/teeth_eating/play/">http://www.bbc.co.uk/bitesize/ks2/science/living_things/teeth_eating/play/</a></p>	<p>Ensure children understand that humans have both milk and permanent teeth. Can they explain why?</p> <p>Can they name and explain the function of the different parts of the teeth?</p>	<p>Netbooks, flipchart containing pictures of teeth, mirrors,</p>

		penguin Compare the teeth of carnivores & herbivores at <a href="http://kidcyber.com.au/topics/animals/animal-digestion/">http://kidcyber.com.au/topics/animals/animal-digestion/</a> . Discuss why there are differences.			
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4	To know that some food and drinks damage our teeth and gums.	In this Session we are going to look at the importance of keeping our teeth healthy. Read about the structure of a tooth in more detail with chn Find out what the chn know about tooth decay and why it happens. Look at the interactive whiteboard activity on the web page at <a href="http://resources.hwb.wales.gov.uk/VTC/need_my_teeth/eng/Introduction/default.htm">http://resources.hwb.wales.gov.uk/VTC/need_my_teeth/eng/Introduction/default.htm</a> .	Enquiry: Explain we are going to investigate <i>Which liquid do the most damage to eggshells?</i> The eggshell protects the egg a bit like the enamel on our tooth protects the living part inside. Brainstorm a list of things they drink (need to include cola-not diet, and also vinegar - perhaps that could be your choice!). Choose about 6 e.g. non-diet cola, milk, water, orange juice, blackcurrant juice, and vinegar. <b>Safety</b> - Teachers need to be aware of any food allergies chn may have. Take care with glass jars.  Explain that we are going to fill screw top jars with enough liquid to cover the hard-boiled egg. Discuss how we will make it a fair test (measure liquid, keep in same place, etc). Set up experiment leave for a week. Children fill in enquiry sheets (differentiated).	Teacher-led activity: Look at the clip of an enquiry at <a href="http://www.bbc.co.uk/learningzone/clips/the-effects-of-different-drinks-on-teeth/4294.html">http://www.bbc.co.uk/learningzone/clips/the-effects-of-different-drinks-on-teeth/4294.html</a> . Discuss & compare to the enquiry chn are carrying out.	
Session	Learning Objectives	Introduction	Main activity	Application and review	Resources
5	To identify the different types of teeth in humans and their simple functions Describe the simple functions of the basic parts of the digestive system in humans	Chn will have been looking at the jars throughout the week (without removing the tops) but now it's time to open them and see what has happened!	Using enlarged version of <i>session resource</i> , open each jar in turn and discuss and record results. Tap the eggshells with a metal spoon, encourage chn to describe: smells like... looks like... feels like... (for those brave enough, let them touch the eggs). Working in pairs and drawing on what they have learned, discuss why they think the effects of the liquids on the eggshells are different. <i>Are there any surprises in the results? Can we make any links about the effect these liquids might have on tooth enamel?</i> Look at and discuss enquiry sheets started last week. Chn complete them independently in mixed ability pairs. <b>Activity:</b> Give the chn the opportunity to look more closely at the eggs and continue the discussion reinforcing the importance of brushing your teeth in relation to sugary drinks. Chn complete results and conclusions on <i>session resource</i>	Discuss the current advice to check the sugar content of foods carefully before buying & therefore eating, and the fact that the government has a campaign to ask manufacturers to cut down on the amount of sugar added to products, particularly those	Results table for emerging.

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6	<p>To construct and interpret a variety of food chains.</p>	<p>Recap with children what they know about the different diets of animals: <u>carnivores</u>, <u>herbivores</u> and <u>omnivores</u>. Volunteers explain what each word means. <i>What sort of a diet do most humans have?</i> Omnivore.</p> <p>Explain that the animals living in any particular habitat are <u>interdependent</u> and their survival also depends on the plants present in that habitat. So another way in which we can classify animals is as a <u>predator</u> or <u>prey</u>. Write these words on f/c and define them. A predator is an animal which kills and eats another animal. The other animal is its prey. For example a fox is a predator and its prey may be a rabbit or a pheasant. Point out that some animals can be both, e.g. a ladybird (predator) eats greenfly (prey), but a ladybird (prey) might then be eaten by a shrew (predator) which in turn (prey) may be eaten by a badger (predator). Remind children of work they did in Year 2 about food chains.</p> <p>Explain that there is a third type of living thing too - a <u>producer</u>. Producers are usually green</p>	<p>All life on Earth is dependent on plants as they are one of the few living things that can make use of the Sun's energy to create food of their own which can be passed on in a useful form from one creature to another. Start to create a food chain on f/c by drawing a plant (if you include the Sun you will build an energy chain). It is the sugars that build up in plants that provide food for other living creatures – including humans! Fruits, vegetables &amp; cereals are key parts of our diets. Next in the food chain draw a slug, followed by a hedgehog, followed by a fox. In which direction is the food/energy passing? Tell the children that scientists use arrows on food chains to show which direction the food/energy is being passed. Beneath the plant write <u>producer</u> as the plant produces the sugars to start the chain. Beneath the slug write <u>herbivore – consumer</u> (primary consumer), the slug consumes the food (energy) stored in the plants. Beneath the hedgehog and the fox write <u>carnivore – consumer</u> (secondary consumers). Ask where we could write predator and prey to complete the diagram.</p> <p><b>Activity:</b> Make a list of habitats on the f/c taking suggestions from the children. Encourage them to think about habitats on a range of scales, those that are global – <i>temperate, polar/arctic, desert, rainforest, seas</i> – and those that are smaller – <i>hedge, grassy area, pond, oak tree, rock pool</i>. Tell the children that they are going to work in pairs to choose a habitat for which they will create one or more food chains (for inspiration some examples of food chains are given in <i>session resources</i>). They can make use of information books &amp;/or internet research to find suitable creatures and plants. They can draw the members of the food chain or download suitable images and then add arrows and label the food chain using the words: producer, primary consumer, secondary consumer, predator, prey, herbivore and carnivore.</p>	<p>with advertised as 'low fat'.</p> <p>Can children see the importance of brushing their teeth and avoiding sugary drinks?</p> <p><a href="http://resources.hwb.wales.gov.uk/VTC/16022007/foodwebs/lesson.html">http://resources.hwb.wales.gov.uk/VTC/16022007/foodwebs/lesson.html</a></p> <p>Talk about how important plants are for the survival of animals – firstly as food, but also as shelter and (from a human point of view) as medicines. Point out that some plants are also dependent on animals, e.g. for seed dispersal (caught in fur, buried, droppings), for pollination, for fertilisation from herbivores' manure.</p>	<p>Books about habitats, plants, producers, prey.</p>

		<p>plants which can produce nutrients (food) by <u>photosynthesis</u>. Remind children that they found out about this important function of leaves in Year 3</p> <p>Herbivores eat the plants and then they are eaten by carnivores, so the food (energy) is passed along the 'chain'.</p> <p>Omnivores eat both plants and animals. So animals can also be classified as consumers, either <u>primary consumers</u> (herbivores) that eat the producers, i.e. plants, and <u>secondary consumers</u> (carnivores) that eat animals.</p>			
Session	Learning Objectives	Introduction	Main activity	Application and review	Resources
7	To construct and interpret a variety of food chains.	<p>Look at the food chains created in the previous session. In pairs ask children to discuss the outcomes of an increase or decrease in numbers at each level. Tell the children that some animals prepare for a lack of food at different times of the year – <i>storage of food for Winter, hibernation, migration to where there is food</i>. Highlight again the key role of plants in food chains: green plants form the basis of virtually all food chains, so without them life on earth could not continue indefinitely. Discuss with the children what would happen if the producer in a food chain dies – <i>the herbivores die first and this then has a knock on effect on the carnivores</i>.</p>	<p>Tell the chn that with so many plants and animals sharing the same habitat the feeding relationships are more complex than a simple chain. Hedgehogs for example will eat insects, snails, frogs, toads, snakes, worms, bird eggs, dead animals, mushrooms, grass roots and berries! Why might a wide and varied diet be a positive thing for the survival of the hedgehogs living in a habitat? With so much interdependence many food chains become linked and a food web is created.</p> <p>Ask the children to create food webs at <a href="http://www.harcourtschool.com/activity/food/food_menu.html">http://www.harcourtschool.com/activity/food/food_menu.html</a>. What do the children notice? – <i>Each thread still starts with a producer but creatures with varied diets may be linked in more than one place</i>. Relate this to humans for example – humans are known as <u>omnivores</u> as they can have a diet consisting of plant matter and animals. Write several food chains with a human at the 'top', e.g. grass → cow → human, grass → sheep → human, wheat (bread) → human, grass → dragonfly → trout → human, wheat → chicken → human. Model how these can start to be combined to produce a web rather than simple chains.</p> <p>Take the children to a large space telling them that they are going to create a food web. (see instructions in resources section) Warm up by asking the children to use their living creature cards to create simple food chains. Which children can make the longest chain? Which the shortest? At the end of the</p>	<p>Show children the video clip at <a href="http://www.bbc.co.uk/learningzone/clips/pesticides/198.html">http://www.bbc.co.uk/learningzone/clips/pesticides/198.html</a> which summarises food chains, food webs and the effect of pesticides. Hedgehog numbers are decreasing rapidly in the UK and some of this is down to gardeners using slug pellets and taking this important food source out of the food chain for hedgehogs.</p>	<p>Ball of string, Cards for animal names,</p>

			<p>main activity try to keep the web that was created as it will make a fantastic display for the classroom.</p> <p><b>Group Activities</b></p> <p><b>Adult-led activity:</b> Using the detailed instructions contained in the <i>session resource</i> take the children to a large space telling them that they are going to create a food web. Warm up by asking the children to use their living creature cards to create simple food chains. Which children can make the longest chain? Which the shortest? At the end of the main activity try to keep the web that was created as it will make a fantastic display for the classroom.</p> <p><b>Independent activity:</b> Children tackle the activity at <a href="http://puzzling.caret.cam.ac.uk/game.php?game=foodchain">http://puzzling.caret.cam.ac.uk/game.php?game=foodchain</a> in pairs. Which pair can score the most points? Afterwards bring the class back together to discuss their findings.</p>		
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