TOPIC 4 Teeth and eating

About this topic

Curriculum link: Year 4, Humans and other animals

SUMMARY:

Children learn about digestion and different types of teeth, before moving on to explore deadly predators and their prey, in their exploration of food chains. They work scientifically throughout the topic, using enquiry, practical experiments and hands-on research to answer questions and investigate how we eat, why we eat and what we eat.

UNITS:

4.1: Tremendous teeth
4.2: The digestive system
4.3: Producers, predators and prey

ACTIVITY RESOURCES

- 4.1: Tooth map
- 4.2: First impressions
- 4.3: Food's incredible journey
- 4.4: Food chain cards

ONLINE RESOURCES:

PowerPoint presentation: Teeth and eating
Interactive activity: Teeth and eating
CPD video: Teeth and eating
Pupil video: Teeth and eating
Word mat: Teeth and eating
Editable Planning: Teeth and eating
Topic Test: Teeth and eating

Learning objectives

This topic covers the following learning 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.

Working scientifically skills

This topic develops the following working scientifically skills:

- Ask relevant questions and use different types of scientific enquiries to answer them.
- Set up simple practical enquiries, comparative and fair tests.
- Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- Gather, record, classify and present data in a variety of ways to help in answering questions
- Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Identify differences, similarities or changes related to simple scientific ideas and processes.
- Use straightforward scientific evidence to answer questions or to support their findings.

CROSS-CURRICULAR LINKS

This topic offers the following cross-curricular opportunities:

English

- Practise handwriting when writing instructions on how to clean your teeth properly.
- Use persuasive writing to sell the toothbrush that you have designed.
- Storyboard and write a story or extended piece of writing about the journey of food.
- Create a glossary for this topic.
- Make notes when researching teeth and the digestive system.
- Script and produce a short documentary on predator / prey relationships or how to look after your teeth.
- Children can interview each other and explain the process of digestion using scientific language.

- Read Pam Ayres 'I wish I'd looked after my teeth'. Write a poem about taking care of teeth.
- Produce a leaflet on teeth as a result of interviewing a dentist or dental technician.
- Write a script for a TV advert, to advertise the toothbrush you have designed.

Numeracy and mathematics

- Keep a record of the time it takes to brush teeth, use data in a bar graph.
- Collect data using a tally chart to find out which is the most popular toothpaste – covert to a bar graph.

Computing / ICT

- Create graphs of how old children were when they lost their first tooth.
- Search safely information on teeth and the digestive system.
- Use software or video camera to produce a short documentary.

Design technology

- Design a toothbrush.

Art

- Sketches of animal skulls.

Drama

- Role-play the food going through the digestive system.
- Role-play predator / prey relationships and food chains.

History

- People and teeth across history.
- Dentists through history
- Find out why in the 1900s some people used to have all their teeth taken out when they were 21 years old.

STEAM (SCIENCE TECHNOLOGY ENGINEERING ART AND MATHS) OPPORTUNITIES

Invite into class

- Dentist or dental technician from local practice or dental hospital.
- Dental student.
- University outreach – scientist to show skulls of carnivores, omnivores and herbivores.
- University outreach – historian to talk about 'Teeth carnivores, omnivores, herbivores through history'.
- Request a STEM ambassador with knowledge and skills relating to medicine and nutrition to support teaching of digestive system.
- Local secondary teacher with skulls or model of digestive system and to carry out an interesting activity.
- Artist to teach sketching, e.g. skulls of carnivores, omnivores and herbivores.
- IT professional to work with children to make a video on the digestive system.
- Writer to support writing poetry about teeth, digestive system and eating.
- Actor to help create sketches or role-play predator / prey relationships, digestive system.

Visit

- Local dentist.
- Local dental hospital.
- Local museum – for exhibits on the human body, in particular the digestive system, plus skulls and models of different animals.

TEACHER SUBJECT KNOWLEDGE

Humans are omnivores, meaning we eat both plants and animals, and our teeth have evolved to suit our diet. Our canines are smaller than a carnivore's and we have flat molars to help us chew our food before swallowing, as plant material needs grinding before we can digest it.

Our first set of teeth is known as our milk teeth. There are 20 teeth in total at this point: eight incisors, four canines, four premolars and four molars. Foods that are high in calcium, such as milk and other dairy products, are important in the formation of teeth and bones, and keep them strong and healthy, which is why children, who are growing bigger bones and new teeth, need full-fat (whole) milk and other dairy products as part of their diets. Between six and 12 years old, our milk teeth are gradually replaced with permanent teeth. There is a third set of molars called 'wisdom teeth' which appear in our late teens – although they may not come through at all. This means adults have 32 teeth. The jaw gets bigger as we grow older, so there is space for those teeth to appear. The human mouth contains 12 molars, eight premolars, four canines and eight incisors.

The outer layer of tooth is called enamel. It is one of the hardest substances in the body. Below enamel is a layer of softer dentine and inside the tooth is the pulp, which contains blood vessels and nerve endings. Bacteria in the mouth eat away at enamel and cause plaque. If plaque is not removed regularly, it can build up and harden to form tartar, which builds up on our teeth and is difficult to remove. Some foods can stain our teeth, such as tea and coffee.

The digestive system

Our digestive system is made up of organs that take in food, including our mouths and teeth which start off digestion as a mechanical process, to then digest it chemically to extract energy and nutrients, and expel the remaining waste.

Food contains large, complex chemicals such as carbohydrates, proteins and fats. To be of use to the body, they must be broken down into smaller chemicals:

- Carbohydrates are broken down into sugar.
- Proteins are broken into amino acids.
- Fats are broken into fatty acids and glycerol.

Digestion starts in the mouth. Teeth provide mechanical breakdown of the food, then saliva moistens food so that it slides down the oesophagus into the stomach. The stomach is a bag of muscle that breaks up food by churning it around. It also contains hydrochloric acid, which kills off bacteria in the food, and enzymes, which further break down carbohydrates and proteins, starting the chemical breakdown of the food.

After a few hours in the stomach, food travels down the duodenum (small intestine), where it is broken down further and sends the nutrients around the body in the blood. The solid waste such as fibre that can't be digested continues along into the large intestine, where water is removed. Then this passes out of the body via the colon and the anus.

Carnivores and herbivores

All living things need energy to survive. Plants are able to use the energy from the Sun to produce their own food. Animals are unable to make their own food so have to eat other living things to get their energy.

Some animals have adapted to eating only other animals and get their energy from meat. These animals are known as carnivores. Animals that eat other animals are known as predators, with the animals that they eat known as prey, whether they are herbivores or carnivores.

Some animals, including humans, have a diet comprising both animals and plants. These animals are known as omnivores. Well-known omnivores that the children might be familiar with include pigs, hedgehogs and rats.

The teeth of carnivores are long and pointed. They have particularly long canine teeth to grip and kill their prey quickly. The incisors at the front of the mouth are used to strip flesh from the bones. Meat is easier to digest than plants, so does not need to be chewed so much.

Plant material, however, is tougher to break down. Therefore herbivores' teeth are different from carnivores'. They have large, flat molars (back teeth) with ridges to help grind plants. Many do not have upper incisors, but instead a bony pad on their upper jaw. Herbivores can spend a long time chewing before the food is finally swallowed. They also have special bacteria in their guts to help break down plants.

CHILDREN'S MISCONCEPTIONS

Children might think…

- That teeth grow continually.
- There are two tubes, one for food and another for drink.
- That the tube from the mouth stops at the stomach.
- That the digestive system covers every part of our bodies, with bits of food going directly to the legs to make you run, for example.
- That a predator can't be prey.
- That only herbivores are prey.
- That humans aren't predators or are not part of food chains.

Children already know…

- The names of external parts of the body.
- About the importance of food for human survival.
- That children grow into adults and the changes that happen as a result.
- How important it is to eat the right amounts of different foods.
- That animals, including humans, need the right types and amount of nutrition.
- We cannot make our own food: we get nutrition from what we eat.
- How nutrients and food are transported within animals and humans.
- How to identify and name a variety of common animals that are carnivores, herbivores and omnivores.
- How to explore and compare the difference between things that are living, are dead and have never been alive.
- How to find out and describe the basic needs of animals and humans for survival.

SCIENTIFIC VOCABULARY

You can download a Word mat of essential vocabulary for this topic from *My Rising Stars*.

anus: the end of the digestive system where unwanted food leaves the body

canine: a tooth for gripping food, a pointy tooth

canines: the pointed, conical teeth next to the incisors

carnivores: animals such as lions whose main way of getting food is to kill and eat other animals, or to scavenge their dead flesh

decay: what happens when teeth aren't cared for

digestion: breaking down food

enamel: the hard covering of the tooth

energy: used to help us move, grow and repair our body

herbivore: animals such as cows that mainly eat plants

incisor: a tooth for biting food, at the front of the mouth

incisors: the flat, sharp-edged teeth in the front of the mouth, used for cutting and tearing food

large intestine: absorbs water and stores undigested food

molar: a tooth for grinding food at the back of the mouth

molars: large back teeth in humans and other mammals, used for chewing and grinding. Humans have 12 molars

mouth: where digestion starts and food gets into the body

nutrients: chemicals needed for growth, movement, repair and health in general

oesophagus: the scientific name for the food pipe

omnivores: animals, like you and me, that eat both plants and meat

small intestine: the thin tube where broken down food is absorbed

stomach: a bag of muscle used in the first part of digestion