



Food and our bodies



About this topic

Curriculum link: Year 3, Animals, including humans

SUMMARY:

Children work scientifically on a variety of quick challenges and longer tasks to learn about food and their bodies. This topic looks at where animals get food from and why it is important, and skeletons, muscles and joints.

UNITS:

2.1: Food for thought

2.2: Bones and skeletons

2.3: Protecting our bones

2.4: Muscles and joints

ACTIVITY RESOURCES:

2.1: My food diary

2.2: Food groups

2.3: What I eat

2.4: Build a skeleton

ONLINE RESOURCES:

Teaching slides (PowerPoint): Food and our bodies

Interactive activity: Food and our bodies

CPD video: Food and our bodies

Pupil video: Food and our bodies

Word mat: Food and our bodies

Editable Planning: Food and our bodies

Topic Test: Food and our bodies

Learning objectives

This topic covers the following learning objectives:

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

Working scientifically skills

This topic develops the following working scientifically skills:

- 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 graphs and tables.
- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.



CROSS-CURRICULAR LINKS

This topic offers the following cross-curricular opportunities:

Mathematics

- Food preferences: collecting data using a table and transferring to bar graphs.
- Cooking: measuring using standard measures, numbers to 1000, e.g. ml, gm.
- Time: how long to cook things for.
- Read food labels.
- Understand weight of ingredients, e.g. sugar, salt.
- Fractions: sharing food, e.g. pizza.
- Addition and subtraction problems with food.

- Measure the body using metres and centimetres.
- Pattern seeking: body measurements, e.g. height and arm span.
- Mental calculations: differences in height, etc.
- Begin to work out the scale when creating a bar graph, e.g. counting in twos, fives, tens.
- Bar graphs, pictograms and tables.

English

- Increase the range of books read, e.g. cookery books.
- Read recipes.
- Write recipes, using correct grammar and punctuation.
- Read and retrieve information from food labels.
- Retrieve and record information, e.g. researching food groups.

- Create a glossary of key scientific words.
- Read and spell scientific vocabulary.
- Research information; comprehension.
- Represent researched information.
- Label and caption diagrams.
- Prepare poems and play scripts to read aloud and to perform, showing understanding through intonation, tone, volume and action.
- Read books that are structured in different ways and read for a range of purposes.
- Transfer handwriting and spelling expectations to science.
- Write stories or poems inspired by the characters in books such as *Funnybones* by Janet and Allan Ahlberg or *Skulduggery Pleasant* by Derek Landy.

Geography

- Food miles; farm to fork.
- Use maps to locate where different foods come from around the world.
- Research recipes from different countries.

History

- Foods in different periods of history, e.g. Stone Age, Romans.
- Timeline of different foods, e.g. sugar, burgers.
- What our parents, grandparents and great grandparents ate.

Design / technology

- Design recipes that are healthy and appealing, e.g. using a computer and selected from a wide range of ingredients.
- Design a healthy lunchbox meal: evaluate each other's lunchboxes.
- Cook recipes and design healthy snacks and plates of food: consider the views of others to improve their ideas.
- Reuse materials to design and make a model of the skeleton and muscles.
- Use annotated sketches to develop the design.
- Select from and use a wide range of materials and components according to their functional properties.
- Evaluate their skeleton and muscles against design criteria and consider the views of others to improve their work.

Music

- 'Danse Macabre' by Saint-Saëns: how does the music represent skeletons?
- 'Dem Bones' music and lyrics: replace the words with specific names, e.g. change knee bone to patella.

MFL

- Learn parts of the body, e.g. in French, Spanish.

Art

- Giuseppe Arcimboldo: create portrait heads from fruit and vegetables.
- Print using fruit and vegetables.
- Still-life painting.
- Observational drawings.
- Printing techniques to create skeletons, e.g. dog bones using white paint on black paper.
- Create X-ray pictures.

P.E.

- Create a keep fit programme.
- Compare and improve own performance.
- Develop flexibility, strength, technique, control and balance.
- Locate which bones and muscles are used in different P.E. activities.
- Use specific bones and muscles to create movement sequences.
- Practise specific activities to improve skills, e.g. strengthening arm muscles to throw a ball a distance.

Computing / ICT

- Use research technology effectively, e.g. to find recipes, research information about food.
- Learn how to use a spreadsheet in science.
- Create a table and graph.
- Collect and place individual and class data, e.g. height, bones broken, on to an Excel® spreadsheet.
- Create basic stick-man skeleton out of pipe cleaners, cover it in modelling clay, then create a video using stop-motion animation.
- Write skeleton songs and record them using microphones or cameras.
- Use technology safely, respectfully and responsibly.



Subject knowledge

This unit covers two different areas of the curriculum – nutrition and skeletons and muscles – and it does so in relation to animals including humans, so it is important to make sure that activities relate to animals as well as humans.

Nutrition

The basic needs of all humans and other animals are food, water, oxygen and shelter. Unlike plants, which make their own food by photosynthesis, animals (including humans) cannot make their own food. Instead, they have to get their food by eating plants or other animals.

Humans need to eat regularly and eat different kinds of food to stay healthy. The food that humans eat can be divided up into different groups. There are various ways of doing this, but we recommend you use the following groups:

- **Fruit and vegetables** are a good source of vitamins and minerals and fibre that helps people to go to the toilet. They are also low in fat and calories.
- **Starchy foods**, e.g. bread, rice, potatoes, pasta and cereals should make up just over a third of the food we eat. They are a good source of energy, fibre, calcium, iron and B vitamins. Where possible, people should eat wholegrain bread, rice and pasta.
- **Dairy food**, e.g. milk, cheese and yoghurt, is a good source of protein and calcium. Our bodies need protein to work properly and to help the body repair itself. Calcium helps to keep our bones and teeth strong.
- **Meat, fish, eggs, beans, pulses and nuts** help the body to grow. They are rich in protein for healthy bones, zinc for hair, nails and eyes and fish is good for keeping the heart healthy.
- **Fat and sugar** are needed in small amounts. Fats are important as they provide the body with energy and help the skin and brain. They help the body to absorb different vitamins such as A, K and D. At the same time, fats act as insulation to help keep humans warm. Sugar is a source of energy but it should not make up more than around 5% of calorie intake because excess sugar can lead to tooth decay, type 2 diabetes and other health issues.
- **Water** is essential to life; without water humans and other animals would die. In humans, the body needs water to work; blood needs water. We need water to digest our food and remove waste in urine. Thirst is a sign that the body is dehydrated

so we need to keep hydrated and drink water, milk and eat fruit and vegetables but avoid sugary drinks.

Skeletons

The skeleton is a strong, rigid structure inside the body made of bone. Bone is living tissue made from bone cells, collagen and minerals such as calcium phosphate. The bones of our skeleton provide us with a strong structure supporting and protecting the rest of the body.

The ribs form a protective structure around the heart and lungs; the skull protects the brain.

Inside bone is a spongy tissue called bone marrow, which is where red blood cells are made. Bone needs a blood supply, just like every other tissue in the body. Bones are joined together by strong elastic groups of fibres known as ligaments.

Cartilage is the elastic, slippery protein covering the ends of bones at joints, allowing them to move freely. Noses and ears are made from cartilage and some fish, such as sharks, have whole skeletons made of it.

We are born with around 300 bones, but as we get older some of these fuse together into large bones. So, by the time we are adults, we only have 206 bones.

Some creatures such as crabs, lobsters and insects have a tough external skeleton, or exoskeleton. However, this is often made from a protein called chitin.

Muscles and joints

Use the CPD video to check understanding about muscles and watch how model muscles can be made to help children understand how they work.

Joints are the places where bones meet. They allow the skeleton to move and allow humans and other animals to grow.

There are various types of joint, each allowing different types of movement:

- **Sliding joints** like the ankle and wrist allow for limited rotation at the joint.
- **Fixed joints** are fixed and do not allow movement, such as the joints between the various bones in the skull.
- **Ball and socket joints** have a rounded end that fits into a cup-like cavity on another bone, e.g. hip and shoulder joints.
- **The elbow and knee** are simple hinge joints, allowing basic movement in a single plane, e.g. backwards and forwards.

Bones are moved using muscles. These muscles are attached to bones by tendons – strong, inelastic strips of tissue. Muscles can contract and get shorter; this pulls on the tendon and makes the bone move. They work in pairs; one muscle contracts and pulls in one direction, then another contracts and pulls back while the original muscle relaxes. Muscles do not always attach to bone;

some do things such as move the eyes. The heart is a ball of muscle, a muscular organ, which pumps blood around the body.

The smallest muscle in the human body is the stapedius; it is a tiny muscle that is less than 2 mm long located in the middle ear. The largest and strongest is the gluteus maximus, which children will enjoy learning about because it is the buttocks / bottom.



CHILDREN'S MISCONCEPTIONS

Children might think...

- that we only eat food to give us energy: in fact, food does much more, including providing the vitamins and nutrients we need to keep our bodies healthy.
- that all fats are bad for us: we need a certain amount of fat in our diet for many different reasons including building cells, helping nerves carry messages, protecting our organs and heat insulation to keep us warm.
- that bone is not living and cannot grow: in fact, it is made from living cells. That is why bone can heal itself if it is broken or fractured.

- that only arms and legs have muscles.
- that muscles are not found all over the body.
- that muscles can push: in fact, they can only pull, but our bodies can push things because of the way the muscles pull on different bones.

Children already know...

- the basic parts of the human body (Year 1).
- that animals and humans need food to survive (Year 2).
- that it is important to eat the right types of food (Year 2).



SCIENTIFIC VOCABULARY: FOOD AND OUR BODIES

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

balanced diet: a diet that has the right amount of nutrients

biceps: a large muscle at the front of the upper arm

carbohydrates: nutrients found in sugary foods such as sweets or starchy foods such as potatoes and pasta; these provide energy

contract: when a muscle gets shorter and pulls

relax: when a muscle stops contracting

exoskeleton: a skeleton that some animals have that is outside their bodies like a suit of armour

fats: nutrients found in foods such as butter; these give you energy and insulate your body

femur: the long bone at the top of the leg

humerus: the long bone at the top of the arm

joint: where bones meet; there are different types of joint that can move in different ways to make the body move

muscle: special organs that can contract and relax

nutrients: useful substances found in foods

protein: nutrients found in foods such as fish, used in your body for growth and repair

skeleton: supports and protects the body, allowing movement

triceps: a large muscle at the back of the upper arm

vertebrate: animal with a spinal column or backbone including mammals, birds, amphibians and fish