

Year 4 Science lessons pack

How did the Anglo-Saxons farm and how was it different from today?

The Harmony Project

Year 4

Science lessons pack

ENQUIRY QUESTION

How did the Anglo-Saxons farm and how was it different from today?

LINKED HARMONY PRINCIPLE

The principle of Interdependence

‘Our bodies are systems that work best when we eat healthy food.’

The six lesson plans in this pack can be used to deliver the science content for the Year 4 enquiry of learning *How did the Anglo-Saxons farm and how was it different from today?*. This enquiry of learning is linked to the principle of Interdependence. The science learning delivers and builds upon National Curriculum statutory requirements relating to animals, including humans.

Each lesson plan includes opportunities to refer to the children’s prior learning, as well as questions to use to reflect on current learning and to assess the children’s developing knowledge and understanding. In addition, lessons feature key elements that are distinctive to the Harmony approach to teaching and learning, for example: opportunities to **learn about Nature,** to **learn in Nature** and to **learn from Nature.**

A summary of these elements in relation to the six lesson plans in this pack is set out on the following pages.

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01 - Learning about Nature

The statutory requirements of the National Curriculum set out what children need to learn about Nature – although, of course, their wider learning about Nature will extend beyond this.

As children progress through their primary education, we can map the journey that their science learning about animals, including humans, takes.

By understanding their prior learning about animals, including humans, in the EYFS and in Years 1 to 3, and by looking ahead to the path this learning will take in Years 5 and 6, we are better able to plan for progression.

The table below shows where the science learning about animals, including humans, covered in the lesson plans in this pack sits within this journey.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
ENQUIRY	**Understanding the world**	**What kind of superhero do I want to be?**	**What do I need to be healthy?**	**What would it be like to live as a hunter gatherer?**	**How did the Anglo-Saxons farm and how was this different from today?**	**What can we learn from the Ancient Greeks about the order of Nature?**	**How can we learn to live in peace?**
SUMMARY OF LEARNING	Children will be guided to increase their knowledge and sense of the ecologically diverse world around them. They will explore the natural world, describe what they see, hear and feel while outside, recognise some environments that are different from the one in which they live and understand the effect of changing seasons	Children will identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Children will learn and identify 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	Children will 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. They will identify that humans and some other animals have skeletons and muscles for support, protection and movement	Children will be able to describe the simple functions of the basic parts of the digestive system in humans and identify the different types of teeth in humans and their simple functions	Children will describe the changes that occur as humans develop to old age	Children will identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood; recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function and describe the ways in which nutrients and water are transported around the body
KEY VOCABULARY	Main body parts incl: head, neck, shoulders, arms, elbows, hands, fingers, legs, knees, toes, face, ears, eyes, hair, mouth, teeth	senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ear, tongue	exercise, heartbeat, breathing, hygiene, germs, disease, diet, nutrients, sugars, vitamins	skull, ribs, spine, joints, protein, minerals, fibre, carbohydrates, bones, skeleton, muscles, support, protect	digestion, saliva, oesophagus, stomach, intestine, incisor, canine, molar, herbivore, carnivore, omnivore	puberty, gestation	circulatory system, drugs, lifestyle, oxygen, carbon dioxide, pulse, rate, pumps, blood, blood vessels, transported, lungs

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The table below sets out what the children's learning about animals, including humans, will look like over the course of the six science lessons.

Week 1	Week 2	Week 3
Did the Anglo-Saxons eat sugar? How will I investigate the effect of sugar on tooth decay?	**What is the function of different teeth? Which ones would be used depending on your diet?**	**How do different diets affect the type of teeth animals have?**
Identify the different types of teeth in humans and their simple functions	Identify the different types of teeth in humans and their simple functions	Identify the different types of teeth in humans and their simple functions

Week 4	Week 5	Week 6
What are the different parts of the digestive system and what are their functions?	**How can I demonstrate and explain the process of digestion?**	**How would an Anglo-Saxon diet affect our health compared with a modern diet?**
Describe the simple functions of the basic parts of the digestive system in humans	Describe the simple functions of the basic parts of the digestive system in humans	Describe the simple functions of the basic parts of the digestive system in humans 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



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02 - Learning in Nature

In addition to learning about Nature, a Harmony approach also provides suggestions for rich opportunities to learn in or alongside Nature, as the six science lessons in this pack demonstrate.

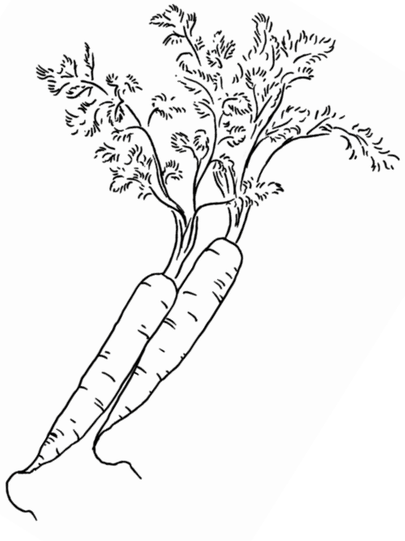
For example, children have opportunities to explore the effect of both natural and processed sugars on teeth using foraged berries collected on a Nature walk that would have been eaten by the Anglo-Saxons and sugary drinks consumed by people today. Other practical activities, such as creating and demonstrating the process of digestion, would work well in an outdoor area.

As they learn in or alongside Nature, the children also have opportunities to develop their science skills relating to the statutory requirements of the National Curriculum for working scientifically. Although these skills will be developed incrementally over time, the coverage of these skills within the sequence of these six lessons is set out below.

Week 1	Week 2	Week 3
Did the Anglo-Saxons eat sugar? How will I investigate the effect of sugar on tooth decay?	**What is the function of different teeth? How are teeth linked to diet?**	**How do different diets affect the type of teeth animals have?**
Setting up simple practical enquiries, comparative and fair tests	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	Recording findings using simple scientific language, drawings and labelled diagrams
Scientific enquiry type: Observing over time	Scientific enquiry type: Identifying, classifying and grouping	Scientific enquiry type: Identifying, classifying and grouping
Week 4	**Week 5**	**Week 6**
What are the different parts of the digestive system and what are their functions?	**How can I demonstrate and explain the process of digestion?**	**Was the Anglo-Saxon diet healthier than our diet today?**
Recording findings using simple scientific language, drawings and labelled diagrams	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
Scientific enquiry type: Research using secondary sources	Scientific enquiry type: Identifying, classifying and grouping	Scientific enquiry type: Research using secondary sources

Working scientifically vocabulary

- predict
- observe
- record
- demonstrate
- compare



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03 - Learning from Nature

The third key element of a Harmony approach to learning is learning from Nature, which is linked to progression in understanding of Harmony principles. This aspect of learning supports the development of children's understanding of what it is to live sustainably.

The six lessons in this pack and the wider enquiry they are part of are underpinned by the principle of Interdependence. They build on children's prior learning in the EYFS and in Years 1 to 3, and prepare them for their learning in Years 5 and 6.

The children's progression in their understanding of the principle of Interdependence and how it helps us to think and live more sustainably, through their exploration of six enquiries of learning linked to the principle of Interdependence (one each academic year), is shown below.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
ENQUIRY	Children are introduced to opportunities to explore and develop their initial knowledge and understanding about interdependence (observing bees, butterflies or wasps pollinating plants, when we work as a team)	**What will we find at the seaside?**	**Why are bees so brilliant?**	**Where does our food come from?**	**How did the Anglo-Saxons farm and how was this different from today?**	**How can we ensure our oceans stay amazing?**	**How are we connected to Antarctica?**
PROGRESSION: CONCEPT OF INTERDEPENDENCE		What will we find at the seaside?	How do bees work together in a colony?	What is the difference between locally grown and seasonal food?	How did the Anglo-Saxons build community and work together?	How do living things in an ocean ecosystem work together?	How are living things dependent on each other in Antarctica?
THINKING SUSTAINABLY		What can we do to look after seaside ecosystems?	What will happen if bees and other insects disappear?	Why should we eat locally grown food when it is in season?	What can we learn from how the Anglo-Saxons produced food?	How can we make sure our oceans stay amazing?	How does our use of energy affect life in Antarctica?
THINKING SUSTAINABLY VOCABULARY	team together look after care	ecosystem role value relationship individual whole litter	connection community part species colony	action reaction consequence impact seasonal	group holistic collective cooperation reciprocate organic	support depend wellbeing ecology biodegradable	isolation essential partnership survival considered view climate change consequence

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Lesson **01**

Enquiry question:
How did the Anglo-Saxons farm and how was it different from today?

Harmony principle:
The principle of Interdependence

Did the Anglo-Saxons eat sugar? How will I investigate the effect of sugar on tooth decay?

NC Links

Animals including humans
Identify the different types of teeth in humans and their simple functions.

Working scientifically:
Asking relevant questions and using different types of scientific enquiries to answer them; setting up simple practical enquiries, comparative and fair tests; using results to draw simple conclusions

Scientific enquiry type:
Observing over time

Key vocabulary

Vocabulary relating to animals, including humans, working scientifically and thinking sustainably is highlighted within the unit introduction.

You will need

A bar of soap, toothpaste, a water bottle, a toothbrush, a carrot (or another fresh vegetable), a trainer and a spoonful of sugar

Copies of Resource 1A (one per pair)

Copies of Resource 1B (one per group)

Copies of Resource 1C (one per child)

Copies of the Woodland Trust's foraging lists for September and October (one per pair)

Adapt the learning

Children requiring additional support could be provided with labels for each liquid.

Challenge the children to identify the variables in the investigation: which they kept the same and which they changed.

Link the learning

CLIMATE ACTION PLAN:
Biodiversity

What do we already know?

Begin the lesson by revisiting the children's prior **learning about Nature** with reference to human health and hygiene by sharing with them the following items: a bar of soap, toothpaste, a water bottle, a toothbrush, a carrot (or another fresh vegetable) and a trainer.

Play 'Link Three', encouraging the children to group three of the items together and give a reason why they are linked. Children are likely to share their prior learning about health, the body and keeping clean. Depending on their responses, support them to focus the discussion on dental health.

Show the children a spoonful of sugar alongside the toothbrush and toothpaste and challenge the children to link these three items.

What are we learning today?

Develop the children's **learning about Nature** with reference to human health by exploring the presence of sugar in our diets today and the absence of sugar in the Anglo-Saxon diet.

Ask the children: *What is sugar and where does it come from?*

Discuss the fact that much of the added sugar in our diet today comes from processed and ultra-processed foods. Establish the difference between natural, processed and ultra-processed foods, using the following definitions for support:

Natural: a food from a plant or animal that we eat with very little being changed or added to it e.g. a whole piece of fruit, vegetables, seeds, nuts, fish or meat.

Processed: a food that has been altered from its natural state. Examples include pre-packed slices of mango, pasta or any other foods that are made using a small number of easily recognisable ingredients.

Ultra-processed: a processed food made using ingredients you wouldn't have in your kitchen cupboards, such as colourings, flavourings, emulsifiers and preservatives. Examples include many types of sliced bread, breakfast cereals and packaged baked goods. Ultra-processed foods may also contain high levels of salt or sugar.

In pairs, the children cut out and sort the foods on Resource 1A according to whether they think they are natural, processed or ultra-processed.

Discuss their ideas as a class (e.g. natural – oats, carrots, chicken, apples, milk, plums; processed – pasta, fruit pots; ultra-processed – breakfast cereal, biscuits, crisps). Address any misconceptions.

In pairs and using the same cards, the children identify the foods they think the Anglo-Saxons would have eaten (e.g. bread, oats, carrots, apples, plums, milk and chicken).

Explain that almost all Anglo-Saxons were farmers. They ate fresh food that they grew themselves (natural foods) and were mostly vegetarian. They were beekeepers and reared some livestock (cows, goats, sheep and chicken) – other meat came from hunting and fishing. Ask the children: *Did any of the foods they ate contain sugar?*

Draw out the fact that the Anglo-Saxon diet was very low in sugar; the majority of the sugar they did eat occurred naturally in fruits and vegetables.

How are we learning today?

Having discussed the presence of sugar in both our diet and in the Anglo-Saxon diet, the children will investigate the impact of different sugars on our teeth.

They could use sugars that were present during the Anglo-Saxon period (e.g. sugars that occur naturally in blackberries) to compare the impact of natural sugars with processed sugars that are often found in our food and drinks today.

TEACHER TIP:
There is an opportunity to take the learning outside into the school grounds or a local green space. In pairs, the children look for examples of foods that contain natural sugars as the Anglo-Saxons would have done, using the Woodland Trust's foraging lists for September and October for support. Before going on a foraging walk, instruct the children not to put anything in their mouths unless instructed to do so, not to touch any funghi that they find etc.

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Provide the children with a copy of Resource 1B. Explain that they will work in groups to set up an investigation to observe the effects of sugar on teeth. They will observe over time the changes that occur to an eggshell (this is similar in composition to tooth enamel) placed in cups containing different liquids.

One liquid will contain natural sugars (e.g. juice from berries), one will contain processed sugars (e.g. shop-bought fruit juice) and one will contain an ultra-processed drink containing sugars (e.g. cola). The fourth will contain water, as a control. The children fill in the first two sections of the investigation planning sheet to show what they are trying to find out and what they predict they will find.

TIME TO EXPLAIN:
The children discuss and write up their investigations on Resource 1C. Ask them: *What happened? Why? What does this experiment show us about the effect of sugar on our teeth over time?*

STEM SENTENCES:
When I compare the eggshell that was in _____ with the eggshell that was in _____ I notice _____ .

What have we learned today?

Encourage the children to reflect on their **learning about Nature** by drawing out in discussion the fact that the Anglo-Saxons only ate things that occur naturally and that, in many ways, their diet was healthier than ours is today.

Ask the children: *Did the Anglo-Saxons eat sugar? Do you think the Anglo-Saxons or people today had or have healthier teeth? Why? What do we have today that they didn't?* (e.g. toothpaste, toothbrushes and access to dental care)

Encourage the children to reflect on their **learning from Nature** by drawing out that Nature provides us with natural foods that are less damaging to our teeth than processed or ultra-processed sugary food. Ask them: *What sugary foods or drinks can we have less of to help keep ourselves healthy?*



Foraged berries formed part of the Anglo-Saxon diet

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Enquiry question:
How did the Anglo-Saxons farm and how was it different from today?

Harmony principle:
The principle of Interdependence

Resource 1A



bread



oats



carrots



chicken



fruit pots



apples

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Resource 1A



milk



biscuits



plums



cereal



pasta



crisps

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Resource 1B

Eggshell in sugar experiment

You will need:

- boiled eggs, unpeeled
- water
- berries, crushed
- uncarbonated drink containing sugar, e.g. shop-bought fruit juice
- carbonated drink containing sugar, e.g. cola

Equipment:

- pestle and mortar
- glasses or beakers
- measuring jugs

What are we trying to find out?

What do you predict will happen to the eggshells?

Method:

1. Grind the berries using a pestle and mortar.
2. Carefully place an unpeeled egg in each glass.
3. Half-fill the glasses with water (this represents saliva, which is 99% water).
4. Add the carbonated drink to one of the glasses of water and label it.
5. Add the uncarbonated drink to one of the glasses of water and label it.
6. Add the crushed foraged berries to one of the glasses of water and label it.
7. Leave one glass with just water in it as a control. This means you'll be able to compare your results with what happens to an egg in water.
8. Leave the eggs in the liquids for 24 hours.
9. After 24 hours, pour away the liquids from the glasses and observe the eggs. Compare these eggs to the control egg (the one in the water), paying close attention to any changes to the eggshells.

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Resource 1C

Eggshell in sugar experiment

Draw and label the experiment:

Results:

Conclusion:

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Lesson

02

Enquiry question:
How did the Anglo-Saxons farm and how was it different from today?

Harmony principle:
The principle of Interdependence

What is the function of different teeth? How are teeth linked to diet?

NC Links

Animals including humans
Identify the different types of teeth in humans and their simple functions

Working scientifically:
Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

Scientific enquiry type:
Identifying, classifying and grouping

Key vocabulary

Vocabulary relating to animals, including humans, working scientifically and thinking sustainably is highlighted within the unit introduction.

You will need

Individual whiteboards

Apples or carrots, prepared as a snack

Copies of Resource 2A (one per child)

Mirrors

Adapt the learning

Children requiring additional support may explore a 3D model of teeth with preprepared labels

Challenge children to explore what is the same and what is different about types of teeth

Link the learning

CLIMATE ACTION PLAN:
Biodiversity

What do we already know?

Revisit the children's prior **learning about Nature** with reference to human health and diet by displaying the images on Resource 1A on the interactive whiteboard.

In pairs, the children sort the foods into the five food groups (carbohydrates, protein, fruit and vegetables, dairy and fats), recording their ideas on whiteboards.

Ask the children to circle a food on their whiteboard that would be eaten by a herbivore. Discuss their choices and encourage them to give reasons for their thinking. Repeat for carnivores. Address any misconceptions.

TEACHER TIP:
Other examples of foods the Anglo-Saxons ate, which the children could sort into food groups, include:

- fruits (crab apples, pears, berries and plums)
- vegetables (purple carrots, onions, garlic, cabbage, turnips, mushrooms, beetroot, parsnips, peas)
- beans, fish and meat (mainly from pigs but also chicken, beef, mutton and goat from time to time)
- honey
- bread (barley and later wheat were dried and milled into flour)

What are we learning today?

Remind the children that humans are either omnivores (discuss what this means) or herbivores. Having established the types of food we eat, move the children's learning on by asking: *Do we use the same teeth to eat different foods?* Establish that different teeth have different functions.

Ask them to feel their own teeth with their tongue and use mirrors to observe their teeth. Discuss any differences they notice.

Using a model of the human mouth, and with reference to the teeth the children can see in their own mouths, introduce the words incisor, canine, premolar and molar. Explore where these are located in our mouths.

Ask: *How are these teeth similar or different? Why do we have different shaped teeth? What words would you use to describe them?*

Explain that the learning in this lesson will focus on human teeth.

How are we learning today?

The **learning in Nature** element of this lesson provides an opportunity for children to sit outside in a circle to try some foods.

Provide a few foods that would have been available to the Anglo-Saxons, such as carrots or apples (crab apples, which were eaten by the Anglo-Saxons, are smaller, harder and more tangy than apples today). As they eat, encourage the children to consider how their teeth are breaking down the food.

Ask them: *Which teeth are we using to bite the apples/carrots? Which are we using to chew them?*

As the children eat the food, discuss with them the different teeth that are being used to break down the apple into smaller pieces e.g. molars crush the apple into a pulp.

Back in the classroom, display the following text on the interactive whiteboard and read through it together:

> First, the **incisors** at the very front of our mouth cut the food. Then, the **canines** at the sides of our mouth shred and tear up food. Finally, the tongue moves the food to the back of our mouth where the **premolars** and **molars** grind the food.

You could watch the BBC Bitesize clip *The different types of teeth* to consolidate this learning.

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TIME TO EXPLAIN:
Provide the children with a diagram of the human mouth (see Resource 2A). Ask them to label the teeth and describe their functions.

STEM SENTENCES:
Incisors are found at the _____ of the mouth and their function is to _____ food. Canines are found between the incisors and molars. The canines do the job of _____ food. Molars are at the _____ of our mouth and their function is to _____ food.

What have we learned today?

Encourage the children to reflect on their **learning from Nature** with reference to human health by asking them: *As humans, why do we have different types of teeth?*

Draw out in the discussion the fact that humans have different types of teeth so that we can eat an omnivorous diet, although some of us eat a different diet.

Together, these different teeth help break down and digest the diversity of foods that Nature provides and which farmers and other food growers produce for us.

Our teeth begin the process of digestion in our bodies – they are a key part of the system!



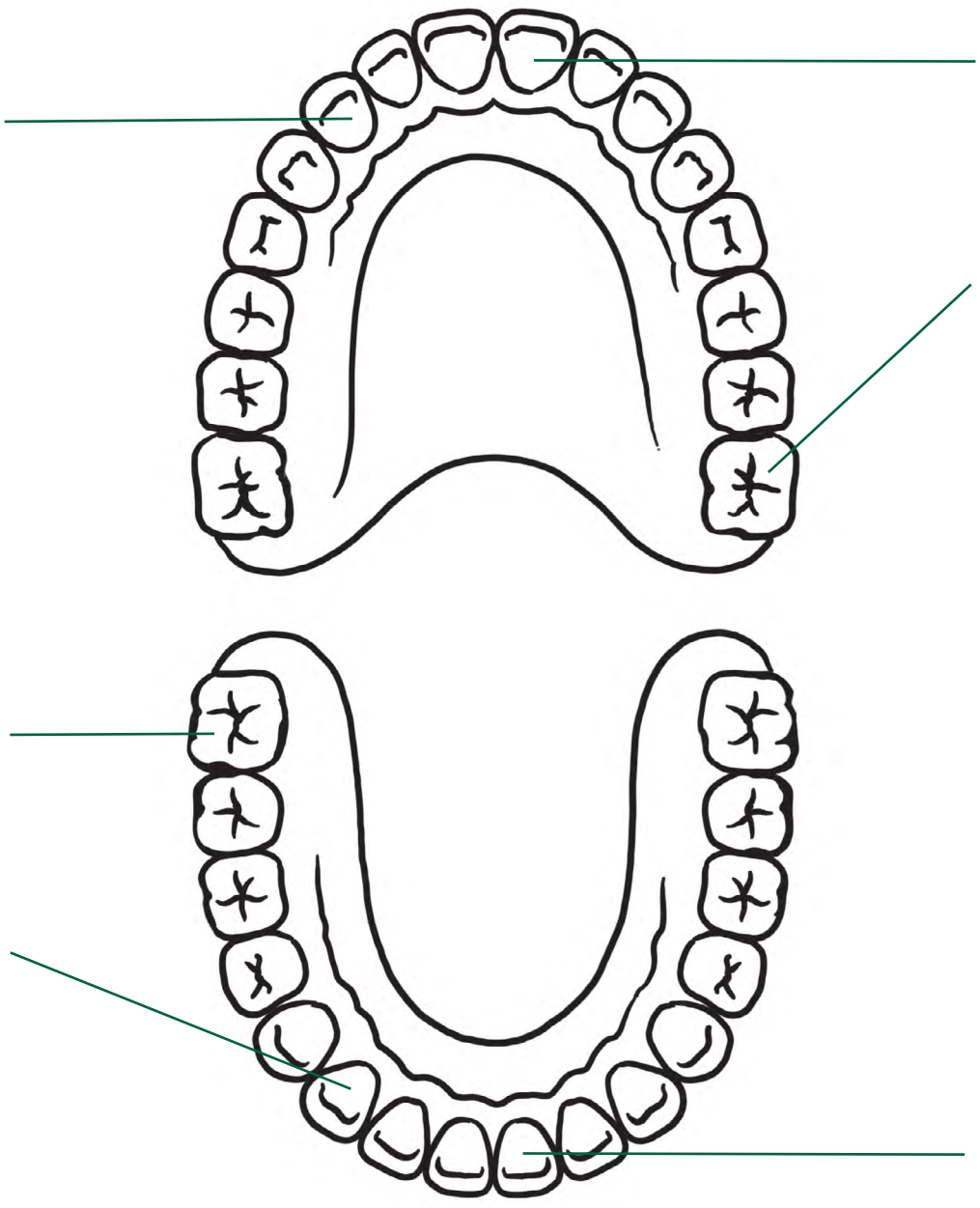
Fruit, including apples, pears, cherries and plums, were eaten by the Anglo-Saxons

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Resource 2A

Label these human teeth using the words in bold at the bottom of the sheet.

Upper jaw



Lower jaw

Incisors are found at the _____ of the mouth and their function is to _____ food. **Canines** are found between the incisors and molars. The canines do the job _____ of food. **Molars** are at the_____ of our mouth and their function is to _____ food.

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Lesson

03

Enquiry question:
How did the Anglo-Saxons farm and how was it different from today?

Harmony principle:
The principle of Interdependence

How do different diets affect the type of teeth animals have?

NC Links

Animals including humans
Identify the different types of teeth in humans and their simple functions

Working scientifically:
Recording findings using simple scientific language, drawings, labelled diagrams

Scientific enquiry type:
Identifying, classifying and grouping

Key vocabulary

Vocabulary relating to animals, including humans, working scientifically and thinking sustainably is highlighted within the unit introduction.

You will need

Copies of The Woodland Trust's Nature Detectives Leaf ID resource

Copies of Resource 3C (one per child)

What do we already know?

Begin the lesson by revisiting the children's prior **learning about Nature** with reference to human teeth by displaying the names of different teeth e.g. incisor, canine, pre-molar, molar. Play a game of 'Just a Minute' and ask the children to describe the function of each type of tooth to their partner in one minute. Address any misconceptions.

Ask them: *What would happen if we had a mouth full of canines? Or molars?*

Watch the *Operation Ouch!: Terrific Teeth* clip showing what would happen if we only had molars or canines. Discuss any questions or comments the children have.

What are we learning today?

Recap the children's prior **learning about Nature** by asking them to define a herbivore, a carnivore and an omnivore and what they eat.

Display the images on Resource 3A of five animals the Anglo-Saxons would have been familiar with (cow, goat, deer, rabbit and fox). Ask the children: *What does each animal eat?*

Ask them: *What kind of teeth do herbivores such as sheep, cows and deer need to eat vegetation?* Draw the children's attention to the image on Resource 3B of a sheep's skull and teeth, and explain how sheep use their molars to chew, swallow and regurgitate their food several times, which is known as 'ruminating' or 'chewing the cud'.

Ask the children if they can guess which animal Anglo-Saxons had to be on the lookout for – an apex predator (now extinct in the UK, but being reintroduced in some parts of the world) that would occasionally prey on their livestock: wolves!

Ask the children: *What kind of teeth do wolves need as carnivores? Why?* Most carnivores have long, sharp teeth adapted to ripping, tearing or cutting flesh.

How are we learning today?

Take the children outside to **learn in Nature** in the school grounds or in a local green space where they can see vegetation at different heights e.g. ground cover, shrub layer and understory of trees. Alternatively, display the image on Resource 3B to support this discussion.

Ask them to imagine they are different animals at different heights:

- Imagine you are the height of a fox (omnivore). Discuss with the children what they would eat and give them time to explore the places where they would forage. What would they find on the ground or underground? e.g. earthworms, rodents, frogs, carrion (dead animals), berries and fruits. Ask them: *What kind of teeth does a fox need to have to eat this diet?*
- Imagine you are the height of a deer (herbivore). Discuss with the children what they would eat e.g. grasses, the leaves and shoots of trees and other woody plants, and sometimes fruit and berries or tree bark when other food is scarce. Ask them: *What kind of teeth does a deer need to eat this diet?*

TEACHER TIP:
The leaves of a holly tree are smoother at the top of the tree and spikier lower down. This adaptation protects the tree from deer and domestic cattle.

Back in the classroom, share the image of the wolf's teeth on Resource 3C. Explain that wolves were present in the UK during the Anglo-Saxon era but have since been hunted to extinction in the wild. They were top predators that preferred to hunt wild prey, such as deer and wild boar. They occasionally preyed on livestock like sheep.

TIME TO EXPLAIN:
Allow the children time to reflect on their learning about Nature by providing each child with a copy of Resource 3B showing the skulls and teeth of a sheep, wolf and human. Ask the children to add labels to show the names of the different types of teeth and compare the similarities and differences.

Adapt the learning

Children requiring additional support could explore the images on Resource 3B prior to the lesson to consolidate their understanding of teeth types.

Challenge children to think about statements such as 'If a sheep had a wolf's teeth...'

Link the learning

CLIMATE ACTION PLAN:
Biodiversity

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STEM SENTENCES:
All three animals have_____ and _____ (incisors and molars). Sheep don't have _____(canines). This means that they can only eat _____ (plants). Humans and wolves can eat _____(meat) because they have _____(canine) teeth.

What have we learned today?

Encourage the children to reflect on their **learning about Nature** by asking them to answer the learning question: *How do different diets affect the type of teeth animals have?*

Link the learning to the **principle of Interdependence** by discussing that herbivores, omnivores and carnivores are all dependent on their teeth to eat a particular diet that keeps them well. Explain how each type of tooth has a valued role to play and that different types of teeth work together in different ways to enable animals, including humans, to eat different types of food.

Remind the children that within a food chain, there will be a mixture of herbivores, omnivores and carnivores (including humans) that rely on each other for their food and that they, too, are interdependent.



A sheep ruminating

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Enquiry question:
How did the Anglo-Saxons farm and how was it different from today?

Harmony principle:
The principle of Interdependence

Resource 3A







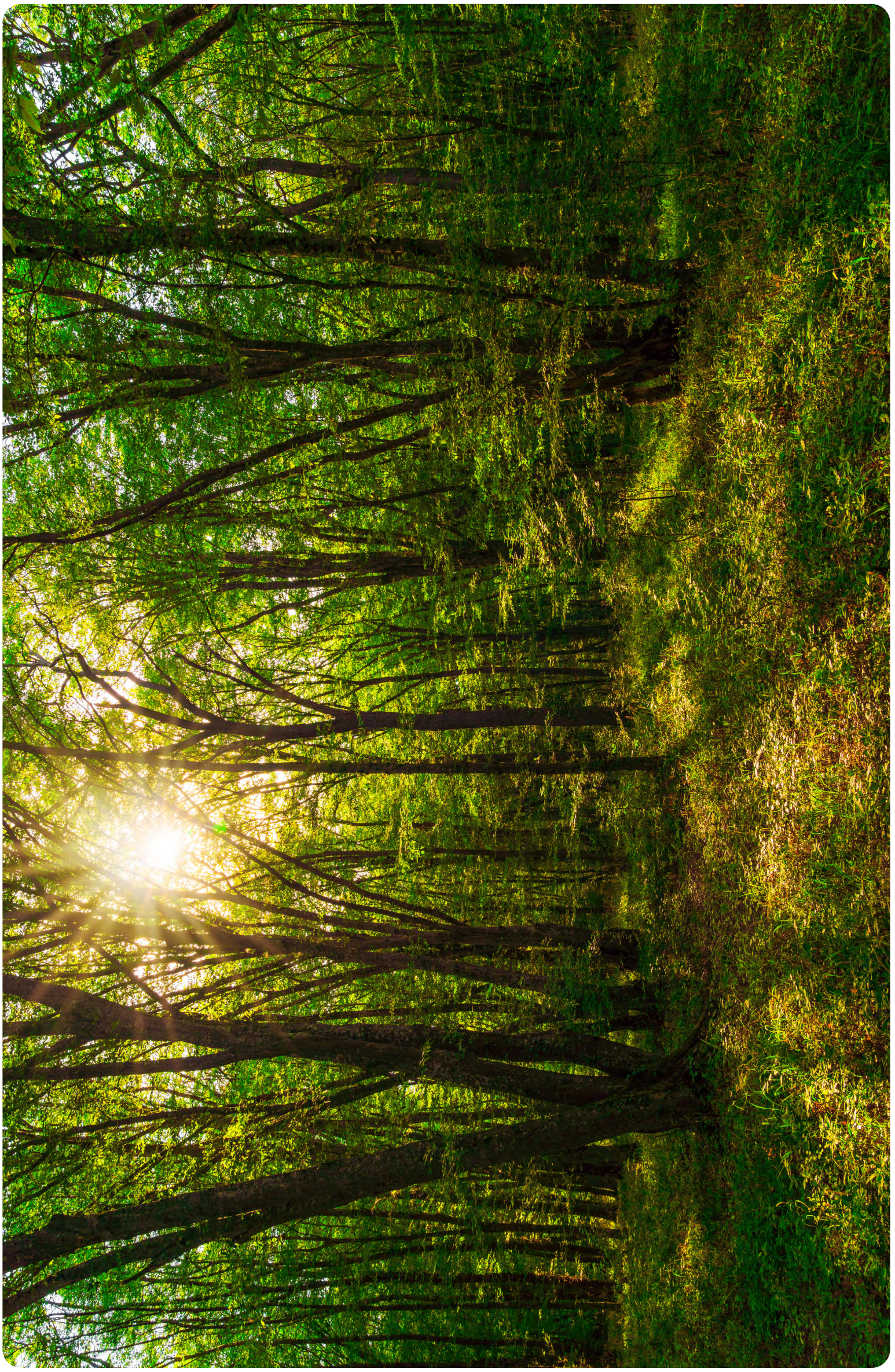




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Resource 3B

Where would a fox look for food? Where would a deer look for food?



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Resource 3C

Label the teeth in the three skulls using these words:

incisors **canines** **premolars** **molars**

sheep skull



wolf skull



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Resource 3C

human skull



What are the similarities between the teeth of these three animals?

What are the differences?

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Lesson

04

Enquiry question:
How did the Anglo-Saxons farm and how was it different from today?

Harmony principle:
The principle of Interdependence

NC Links

Animals including humans
Describe the simple functions of the basic parts of the digestive system in humans

Working scientifically:
Recording findings using simple scientific language, drawings, labelled diagrams

Scientific enquiry type:
Research using secondary sources

What are the different parts of the digestive system and what are their functions?

Key vocabulary

Vocabulary relating to animals, including humans, working scientifically and thinking sustainably is highlighted within the unit introduction.

You will need

Fruit, cut into small pieces

Chalk

Resource 4A

Copies of Resource 4B (one per group)

Copies of Resource 4C (one per child)

Copies of Resource 4D (one per child)

Adapt the learning

Pre-teach the digestive system labels and functions (Resource 4B) to children requiring additional support.

Challenge the children to describe the journey of their food through the digestive system.

Link the learning

CLIMATE ACTION PLAN:
Biodiversity

What do we already know?

Begin the lesson by revisiting the children's prior **learning about Nature** with reference to the human skeleton.

Display the multiple choice quiz on Resource 4A on the interactive whiteboard. Pose questions for the children to answer to explore their prior learning about the human skeleton and address any misconceptions.

What are we learning today?

Move the children's **learning about Nature** with reference to the human body on by explaining that they are going to explore another system within the body: the digestive system. Ask the children to point to the part of their body that they think is the start of the digestive system (the mouth). Establish that biting and chewing our food is the first stage of digestion. Ask them: *Once you've chewed your food, where does it go next?* Ask them to trace with their finger the journey that they think their food goes on next.

Explore the parts of the human digestive system and their functions using the BBC Bitesize tool *What is the digestive system?*.

Give each child a small piece of fruit. Invite them to shut their eyes and eat it, focusing on the sensation and visualising its journey from their mouth, down into their stomach and on through their digestive system.

Either outdoors or in a large indoor space, the children work in small groups to draw around a volunteer to create a chalk outline of a human body. Using the diagram of the human digestive system on Resource 4C for support, they draw the main organs that make up the human digestive system within the outline.

As an extra challenge, they could label them and match them to their functions, using the cards on Resource 4B for support.

How are we learning today?

TIME TO EXPLAIN: Allow the children time to reflect on their **learning about Nature** by providing them with a diagram of the human digestive system (Resource 4C) to label and annotate.

Challenge them to complete the sentences (Resource 4D) or devise their own to demonstrate their understanding.

STEM SENTENCES:
Digestion begins in the _____ (mouth).
When we chew, our food is broken up by the _____ (teeth) and _____ (tongue) and by chemicals in the _____ (saliva).

The muscular tube that takes food from the mouth to the stomach is the _____ (oesophagus).
Next the food goes into the _____ (stomach), which is like a muscular bag that churns and adds chemicals, including _____ (acid), to break the food down more.
After that, the _____ (small intestine) absorbs nutrients into the _____ (blood stream).
The main job of the _____ (large intestine) is to absorb water from what's left of the food.

What have we learned today?

Ask the children: *What does the word 'system' mean? What other systems do you know about?* For example, the children may mention the skeletal system, muscular system or ecosystems such as the seaside, polar regions or the rainforest.

Draw out the significance of the **principle of Interdependence** to this learning e.g. when different elements within a system work together, we say they are interdependent. Without one of the parts of our digestive system, we wouldn't be able to digest food effectively.

Ask the children: *What helps the digestive system to work well?* In pairs, challenge the children to think of three things (or more, if they can), which could include eating enough fibre, drinking enough water, eating fresh food, eating natural foods and eating less processed food.

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Resource 4A

Multiple choice quiz

1. How many bones are there in an adult human skeleton?
   a. 5
   b. 500
   c. 206
   d. 103

2. More than half of our bones are in our hands and feet.
   a. true
   b. false

3. The human skeleton...
   a. provides support
   b. provides protection
   c. facilitates movement
   d. does all of the above

4. The brain is protected by the...
   a. shin bone
   b. femur
   c. skull
   d. rib cage and sternum

5. The skeletal system helps us to digest food.
   a. true
   b. false

ANSWERS: 1c, 2a, 3d, 4c, 5b

Resource 4B

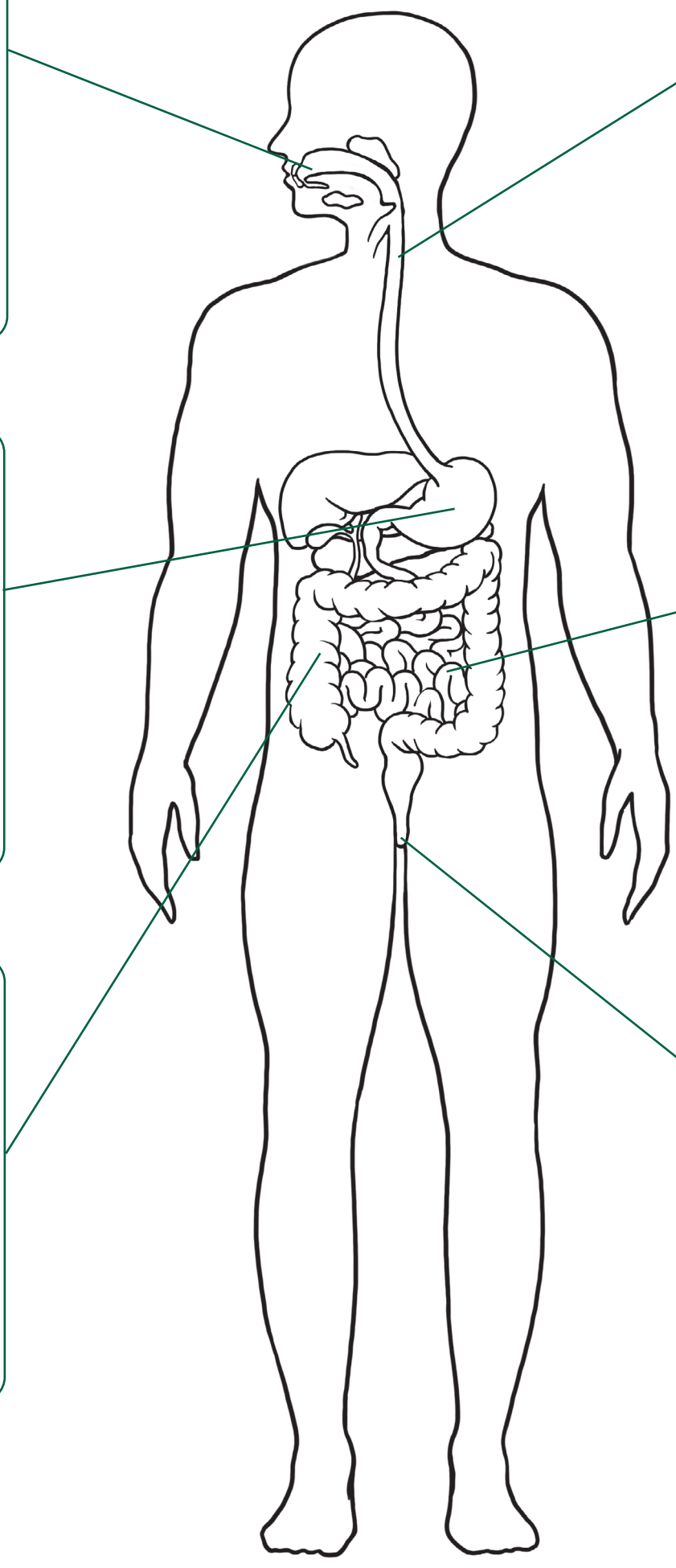
Match the organs with their functions

mouth	A bag of muscle that churns food in fluid to digest it.
oesophagus	Absorbs nutrients into the bloodstream.
stomach	Absorbs water from the remaining food.
small intestine	An opening at the end of the digestive system where solid waste leaves the body.
large intestine	A muscular tube that takes food from the mouth to the stomach.
anus	The start of the digestive system where our food is broken up by chewing.

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Resource 4C

Label the parts of the digestive system and describe what each part does.



mouth	oesophagus	stomach
anus	small intestine	large intestine

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Resource 4D

Use the words in the box to fill in the gaps in the text.

Digestion begins in the_____. When we chew, our food is broken up by our _____ , _____ and chemically by _____ . The muscular tube that takes food from the mouth to the stomach is the _____.

Next, the food goes into the _____, which is like a muscular bag that churns and adds chemicals, including _____ , to break the food down more. After that, the _____ absorbs chemicals into the blood stream. The main job of the _____ is to absorb water from what's left of the food.

stomach	mouth	small intestine
saliva	oesophagus	large intestine
teeth	tongue	acid

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Lesson

05

Enquiry question:
How did the Anglo-Saxons farm and how was it different from today?

Harmony principle:
The principle of Interdependence

NC Links

Animals including humans
Describe the simple functions of the basic parts of the digestive system in humans.

Working scientifically:
Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Scientific enquiry type:
Identifying, classifying and grouping

Key vocabulary

Vocabulary relating to animals, including humans, working scientifically and thinking sustainably is highlighted within the unit introduction.

You will need

Foods grown and eaten by the Anglo-Saxons e.g. oats, bread, peas, broad beans, carrots, apples, pork, milk

Water

Clear plastic sandwich bag

Orange juice

Funnel and tray

Pair of tights

Scissors

2 paper cups (one with a hole in the base)

Camera

Adapt the learning

Children requiring additional support may benefit from an adult modelling a verbal description of each stage, emphasing the key actions and parts of the digestive system.

Challenge the children to research and add the functions of the liver and pancreas.

Link the learning

CLIMATE ACTION PLAN:
Biodiversity

How can I demonstrate and explain the process of digestion?

What do we already know?

Begin the lesson by revisiting the children's prior **learning about Nature** with reference to the human digestive system by playing a game of 'Elaborative Interrogation'.

Display Resource 4C and ask the children to describe and explain in detail to a partner how food travels through the digestive system, using what they have remembered about digestion so far. Their partners ask 'How?' and 'Why?' questions to extend their explanations.

Invite pairs to share their elaborations with the group and address any misconceptions.

What are we learning today?

Move the learning on by explaining to the children that through the process of digestion, all animals, including humans, absorb vital nutrients, vitamins and minerals into their body, and that different foods provide us with different things we need. For example:

Peas are high in vitamin C (this is needed to keep the cells in our skin, blood vessels, bones and cartilage healthy).

Broad beans are high in fibre (this aids digestion and prevents constipation).

Oats are high in magnesium (this helps maintain the health of muscles, including the heart).

How are we learning today?

The next part of the learning could take place outdoors. Follow the instructions on the STEM Learning *Practical: The Digestive System* resource to create a class model showing the movement of food through the digestive system. Ask for a volunteer to photograph each stage.

1. Ask some children to break apart and grind food to imitate chewing, then add water to it to represent saliva.

2. Next, put all this food into a clear plastic sandwich bag to represent the stomach. Mimic the action of the stomach wall by squashing and squeezing, adding orange juice to represent stomach acid.

3. Over a tray, funnel the contents of the 'stomach' into the leg of a pair of tights representing the small intestine. Squeeze everything down the 'small intestine'. Explain that the fluid that leaks through the tights and collects in the tray represents the nutrients that are absorbed into the body.

4. Once the food has been squeezed through the tights, cut the end of the tights and squeeze the solidified waste into a paper cup with a hole in the base. Draw the children's attention to the fact that fibre plays an important role in adding bulk to this waste, keeping it soft and helping it move through the digestive system. The cup represents the large intestine.

5. Use another cup to push the waste through the hole. This represents passing a stool.

Consolidate this new learning by watching the STEM Learning clip *Food's Incredible Journey*.

TIME TO EXPLAIN:
Display the photographs taken at each stage of the practical activity on the interactive whiteboard. The children suggest or write a caption for each.

STEM SENTENCES:
First, food is_____ (chewed) in the_____ (mouth). After that, the food travels down the _____ (oesophagus) to the _____ (stomach).

Next, the food enters the _____ (small intestine) then travels through the _____ (large intestine). Finally, the waste exits the body as_____ (poo/waste/faeces).

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Lesson 05

What have we learned today?

Draw the learning together by recapping that the process of digestion helps our bodies to extract the nutrients we need from our food. The fibre in our diet plays a vital role in keeping the digestive system healthy and helping it to operate efficiently.

Link the learning to the **principle of Interdependence** by challenging the children to think what they can do to keep their own digestive system healthy. Provide some examples of fibre-rich foods (e.g. fruits such as raspberries and apples, vegetables such as broccoli and peas, pulses such as beans and lentils, wholegrains such as oats, brown bread and brown rice, and nuts and seeds).

Ask the children which of these foods they would enjoy eating. Then, ask them which ones they would be prepared to eat to help keep their digestive system healthy.



Broad beans are high in fibre. Having a fibre-rich diet helps the digestive system to function effectively

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Lesson **06**

Enquiry question:
How did the Anglo-Saxons farm and how was it different from today?

Harmony principle:
The principle of Interdependence

Was the Anglo-Saxon diet healthier than our diet today?

NC Links

Animals including humans
Describe the simple functions of the basic parts of the digestive system in humans

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 (Year 3)

Working scientifically:
Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

Scientific enquiry type:
Research using secondary sources

Key vocabulary

Vocabulary relating to animals, including humans, working scientifically and thinking sustainably is highlighted within the unit introduction.

You will need

Individual whiteboards and pens

Images (or real examples) of foods grown and eaten by the Anglo-Saxons e.g. oats, bread, peas, broad beans, carrots, apples, pork and milk

A3 sheets of paper

Copies of Resource 6A (one per pair)

Copies of Resource 6B (one per pair)

Adapt the learning

Children requiring additional support could use the word bank on Resource 6B.

Challenge the children to work in small groups to plan and compare their Anglo Saxon and modern meal highlighting the pros and cons in each option.

Link the learning

CLIMATE ACTION PLAN:
Biodiversity

What do we already know?

Begin the lesson by revisiting the children's prior **learning about Nature** in relation to dietary health by asking: *What is a balanced diet? Which foods do we need to eat to stay healthy?*

Depending on their responses, highlight the five main food groups and ask them to list on their whiteboards examples for each group and how each group affects the human body (see table below).

Once they have made their notes, share ideas as a class and address any misconceptions.

FOOD GROUP	EXAMPLES	BENEFITS
fruits and vegetables	apples, bananas, oranges, strawberries, carrots, broccoli, courgette, leeks	contain vitamins and fibre, which help digestion and keep us healthy
starchy carbohydrates	pasta, rice, oats, potatoes and sweet potatoes or noodles, bread	give us energy, contain fibre
protein	meat, fish and eggs, nuts, beans, lentils, peas	helps us grow and build muscle
dairy	milk, yoghurt, cheese	contains calcium for strong bones and teeth
fats	butter, olive oil, avocados, nuts, seeds, oily fish	give us energy, help us to absorb some vitamins, help brain development and cell function

What are we learning today?

Remind the children that through the process of digestion, all animals absorb vitamins and minerals into their body, as well as things like sugars and fatty acids. Our food also provides our bodies with fibre, which we need to keep our digestive systems healthy and which also helps prevent us becoming ill.

Introduce the foods that were central to the Anglo-Saxon diet with reference to the factsheet on Resource 6A.

Ask the children: *Do you think the Anglo-Saxons had more fibre in their diet than we do today?* Working in pairs, they read the information on the factsheet and highlight the foods they think are high in fibre before sharing their ideas as a class. Ask them: *How much of these fibre-rich foods do we eat today? How could we increase the amount of fibre in our diet?* e.g. by choosing brown or granary bread instead of white; eating more vegetables; snacking on nuts instead of crisps.

TEACHER TIP:
On average, in the UK we eat only two-thirds of the recommended daily intake of fibre and some studies show that only around a tenth of the population has enough fibre in their diet. The NHS website has advice on eating a more fibre-rich diet.

Ask the children: *Do you think the Anglo-Saxons had more sugar in their diet than we do today?* Working in pairs, they read the information on the factsheet and highlight the foods they think are high in sugar before sharing their ideas as a class. Ask them: *How could we reduce the amount of sugar we eat today?*

Remind the children of the learning about ultra-processed foods from Lesson 1 and ask them whether they found any examples of these on the factsheet. Highlight the fact that ultra-processed food didn't exist in Anglo-Saxon times and that this is another key difference between the Anglo-Saxon diet and our diet today.

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How are we learning today?

Working in pairs, the children fold their A3 sheet of paper in half then draw in one half their favourite meal. In the other half, they draw a typical Anglo-Saxon meal such as pottage (see factsheet for details).

Using the wordbank on Resource 6B for support, the children write labels to explain how healthy they think each meal is, giving reasons for their thinking.

TIME TO EXPLAIN:
Give the children time to present their meals to the class and explain their ideas about each.

As a class, discuss that some foods taste good even if they aren't very good for our health (they might contain additives or high levels of fat, sugar or salt, for example). While it's still OK to eat them, we need to be careful that we don't eat too much of them or eat them too often.

What have we learned today?

This part of the learning could take place outside. Write each of the following words on three whiteboards: Anglo-Saxons, people today, both. Place these around the outdoor space.

Share the following statements and ask the children to decide whether they think the statement applies to the Anglo-Saxons, people today or both, and to stand by the whiteboard that matches their choice.

Meals contain lots of seasonal vegetables, fruit and other plants.

The benefits of a balanced diet are widely understood.

Foods eaten are high in fibre and rich in vitamins.

Foods eaten are low in added sugar. (This is a good time to talk about the health of people's teeth today and in Anglo-Saxon times).

Foods eaten are low in fat.

There is a diversity of fresh food throughout the year.

Ultra-processed food doesn't exist.

There is a wide selection of food choices available.

All food is grown organically, without the use of chemicals.

To take the discussion further, you could encourage the children to say whether the statements apply always, sometimes or never to justify their response.

Ask them to share with their partner a 'healthy eating pledge' identifying one thing they will change to make their own diet healthier and to keep their bodies healthy. Share some of their ideas as a class.



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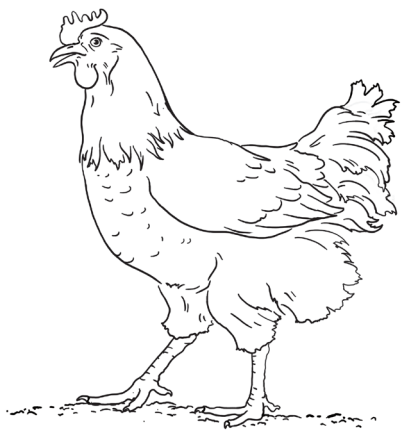
Resource 6A

What did the Anglo-Saxons eat?

The Anglo-Saxons ate very different food to the food we eat today. They could only eat what grew nearby, what they grew themselves and what they had been able to preserve to eat later. Most people ate a mostly plant-based diet and only had meat a few times a year. All their food would have been organic (grown without chemicals).

Meat

Pork was the most commonly eaten meat in Anglo-Saxon times. Pigs were easy to rear because they had large litters of piglets that grew fast. Sometimes, they also ate chicken, goat and beef from cows. Rich people ate more meat than poorer people. Most people kept cows for milk and chickens for eggs.



Fish

People who lived near the sea ate lots of fish. They also ate shellfish like oysters and crabs. They would have preserved fish by drying it or salting it to make it last longer. This was helpful in winter when other food was hard to find.

Vegetables

Anglo-Saxons grew and ate lots of vegetables, including onions, garlic, cabbage, turnips, mushrooms, beetroot, parsnips, carrots (which were white or purple at the time), peas and beans. Vegetables were grown or foraged and would have been used to flavour meals as the Anglo-Saxons only used herbs in medicines. Spices like pepper, coriander, cinnamon and ginger were used very occasionally by rich people, but most Anglo-Saxons would never have tasted them.



Fruits

In summer, the Anglo-Saxons ate fruit such as cherries, berries, apples, pears and plums. They also loved honey from beehives. Honey was the only sweetener they had as they wouldn't have had sugar, for example.

Grains

Anglo-Saxons ate lots of bread, which was made from barley and wheat. In fact, they ate bread with almost every meal. They also made a thick soup called pottage using grains and vegetables.



Drinks

Most Anglo-Saxons drank ale, which is like beer. They didn't drink water because it wasn't clean and could make them ill. Even children drank weak ale! In autumn, they also made and drank apple cider.

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carbohydrates (potatoes, bread, rice, pasta)	energy	processed
fruit and vegetables	growth and repair	ultra-processed
protein (beans, pulses, fish, eggs, meat)	fibre	natural
dairy (milk, cheese and yoghurt)	calcium	absorb
fats and oils	vitamins	balanced

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