

## Year 3 Science – Unit: Animals Including Humans (Rich, Detailed Lesson Plans)

### Unit Overview (teacher notes)

Big idea: Structure and function in animals – what living things need, and how bodies are supported and moved.

This unit is designed to be highly practical and language-rich. Each lesson includes explicit vocabulary teaching, a core task that applies the new skill, and a challenge pathway for greater depth.

National Curriculum focus (Year 3 – Animals Including Humans): Nutrition (right types and amounts; animals cannot make their own food; nutrition comes from what they eat) and the role of skeletons and muscles for support, protection and movement.

Threads across the unit: careful observation, classifying, using evidence from research, speaking in full scientific sentences, and explaining relationships (because/so/therefore).

Suggested running enquiry (over time): “How do our choices affect our bodies?” Pupils keep a simple 5-day “food groups tally” and reflect on variety (no calories or dieting language).

### Core Resources (unit)

- Food cards or photos (wide range across all food groups) + sorting hoops
- Clean, empty food packaging with nutrition labels (allergens checked) OR printed label examples
- Large human skeleton poster (or model), plus animal pictures (vertebrates/invertebrates)
- Mini whiteboards and markers, glue sticks, scissors, highlighters
- Pupil investigation booklets: tables for sorting results, notes, and conclusions (included on slides)

## Vocabulary routines (quick but powerful)

- Say it, clap it, segment it: pupils repeat the word, clap syllables, then use it in a sentence.
- Frayer mini-model (2 minutes): word → meaning → example → non-example.
- Sentence stems displayed: "I can classify \_\_\_\_ as \_\_\_\_ because \_\_\_\_." / "This shows \_\_\_\_ because \_\_\_\_." / "I can conclude \_\_\_\_."
- Retrieval starter each lesson: 4 questions (2 recall, 1 apply, 1 vocabulary).

## Lesson 1: What is nutrition? Food groups and nutrients

**Learning Objective (LO):** To explain that animals (including humans) get nutrition from food and to identify main food groups and key nutrients.

**National Curriculum link (Year 3 – Animals Including Humans):** Identify that animals, including humans, need the right types and amount of nutrition and cannot make their own food; they get nutrition from what they eat.

**Working Scientifically focus:** Research using secondary sources; identifying and classifying foods; recording findings in tables.

**Key knowledge (what pupils should leave knowing):**

- Nutrition means getting the substances our bodies need from food.
- Animals (including humans) cannot make their own food; we get nutrition from what we eat.
- Different foods give different nutrients (e.g., carbohydrates for energy, protein for growth/repair).
- Food can be grouped in different ways (food groups) to help us plan variety.

**Rich vocabulary for explicit teaching (Tier 2 + Tier 3):**

| Word      | Child-friendly meaning        | Teacher precision (science)                                            | Example sentence (pupil)              |
|-----------|-------------------------------|------------------------------------------------------------------------|---------------------------------------|
| nutrition | the goodness we get from food | the process of taking in nutrients from food to stay alive and healthy | Nutrition helps my body stay healthy. |
| nutrient  | a helpful substance in food   | a substance in food that the                                           | A nutrient in milk is protein.        |

|              |                                |                                                                              |                                                |
|--------------|--------------------------------|------------------------------------------------------------------------------|------------------------------------------------|
|              |                                | body needs (e.g., protein, vitamins)                                         |                                                |
| carbohydrate | a food that gives energy       | a nutrient used by the body for energy (e.g., bread, rice)                   | Bread gives me carbohydrates for energy.       |
| protein      | helps our body grow and repair | a nutrient used to build and repair body tissues (e.g., beans, eggs)         | Protein helps my muscles repair.               |
| fat          | a nutrient that stores energy  | a nutrient that stores energy and supports the body; needed in small amounts | Some fats help my body, but I don't need lots. |
| vitamin      | tiny helpers for health        | small substances needed for body functions (e.g., vitamin C)                 | Fruit has vitamins.                            |
| mineral      | tiny helpers like calcium      | substances like calcium/iron needed for bones, blood and more                | Calcium is a mineral for strong bones.         |
| food group   | a category of similar foods    | a way to organise foods by the nutrients they often provide                  | Fruit is a food group.                         |

#### Common misconceptions & how to address them:

- "Only unhealthy food has fat." → Explain: fat is a nutrient; we need some, but not too much.
- "Protein is only in meat." → Show plant proteins (beans, lentils, nuts) and dairy/eggs.
- "If it's a fruit, it has no sugar." → Clarify natural sugars exist; focus on balance and variety.

#### Resources / preparation:

- Food photo/cards; sorting hoops; label examples; large food group poster
- Vocabulary grid template and sentence stems

- Highlighters for spotting nutrients on labels

**Suggested lesson sequence (approx. 60 minutes):**

1. Retrieval (5): Quick recap of what living things need (from prior learning).
2. Hook (5): "Fuel for a machine" analogy—What does our body need to work well?
3. Explicit teaching (10): Define nutrition; introduce key nutrients and simple roles.
4. Guided practice (10): Sort 8 foods together and justify using a sentence stem.
5. Main task (20): Group sort + table recording + 3 justification sentences.
6. Plenary (5): Exit ticket—define nutrition and name one nutrient + job.

**Main activity (pupil task) – apply the new skill:**

- In groups, sort food cards into food groups (your teacher will choose the group model used).
- Complete a table: Food → Group → One nutrient it gives → Evidence (picture/label clue).
- Write 3 sentences using: "I classified \_\_\_\_ as \_\_\_\_ because \_\_\_\_."

**Support / scaffolds (SEND/EAL):**

- Use fewer cards and only 3 groups at first (e.g., fruit/veg, protein, carbohydrates).
- Provide picture word bank and pre-filled table headings.
- Adult prompts: "What do you notice?" "Which group does it fit?" "Use the word nutrient."

**Challenge / Greater Depth:**

- Add "why" reasoning: link nutrient to its role (energy, growth, health).
- Spot foods that fit more than one group and explain why.
- Create a mini-glossary with precise definitions for 5 words.

**Plenary (check learning):**

- Turn-and-talk: "One thing I learned about nutrition is..."
- Exit ticket: "Nutrition is... A nutrient is... One example is..."

**Assessment opportunities:**

- Check sorting tables for sensible groupings and evidence notes.

- Listen for correct use of "nutrition" and "nutrient" in explanations.
- Hinge question: "Can humans make their own food? Explain."

#### Home learning / extension (optional):

- At home: choose one meal and list 3 food groups you can spot (no judgement language).
- Make 5 vocabulary flashcards (word/meaning/example).

## Lesson 2: Balanced diet: the right types and amounts

**Learning Objective (LO):** To explain what a balanced diet means and to design a simple balanced meal using food group evidence.

**National Curriculum link (Year 3 - Animals Including Humans):** Identify that animals, including humans, need the right types and amount of nutrition.

**Working Scientifically focus:** Using evidence from research; communicating findings; evaluating choices against criteria.

#### Key knowledge (what pupils should leave knowing):

- A balanced diet includes a variety of food groups.
- "Right types and amounts" means not too much of one type and not missing key groups.
- Water is essential for the body (hydration).
- Different people may need different amounts because bodies are different (growth/activity).

#### Rich vocabulary for explicit teaching (Tier 2 + Tier 3):

| Word          | Child-friendly meaning               | Teacher precision (science)                                                       | Example sentence (pupil)                                   |
|---------------|--------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------|
| balanced diet | eating a variety in sensible amounts | a pattern of eating that provides a range of nutrients from different food groups | A balanced diet includes fruit, protein and carbohydrates. |
| portion       | the amount you eat at one time       | a serving size of food                                                            | A portion of pasta can be different                        |

|          |                             |                                                                 |                                                 |
|----------|-----------------------------|-----------------------------------------------------------------|-------------------------------------------------|
|          |                             |                                                                 | for different people.                           |
| variety  | having different kinds      | including many different foods to get many nutrients            | Variety helps me get different nutrients.       |
| hydrate  | to give the body water      | to take in enough water so the body works well                  | I hydrate by drinking water.                    |
| criteria | rules to check our work     | features used to judge if something meets a goal                | Our criteria were: 3 food groups and water.     |
| evidence | proof from what we find out | information from research/observations that supports a decision | The label is evidence that yoghurt has protein. |

#### **Common misconceptions & how to address them:**

- "Balanced means equal amounts of everything." → Clarify: balance is variety and sensible amounts, not equal.
- "Healthy food is only salad." → Show balanced meals include carbohydrates and protein too.
- "Drinks don't matter." → Reinforce hydration and choosing water often.

#### **Resources / preparation:**

- Meal planning template (plate model or food group checklist)
- Food cards + label examples; coloured pencils
- Success criteria poster: variety + right types + right amounts

#### **Suggested lesson sequence (approx. 60 minutes):**

7. Retrieval (5): Quick quiz on nutrients + examples.
8. Hook (5): "Build a body" game—what happens if we only eat one type?
9. Explicit teaching (10): Define balanced diet; model using criteria/checklist.
10. Guided practice (10): Improve an unbalanced meal together—what is missing?
11. Main task (20): Design a balanced meal + justify using evidence.
12. Plenary (5): Gallery walk—pupils give one "star" and one "step" feedback.

#### **Main activity (pupil task) - apply the new skill:**

- Design a breakfast/lunch meal that includes at least 3 food groups.
- Label each item with its group and one nutrient it provides.
- Write a justification: "My meal is balanced because...".
- Resources on slide can be used or paper plate with pictures for sorting.

**Support / scaffolds (SEND/EAL):**

- Provide a pre-made menu to choose from; pupils tick the groups.
- Sentence stems with word bank: balanced, variety, portion.
- Adult-led group to model one example together.

**Challenge / Greater Depth:**

- Design two meals for different activity levels (e.g., sports day vs restful day) and explain differences.
- Add a "swap" suggestion to improve a meal and explain why.
- Use comparative language: more/less, enough, too much.

**Plenary (check learning):**

- Oral quiz: "Name one sign a meal is not balanced."
- Exit ticket: "Balanced diet means... One example of variety is...".

**Assessment opportunities:**

- Check meal plans: inclusion of multiple groups + justified reasoning.
- Listen for vocabulary use: balanced, variety, portion, evidence.
- Hinge: "Is toast-only breakfast balanced? Why/why not?"

**Home learning / extension (optional):**

- Create a "food group rainbow" tally for one day: how many different groups did you have?
- Teach someone at home 3 new words (nutrition, nutrient, balanced) and write a sentence for each.

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**Lesson 3: Comparing diets: herbivores, carnivores and omnivores**

**Learning Objective (LO):** To compare the diets of different animals and classify them based on what they eat.

**National Curriculum link (Year 3 – Animals Including Humans):** Nutrition: animals get nutrition from what they eat (and cannot make their own food).

**Working Scientifically focus:** Identifying and classifying; using secondary sources; explaining decisions using evidence.

**Key knowledge (what pupils should leave knowing):**

- Animals get nutrients from their food.
- Herbivores eat plants; carnivores eat other animals; omnivores eat both.
- Animals' diets link to their needs and environment.
- Scientists group animals using shared characteristics (classification).

**Rich vocabulary for explicit teaching (Tier 2 + Tier 3):**

| Word      | Child-friendly meaning                 | Teacher precision (science)                 | Example sentence (pupil)                        |
|-----------|----------------------------------------|---------------------------------------------|-------------------------------------------------|
| diet      | the food an animal eats                | the usual food an organism eats             | A rabbit's diet includes grass.                 |
| herbivore | an animal that eats plants             | an animal that mainly eats plants           | A cow is a herbivore.                           |
| carnivore | an animal that eats meat               | an animal that eats other animals           | A lion is a carnivore.                          |
| omnivore  | an animal that eats plants and animals | an animal that eats both plants and animals | A human can be an omnivore.                     |
| classify  | to put into groups                     | to group based on shared features           | We classify animals by what they eat.           |
| evidence  | proof for our choice                   | information that supports a claim           | The video is evidence that the eagle eats fish. |

**Common misconceptions & how to address them:**

- "All big animals are carnivores." → Use counterexamples (elephant, giraffe).
- "Omnivore means it eats everything." → Clarify: it eats both plants and animals, not all foods.
- "Humans must be omnivores." → Clarify: many humans choose different diets; focus on classification terms.

**Resources / preparation:**

- Animal cards (with diet clues) and sorting hoops
- Short fact cards or QR-linked videos (teacher-controlled) for evidence
- Classification table template

**Suggested lesson sequence (approx. 60 minutes):**

13. Retrieval (5): Define nutrition and balanced diet in one sentence each.
14. Hook (5): Mystery animal—show teeth picture; what might it eat?
15. Explicit teaching (10): Define herbivore/carnivore/omnivore with examples.
16. Guided practice (10): Classify 6 animals together and justify.
17. Main task (20): Group classification + evidence notes + conclusion.
18. Plenary (5): "Odd one out" challenge with three animals.

**Main activity (pupil task) – apply the new skill:**

- Sort animals into herbivore/carnivore/omnivore.
- Record in a table: Animal → Group → Evidence (what told you).
- Write a short conclusion: "I can tell \_\_\_\_ is a \_\_\_\_ because \_\_\_\_."

**Support / scaffolds (SEND/EAL):**

- Use fewer animals and clearer diet clues.
- Provide sentence stems and word bank.
- Adult-led reading of fact cards for EAL/SEND.

**Challenge / Greater Depth:**

- Add a "depends" category for animals that change diet over seasons and explain.
- Link to teeth types (non-statutory enrichment): sharp vs flat and why.
- Create your own animal card with diet clues and swap with a partner to classify.

**Plenary (check learning):**

- Quick-fire: "Define herbivore/carnivore/omnivore."
- Exit ticket: classify one new animal and give evidence.

**Assessment opportunities:**

- Check tables for correct classification and valid evidence.
- Listen for vocabulary accuracy and full sentence explanations.
- Hinge: "A bear eats fish and berries. What is it? Explain."

**Home learning / extension (optional):**

- Choose an animal and write 3 sentences: its diet, its group, evidence.
  - Make a mini-poster of the three diet words with examples.
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## Lesson 4: Skeletons: support, protection and movement (animals with and without skeletons)

**Learning Objective (LO):** To identify that humans and some animals have skeletons for support, protection and movement, and to classify animals with and without skeletons.

**National Curriculum link (Year 3 - Animals Including Humans):** Identify that humans and some other animals have skeletons and muscles for support, protection and movement.

**Working Scientifically focus:** Identifying, classifying and grouping; observing and comparing movement; recording with labelled diagrams.

**Key knowledge (what pupils should leave knowing):**

- A skeleton supports the body and helps it keep its shape.
- A skeleton protects important organs (e.g., skull protects brain; ribs protect heart/lungs).
- Some animals have skeletons inside (endoskeleton) or outside (exoskeleton); some have no hard skeleton.
- Movement happens when bones move at joints (muscles help—next lesson).

**Rich vocabulary for explicit teaching (Tier 2 + Tier 3):**

| Word     | Child-friendly meaning      | Teacher precision (science)                                       | Example sentence (pupil)         |
|----------|-----------------------------|-------------------------------------------------------------------|----------------------------------|
| skeleton | the body's frame            | a framework that supports and shapes the body and protects organs | My skeleton helps me stand up.   |
| bone     | a hard part of the skeleton | hard tissue that forms the skeleton                               | A bone in my arm is the humerus. |

|              |                               |                                                                |                                   |
|--------------|-------------------------------|----------------------------------------------------------------|-----------------------------------|
| skull        | bone that protects the brain  | the set of bones that protect the brain                        | My skull protects my brain.       |
| ribs         | curved bones around the chest | bones that protect the heart and lungs                         | Ribs protect my heart and lungs.  |
| spine        | bones down your back          | a column of vertebrae that supports the body                   | The spine helps me sit and stand. |
| endoskeleton | skeleton inside the body      | internal skeleton (e.g., humans, fish)                         | A human has an endoskeleton.      |
| exoskeleton  | skeleton outside the body     | hard outer covering supporting/protecting (e.g., crab, beetle) | A crab has an exoskeleton.        |
| vertebrate   | animal with a backbone        | an animal with a spine/backbone                                | A dog is a vertebrate.            |
| invertebrate | animal without a backbone     | an animal without a backbone (some have exoskeletons)          | A worm is an invertebrate.        |

#### Common misconceptions & how to address them:

- "All animals have bones." → Provide counterexamples (worms, jellyfish; many invertebrates).
- "Bones are only for movement." → Reinforce protection and support roles.
- "Exoskeleton means no skeleton." → Clarify: exoskeleton is a skeleton on the outside.

#### Resources / preparation:

- Human skeleton poster/model; labelled bone cards
- Animal picture set (vertebrates/invertebrates; exoskeleton/no hard skeleton)
- Joint movement demo (card strips + split pins), hand lenses (optional)

#### Suggested lesson sequence (approx. 60 minutes):

19. Retrieval (5): classify 4 animals as herbivore/carnivore/omnivore.
20. Hook (5): "What if humans had no skeleton?" quick drama freeze frame.
21. Explicit teaching (10): Define skeleton; explain support/protection/movement.
22. Guided practice (10): Label key human bones (skull, ribs, spine).
23. Main task (20): Classify animals with/without skeletons; add movement notes.
24. Plenary (5): Hinge question and exit ticket.

### **Main activity (pupil task) – apply the new skill:**

- Station 1: Label a human skeleton diagram with 5 key bones.
- Station 2: Sort animal cards into: endoskeleton / exoskeleton / no hard skeleton.
- Station 3: Write 3 function sentences: "The \_\_\_\_ protects/supports \_\_\_\_."

### **Support / scaffolds (SEND/EAL):**

- Provide pre-printed labels for diagrams and a reduced animal set.
- Use icons for categories (inside/outside/none).
- Adult support to read animal fact clues and prompt reasoning.

### **Challenge / Greater Depth:**

- Explain how the ribcage protects organs using "because".
- Compare two animals: how does skeleton type affect movement?
- Create a short caption for a display: "Skeletons are important because..."

### **Plenary (check learning):**

- Hinge: "Is a crab a vertebrate? Why/why not?"
- Exit ticket: "One function of a skeleton is..." with an example.

### **Assessment opportunities:**

- Check classification accuracy and justification notes.
- Check diagrams for correct labels and spelling of key bones.
- Listen for correct function vocabulary: support/protection/movement.

### **Home learning / extension (optional):**

- Find 3 animals and decide if they are vertebrates/invertebrates. Explain.
- Draw a labelled ribcage or skull and write one protection sentence.

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## **Lesson 5: Muscles and movement: how muscles work with bones**

**Learning Objective (LO):** To explain that muscles work with the skeleton to move the body and to investigate how joints and muscles help movement.

**National Curriculum link (Year 3 – Animals Including Humans):** Identify that humans and some other animals have skeletons and muscles for support, protection and movement.

**Working Scientifically focus:** Observing and comparing movement; taking simple measurements; using evidence to explain.

**Key knowledge (what pupils should leave knowing):**

- Muscles are attached to bones and help us move.
- Muscles can pull but they cannot push; they work in pairs around joints.
- Joints are places where bones meet and movement happens.
- Good explanations use evidence from observations (what we saw/what changed).

**Rich vocabulary for explicit teaching (Tier 2 + Tier 3):**

| Word              | Child-friendly meaning                      | Teacher precision (science)                                     | Example sentence (pupil)                      |
|-------------------|---------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------|
| muscle            | a body part that helps you move             | tissue that contracts to pull bones and create movement         | My muscles help me run.                       |
| contract          | to get shorter/tighter                      | when a muscle shortens to pull a bone                           | My biceps contract when I lift my arm.        |
| relax             | to loosen                                   | when a muscle returns to its longer resting length              | My triceps relax when I bend my arm.          |
| joint             | where two bones meet                        | a connection between bones that allows movement                 | My elbow is a joint.                          |
| tendon            | a strong strap that attaches muscle to bone | tough tissue connecting muscle to bone                          | A tendon helps the muscle pull the bone.      |
| antagonistic pair | two muscles that take turns                 | a pair of muscles that work opposite each other to move a joint | Biceps and triceps are an antagonistic pair.  |
| evidence          | what we saw or measured                     | observations/measurements that support a conclusion             | My arm moved when the elastic band tightened— |

|  |  |  |                   |
|--|--|--|-------------------|
|  |  |  | this is evidence. |
|--|--|--|-------------------|

### Common misconceptions & how to address them:

- "Muscles push bones." → Clarify: muscles pull; pairs take turns.
- "Joints are bones." → Clarify: joints are where bones meet.
- "Bigger muscles always mean stronger." → Keep simple: strength depends on training/health; avoid body comparisons.

### Resources / preparation:

- Arm model materials: card strips, split pins, elastic bands
- Simple diagram of elbow joint + biceps/triceps
- Rulers or tape measures (optional) for recording movement range

### Suggested lesson sequence (approx. 60 minutes):

25. Retrieval (5): Name 3 functions of a skeleton.
26. Hook (5): "Feel it" - gently touch biceps while bending arm (safe, optional).
27. Explicit teaching (10): Muscle contracts/relaxes; muscles pull; joints.
28. Guided practice (10): Label a diagram of elbow joint and muscles.
29. Main task (20): Build a moving arm model and test how it moves.
30. Plenary (5): Evidence-based conclusion sentence.

### Main activity (pupil task) - apply the new skill:

- Base this lesson on physical activity and exploration. Use appropriate vocabulary to name the relevant muscles involved in the activity, discuss and record findings. Draw a diagram of what was observed.
- Record results: What moved? Which "muscle" tightened? Write a conclusion using evidence.

### Support / scaffolds (SEND/EAL):

- Sentence stems: "When the muscle contracts, the arm \_\_\_\_."

### Challenge / Greater Depth:

- Improve the model: add a second elastic to show an antagonistic pair.
- Measure the angle or distance moved and compare two designs.
- Explain: "Muscles work in pairs because..." using cause-and-effect language.

### Plenary (check learning):

- Quick quiz: define contract, relax, joint.
- Exit ticket: "Muscles move bones because..." with evidence.

### Assessment opportunities:

- Check diagrams and vocabulary use (contract/relax/joint).
- Observe models: can pupils explain what each part represents?
- Listen for evidence language: observed, shows, therefore.

### Home learning / extension (optional):

- Draw a joint (knee or elbow) and label bone, joint, muscle.
- Write 3 sentences explaining how your body moves during one sport or game.

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## Appendix: Ready-to-print pupil templates (copy/paste into worksheets)

### A1. Vocabulary grid (any lesson)

Word | My meaning | Picture/diagram | Use it in a sentence

### A2. Evidence sentence stems (all lessons)

- I observed \_\_\_\_\_.
- This is evidence that \_\_\_\_\_.
- This shows \_\_\_\_\_ because \_\_\_\_\_.
- Therefore, I can conclude \_\_\_\_\_.

### A3. Classification table (diets or skeletons)

Item | Group | Evidence (what tells you) | Conclusion sentence