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Finding features • Lesson 1 • Using senses to observe

**Lesson 1**

**Launch**

**Year F**

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# Lesson overview

Students use their senses to make observations about the features of plants and animals.

## Learning Goals

Students will:

* identify the five key senses.
* observe plants and animals.
* explore the importance of using senses for observation, in the context of learning about plants and animals.
* use age-appropriate, student-selected vocabulary related to touch, sight, and smell to describe observed objects.

Students will represent their understanding as they:

* use a class science journal to communicate their understanding.
* participate in and contribute to discussions, using talk to share information, experiences and ideas about plants and animals.
* contribute to the creation and organisation of ideas in a mind map.

## Assessment advice

In the Launch phase, assessment is diagnostic.

Take note of:

* Can students identify the difference between sight, touch, and smell, and use appropriate adjectives to describe each?
* How do students tell the difference between plants and animals?
* What plant/animal features have students identified? What have they missed?
* What words did they use for these features?
* What alternative conceptions did they have?

## List of materials

**Whole class**

* Class science journal (digital or hard-copy)
* Demonstration copy of My five senses Resource sheet
* Demonstration copy of An unusual creature Resource sheet
* Demonstration copy of the Museum models Resource sheet
* Materials to create a word wall

**Mystery box activity (optional)**

* Mystery box containing 10 secret plant and animal items, such as: acorn, pinecone, banksia pod, orange, banana, lettuce leaf, garden leaf, stick, bark, sea shell, stuffed animal toy etc.

**What's that smell? activity(optional)**

* 2 x opaque containers (such as margarine container) with holes in the lids to use as ‘scent tubs’
* Masking tape to cover the holes in the lids of the scent tubs
* 4 x cotton balls
* 2 x different, plant based 'strong scents' to soak 2 cotton balls in each, such as eucalyptus oil and vanilla essence.

**Each student**

* Appropriate clothing and equipment for outdoor walk as required e.g. hat, comfortable shoes, water bottle, jumper, rain jacket etc.

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| **Lesson Routine** | **Estimated time** | **Task type** |
| Experience and empathise | Variable | Whole class |
| Elicit | 15 minutes | Whole class |
| Anchor | 15 minutes | Collaborative teams, Whole class |
| Connect | 10 minutes | Whole class |
| Asking questions | 10 minutes | Whole class |

# Launch

## Experience and empathise • Observing out world

Introduce the idea that plants and animals are all around us. Students will be working like scientists to make observations about plants and animals using their senses.

Referring to the demonstration copy of the **My five senses Resource sheet**, discuss what ‘observation’ means and how it’s done, referring to the key senses: sight, hearing, touch, smell and taste.

Discuss how we use our senses to make observations.

**Potential discussion prompts**

* *What do we mean when we say we're observing something?*
  + We 'look' at something really close, trying to 'see' as much as we can.
* *When we observe do we just look with our eyes?*
* *What other senses can we use to observe?*
  + Smell, hearing and touch. We can only taste something if a responsible adult says it's okay to.

Safety note: Be aware of students with allergies. Students may suffer from allergies caused by tasting/eating, touching or smelling things. The following discussion prompts support a conversation on this topic.

* *What other ways might we have to try to be safe?*
  + Some people are allergic to certain foods, and eating them can make them sick. Sometimes the allergy is really serious and can be life threatening. This is called *anaphylaxis*.
  + Sometimes even just touching something we're allergic to can make us very sick very quickly and can be life threatening.
  + Some smells can make us sneeze, get runny eyes, or feel sick.
* *If someone doesn't want to taste, touch or smell something (even with an adult’s permission) is that okay?*
  + Yes! And we must not try to make them.
* *If we know someone has a serious allergy to something (anaphylaxis) what should we do?*
  + We should take extra care to make sure that person doesn't eat, touch or smell the thing they're allergic to, so that they can stay healthy and safe.

The following tasks are two options for how you might support students to have a shared experience to begin this teaching sequence. The **Observation walk** relates to the content of the unit (the observable features of animals) and **Playing games** relates to the context of the unit (using of senses to make observations like scientists).

Select the task that best suits the needs and context of your students and classroom. You may choose to do both if time permits.

### Observation walk

Take students on a plant and animal observation walk, encouraging them to suggest the locations to stop at along the way.

At each stop discuss the plants and animals they observe.

**Potential discussion prompts**

* *What can you see?*
* *Can you see any plants? What types of plants?*
* *Do they have a smell?*
* *Are they making a sound?*
* *Can you see any animals?*
* *Can you hear any animals?*
* *Can you identify animals by the sounds they make? Or by how they smell?*
* *Have you seen any of these plants and animals before?*
  + Prompt students to remember other outdoor experiences, holidays, beach or zoo visits etc.

Upon returning to the classroom record students' observations on a page in the class science journal entitled 'Our observation walk'.

### Playing games

**Mystery box**

To highlight the senses of touch and sight, play **Mystery box**, using the box prepared before the lesson. You might like to do this as a whole class activity or divide students into collaborative teams of 2.

1. Students place their hands inside the mystery box and select one item without looking, taking care to keep it inside the box.
2. They describe what they can feel, and the class/their partner guesses what the item is.
3. Next, they peek inside the box, describe what they can see, and the class/their partner guess what it is.
4. Record the adjectives students use as they describe the items.
5. Student reveals the item.
6. Discuss the descriptions the student used to describe the item’s features.

**What's that smell?**

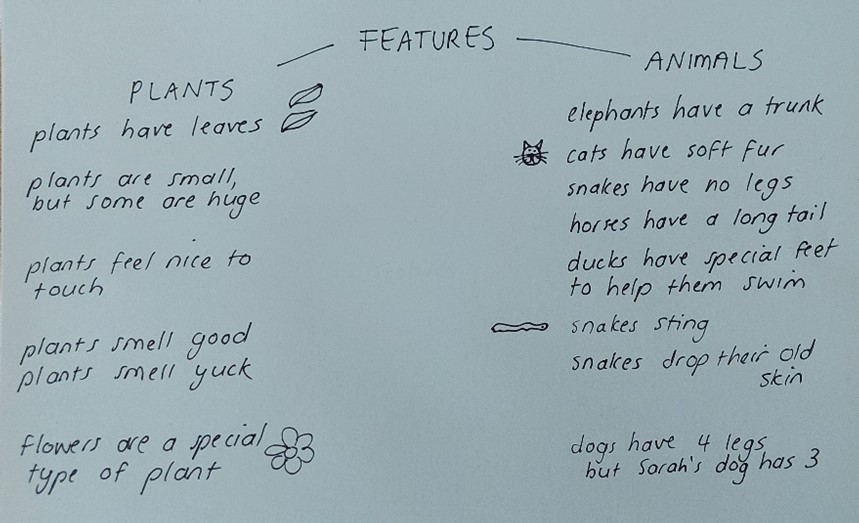
To highlight the sense of smell, play **What’s that smell?** using the scent tubs prepared before the lesson.

1. Discuss with students whether they think plants have a smell.
2. Show students the two tubs, *without* telling them what's inside them.
3. Explain to students that the tubs have been specially prepared for the activity and that they are safe to smell. Show students how to safely smell things in science using the ‘wafting’ technique.
   * It is not advisable to place something directly under the nose and take a deep sniff. In order to smell something, we should hold it away from our face, and use our hands to 'waft' the smell (fumes) towards us. Always ensure there is adequate ventilation.
4. Remove the sticky tape from the holes on the first tub and pass it around for students to smell.
5. Students describe the smell.
6. Record their observations in the class journal, under a heading “What’s that smell?”
7. Repeat with the second tub.
8. Ask students: *What parts of the tree/plant does this smell come from?*
   * If using eucalyptus oil, the leaves, and vanilla essence/extract, the pod/bean.

## Elicit • What do we think we know?

Introduce the word 'features' (the parts of something), describing the features of a human as an example (arms, legs, body, head, which in turn has features of hair, eyes, nose, ears, mouth, teeth, tongue).

Ask students to identify the 'features' of some classroom objects such as a chair (legs, seat, back), television (screen, buttons, remote, speakers) etc.

Elicit students’ prior knowledge of the features of plants and animals by creating a mind map in the class science journal, using the students’ actual vocabulary. Encourage all students to share their ideas. Take note of any alternative conceptions to address during the Inquire phase.

## Anchor • Looking closely

View and discuss an unusual insect or animal, for example a lantern bug (as found on the **An unusual creature Resource sheet**). Discuss the features we can observe (patterns, colours, number of legs…), and why scientists might want to observe it.

**Potential discussion prompts:**

* *How could we describe this animal?*
* *How many legs does it have?*
* *How would you describe its colours? Patterns?*
* *Why might scientists want to learn more about insects? This insect?* 
  + To find animals it is similar to, to learn about the environment, to know what might be affecting the environment.
* *What about this insect is the same as other insects? What is different? How do you know?*
* *Why might it be important to compare?*

To understand more about it, to find out if it is a helpful insect on farms or whether it is bad for the environment.

Discuss why scientists study plants and animals in general.

**Potential discussion prompts:**

* *Do you think the work scientists do learning about plants and animals is important? Why?* 
  + What they discover helps us to know and understand the world around us, for example, which insects help us by eating dangerous spiders, which ones will eat our food plants, and which ones are food for the birds.
* *Why is it important that scientists observe even the little details, such as the two different colours on this insects legs?* 
  + To group plants and animals that are similar together, helping us to understand more about the world we live in.
* *How did we work like scientists during our discovery walk?* 
  + We used our senses to observe as much as we could, even the things we could see with our eyes.

## Connect • Connecting to or world

View and discuss the images of plant and animal models found on the **Museum model Resource sheet**.

****Potential discussion prompts:**

* *What can we see in this photo?*
* *Do you think the animals are real? Why? Why not?*
* *What features did the scientists have to observe/take notice of so they could make a real-looking animal?* 
  + Crocodile size and patterns along its back etc.
* *Why do scientists and museums make models of plants and animals?* 
  + To help others to learn more about them.
* *Where do we think this photo was taken?* 
  + A museum.
* Explain to students that at the end of the teaching sequence, they will make their own model of a plant or animal to help other people learn about plants and animals.
* They will then display their model, and explain the external features of their plants or animal to the selected audience (classmates, other classes, parents etc.)
* **Optional:** Introduce the idea of a nature table to the students, and invite them to begin collecting things from nature to display on the table. Students might like to bring along shells, dried flowers etc. over the coming weeks to add to the table.

## Connect • Connecting to or world

Encourage students to ask questions about plant and animal features (similarities and differences), draw out their interests and past experiences. Record the questions on a page titled ‘What we want to learn about the features of plants and animals’ in the class science journal, grouping similar questions together.

If required, model asking questions (as these questions will be addressed through the inquiry phase.).

**Examples of questions**

Example plant questions

* *What is a plant? How do we know?*
* *How do plants grow?*
* *Are all leaves the same?*
* *Are all flowers the same?*
* *Which part of a plant can I eat?*
* *What do plants look like under the ground?*

Example animal questions

* *What is an animal? How do we know?*
* *What parts/features can I see on animals?*
* *How do animals move around?*
* *Do all animals feel the same if I pat them?*
* *Do other animals eat things the same way we do?*

**Reflect on the lesson**

You might:

* review the class science journal.
* add relevant words and images to begin a word wall.
* take another observation walk, making closer observations.
* play another round of **Mystery box** or **What's that smell?**.

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**Year F**

Finding features • Lesson 2 • Seeds and leaves

**lesson 2**

**inquirE**

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# Lesson overview

## Focusing on the senses of sight and hearing, students observe the growth of plants from seeds and group leaves according to the sounds they make, as well as their patterns, shape or size.

## Key learning goals

Students will:

* identify seeds and leaves as features of a plant.
* plant a seed for future investigation.
* group leaves with similar features.

Students will represent their understanding as they:

* contribute to group discussions to compare their ideas.
* contribute to recording scientific findings (through teacher modelled class science journal).
* describe leaves using vocabulary related to what they hear and see.

## Assessment advice

In this lesson, assessment is formative.

Feedback might focus on:

* students’ ideas about seeds. Do they recognise that a seed is a part of a plant?
* students’ ideas about leaves. Do they recognise that leaves are a part of a plant?
* how students group leaves. Can they group leaves in multiple ways based on their features?

## List of materials

**Whole class**

* Class science journal (digital or hard-copy)
* Demonstration copy of **Sunflower Resource sheet**
* Water source: tap, bucket or spray bottle
* Glue, stapler, push pins or blu-tac to display seed bags
* Permanent marker to name student seed bags
* Crayons
* Leaf samples from locations other than the school, to ensure diversity in leaf samples. Students will collect their own leaf samples from around the school during the lesson.
* Time-lapse video of seeds growing, for example [I Could Watch Time Lapses Of Seeds Growing All Day (1:33)](https://www.youtube.com/watch?v=ECibetK2EYI)
* Video demonstrating leaf rubbing with crayons, for example [Leaf Rubbings Activity from Evan-Moor's Skill Sharpeners: Science](https://www.youtube.com/watch?v=OvegBhx8510) (1:04)
* Materials to make a word wall

**Each student**

* A large seed (red kidney bean seed or similar), pre-soaked overnight
* Piece of paper towel
* Resealable plastic bag
* 2 x pieces of A4 paper
* Optional: Tongs/tweezers/tea bag squeezers for picking up leaves safely
* Optional: Individual science journal (digital or hard-copy)

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| **Lesson Routine** | **Estimated time** | **Task type** |
| Re-orient | 10 minutes | Whole class |
| Question | 15 minutes | Collaborative teams, Whole class |
| Investigate (ongoing) | Variable | Whole class, Individual |
| Integrate | 15 minutes | Whole class |
| Investigate | 40 minutes | Whole class, Individual |
| Integrate | 20 minutes | Whole class |

# Inquire

## Re-orient

Discuss the previous lesson where students used their senses to observe plants and animals.

Review the questions on the ‘What we want to learn about the features of plants and animals’ page in the science journal. Focus on the questions about plants in preparation for today's investigations.

## Question • What happens when I bend it?

**Pose the question:** *How do plants grow?* Discuss what students know.

**Potential discussion prompts:**

* *In the bush/wild, how do new plants grow?*
* *How do we grow new plants at home/school?*
* *Why are seeds important? What do they do?*
* *Where would I find a seed?* 
  + Plant, tree, on the ground/underground, a shop.

Show students the sunflower image from the **Sunflower Resource sheet** and discuss. Use the think, pair, share strategy by prompting with the questions below, and allow students time to think and discuss with a partner before sharing ideas with the class.

**Potential discussion prompts**

* *What can you observe with your eyes in this picture?*
  + Someone is touching the centre part of the sunflower.
* *What do you think is in the centre part of the sunflower?* 
  + The seeds.
* *What is the person collecting with their hands?*
  + The sunflower's seeds.
* *What do we need the seeds for?*
  + The seeds can be used to grow new sunflowers.

## Investigate • Growing plants (ongoing)

Ask students to close their eyes. Distribute one seed to each student, without telling them what it is. Remind students to hold the object gently in their hands.

With a partner, students share observations about the item by touching, smelling and listening to it, then guessing what it might be. Students then open their eyes to look at the item and see if their guess was correct. They share any observations they made that helped their guess.

Explain that students will be planting their seeds into clear bags, instead of dirt, so that they can use their sense of sight to observe the changes each lesson and to find out how plants grow. Demonstrate how to plant the seed in the bag, then assist students to plant their own.

1. Fold a single sheet of paper towel into a small square. Wet the paper towel by dunking it into water, then gently press it to remove some excess water.
   * The paper towel should feel quite wet, but not dripping excessively.
2. Place the folded paper towel into a resealable bag. Place the soaked bean inside the bag, in contact with the wet paper towel.
3. Seal the bag about two thirds of the way across, leaving a gap for some air flow.
4. Write the student's name on their bag.
5. Attach the bags to a wall where they will receive sunlight, or directly to the window.
   * In moderate and warm climates, attaching the bags directly to a window is fine, but in colder climates/seasons placing the bags directly on glass is not advised as the cold glass may affect germination. In this case, place the bags as close to the window as possible.
6. Create a table to record observations about the growth of the plants over the following weeks on a page of the class science journal titled 'How seeds grow - Observation recording table'. Model the first entry by including a labelled diagram or add a photograph of a planted seed, and written notes about what students observed about the seed.

**Optional:** Students might draw and write their own observations in their individual science journals if appropriate.

A bag with a label and a red pill in it

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**Optional:** Watch and discuss the time lapse video [“I could watch time lapses of seeds growing all day”](https://www.youtube.com/watch?v=ECibetK2EYI) (1:33 minutes). Pause the video at a point that shows the seed starting to grow and discuss what is happening to the seed.

**Potential discussion prompts**

* *This is a time lapse video, what does that mean?* 
  + They film something that takes a long time to happen, then they make the video play faster, so that we can see things that would normally take a long time to happen, in just a few minutes.
* *Does the video show us what is happening above or below the ground?*
* *Did you see a seed in the video that looks the same as or similar to yours?*
* *What do you think will grow from this seed?*
* *What is this seed growing in?* 
  + Dirt, the ground, potting mix.
* *What did the seeds grow into?*
* *Is the seed still there? Where is the seed now?*
* *What are roots?*
* A part of the plant, usually underground, that helps to hold the plant in place and it also absorbs/sucks up water so the plant can grow.

## Integrate • Seeds become plants

Add any new vocabulary to the class word wall.

Discuss how seeds grow.

**Potential discussion prompts:**

* *What do you think will happen to the seed over the coming days/weeks?*
* *Why do you think this?*
* *Do you think all seeds look the same or are there different kinds? Why?*
* *Do you think all seeds grow at the same rate?*

The observation of the seeds as they grow will be an ongoing task. Once the plants have grown enough for students to have observed the seed sprouting, growing a shoot, roots and leaves, and getting taller, the class will write a final observation. More details about this will be in subsequent lesson steps. At this stage the observation can be concluded and plants sent home.

**Potential ongoing discussion prompts**

* *How would you describe your plant today?*
* *How does it look like the ones we saw in the time-lapse video?*
* *How are they different? Why do you think they are different?*
  + You might like to watch this video again throughout the sequence.
* *Do you think our plant can grow to its full-size in the small bag? Why not?*
* *What might we do to help it grow bigger?*
* *What do you think will happen next to our plants?*
  + They will keep growing taller, get more leaves, more roots, and eventually flower.
* *After a plant grows flowers, what would happen next?*

## Investigate • Investigating leaves

**Pose the question:** *Are all leaves the same?*

Ask students to predict whether the leaves in the schoolyard are all the same or have differences. Why/why not? Which of our senses could we use to observe the answer to this question?

Lead the class on a ‘directed hunting’ expedition around the school to pick up only leaves.

Remind students to:

* collect leaves from the ground to use back in the classroom.
* only pick leaves off living plants if they are given permission.
* pick up leaves carefully at the edge (or using tongs/tweezers) as spiders or ants may be underneath.

LOW TECH: Students can take photos of various leaves around the school yard on iPads/digital cameras.

After collecting the leaves, students will look at them more closely during the following investigations, taking note of their observable features.

### Crackle & crunch

Students select a leaf and predict how much sound the leaf will make when it is crunched up, placing themselves on an invisible line from ‘silent’ to ‘loud’.

Determine which leaves crackle and crunch when they are bent and squashed in students' hands.

Ask students if they think they were right in their prediction, or if they would like to move themselves on the line.  
This is an informal way for students to make predictions, and to use different observations to group leaves—in this case leaves with similar sound qualities.

V Potential discussion prompts:

* *Why do some leaves make a louder sound?*
  + The leaf has dried out.
* *Why do some leaves make little or no sound when you bend them?* 
  + They are freshly fallen from the tree and haven’t had time to dry out.
* *What colour are the leaves that were louder?*
* *What colour are the leaves that were quiet?*
* *Do we predict the same thing would happen with flower petals? Why/why not?*

### Leaf rubbings

Model how to do a leaf rubbing in the class journal, showing students how to:

1. Place the leaf facing down.
2. Place the paper over the leaf.
3. Lay the crayon on its side and rub gently on the paper.

**Optional:** View a video demonstration of how to do a leaf rubbing.

Discuss how leaf rubbing helps to record the patterns on the leaves before the leaves shrivel up and begin to decompose.

Students produce their own leaf rubbings. They cut around each leaf rubbing so leaves are on separate small pieces of paper (no need to follow the leaf edge with the scissors).

Discuss their observations about the leaves.

**Potential discussion prompts**

* *Which leaves are the same size or shape?*
* *Does the colour of the rubbing matter? Why or why not?*
* *Were the leaves all the same colour before the rubbing?*
* *Which leaves have the same pattern on them?* 
  + Look at the veins.

As a class, explore how else the leaves might be grouped, for example by size, shape, or vein patterns.

**Optional:** Staple/glue/blu-tac the leaves into categories to keep as a display/reference. This could be grouped on sheets of butchers’ paper, on streamers/long strips of paper, or blu-tacked to a white board/window.

## Integrate • Grouping leaves

Use the leaf rubbings and digital photos and evaluate the data collected.

Potential discussion prompts

* *Which leaf shape, size, or vein pattern is the most common in the leaves we found?*
* *Why do we have more or fewer of those leaves?*
* *What similarities can we see?*
* *What differences can we see?*
* *Do the leaves that made a loud crunchy sound have a certain shape/size or pattern?*
* *What does the size of a plant or tree tell us about the leaves? Do big trees always have big leaves? Do small trees always have small leaves?*

**Reflect on the lesson**

You might:

* reflect on challenges with finding and collecting leaves in the schoolyard and planting seeds.
* review the mind map in the class science journal. Determine which questions have been answered during the session and add any new questions that have arisen.
* reflect on what we have learned about the features of plants and animals.
* add relevant words and images to the class word wall, including new vocabulary related to senses/observation and leaves.

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**Year F**

**lesson 3**

**INQUIRE**

Finding features • Lesson 3 • Flowers

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# Lesson overview

## Focusing on the senses of sight and smell, students make observations about the features of flowers.

## Key learning goals

Students will:

* identify flowers as a feature of many plants.
* group flowers with similar features.
* record scientific findings (through teacher modelled class science journal).

Students will represent their understanding as they:

* label the features of a flower.
* compare their ideas with others in group discussions.

## Assessment advice

In this lesson, assessment is formative.

Feedback might focus on:

## the parts of the flower that students identify. Can they identify the main features (petal, middle, stem)?

## List of materials

**Whole class**

* Class science journal (digital or hard-copy)
* Optional: Large plastic tweezers to dissect a flower

**Each group**

* Optional: A pre-collected sample of a flower, if you do not believe students will be able to collect one from the school grounds
* Optional: Large plastic tweezers to dissect the flower
* A4 piece of paper
* Sticky tape
* Optional: Contact to press dissected flower work sample between

**Each student**

* Optional: Individual science journal (digital or hard-copy)

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| **Lesson Routine** | **Estimated time** | **Task type** |
| Re-orient | 10 minutes | Whole class |
| Question | 15 minutes | Whole class |
| Investigate | 30 minutes | Collaborative teams. Whole class |
| Integrate | 15 minutes | Whole class, Individual |

# Inquire

## Re-orient

Recall the previous lesson, focusing on the ways in which students used their senses of hearing and sight to learn about leaves, and the seed that was planted for ongoing observation.

Ask students what changes they have observed in their seeds. Take note of how students describe the changes, and any new vocabulary used. Add to the 'How seeds grow - Observation recording table' in the class science journal, modeling how to draw a diagram showing the changes that have occurred to the seed, or adding a photograph. Add labels such as ‘crack’ and ‘small white roots’ if appropriate. Introduce the term ‘roots’ if students do not offer it, and check if the seeds have started to grow them.

**Optional:** Students might draw and write their own observations in their individual science journals if appropriate.

## Question • What do we know?

In the class science journal, refer back to the page “What do we want to learn about the features of plants and animals?", noting a question about flowers if there is one.

**Pose the question:** *How are flowers the same and how are they different?*

Students share their experiences with flowers. Encourage them to refer to observations made with all of their senses in possible.

**Potential discussion prompts:**

* *Can you tell me about a time when you've been close to flowers?*
  + Giving them as a gift, picking them from someone’s garden, planting them etc.
* *Did the flowers have a smell? Was it a nice smell, or a bad smell?*
* *Do all flowers smell the same?*
* *Why do you think flowers smell?*
* *What colour were the flowers?*
* *Are all flowers the same colour?*
* *Is there anything in our classroom that is a similar colour to those flowers?*
* *Why do you think flowers are colourful? And are all different colours?*
* *Were the petals of the flowers smooth or rough?*
* *Do all plants have flowers?*
* *Do you know any plants that don't have flowers?*
* *Why do you think plants have flowers?*
* *Why are flowers important in gardens, parks and bushland?* 
  + The provide food (nectar and pollen) for bees/butterflies/beetles/birds; they look and smell nice.
* *What sense(s) did we use to make observations about flowers?*
  + Sight, smell, touch.
* *How did we use these senses to make observations about flowers?*

**Optional:** If students are having difficulty recalling flower experiences from memory, take a walk around the school to observe flowers if appropriate, or display images of a variety of flowers.

Add words and images related to flowers to the word wall.

## Investigate • Parts of a flower

Ask students if they think all the flowers in the schoolyard are the same or if they are different, and why they think that. Discuss their reasons, or evidence, for their prediction.

Lead the class on a **‘directed hunting’** expedition around the school grounds.

**Safety note**

Be aware of students with allergies, particularly pollen. Students may suffer from allergies caused by inhalation and/or touch. Be aware of allergies to insects, particularly bees, that they might come into closer contact with when observing flowers.

### Before the 'hunt':

* Remind students not to pick flowers from plants unless they ask first and are given permission. If they have known allergies to plants, they should not smell them or touch them.
* Discuss how to handle flowers, other parts of plants, insects, and other natural life safely and carefully.
* Discuss safety around bees, encouraging students to move away from plants/flowers if they see a bee, not to make any loud noises or sudden movements that risk scaring the bee.

### During the 'hunt':

* Students observe and possibly collect flowers from the ground (and plants with permission) to use back in the classroom.
* **Optional:** Students take photos of various flowers around the school yard and in the classroom.

### After the 'hunt':

* In collaborative teams, students explore their flowers by drawing the different parts and by using magnifying glasses.
* Briefly discuss the students’ observations as they move around the room, or as a class.

Model for the students how to dissect a flower into its parts and stick the parts onto a page. Identify and label the parts (use scientific names if appropriate for your students):

* petals
* the special leaves that protected the flower when it was growing (sepal)
* stem
* leaves
* optional: the place where pollen is produced (stamen)
* optional: the pistil, above where the petals are joined, where the pollen is collected

Discuss the need to be careful with flowers as they are fragile and the parts can easily be ripped. Consider using large plastic tweezers to pull the flowers apart.

In pairs students dissect a flower. Use sticky tape to stick the parts for one flower on one piece of A4 paper. Label the parts, using a scribe if required.

## Integrate • Gallery walk

Teams display their dissected and labelled flowers. Conduct a gallery walk, with teams moving around together looking at other teams' work. Ask teams to identify one thing that is the same in another team’s work sample, and one thing that is different. Remind them not to touch other teams' work samples.

After the walk, students discuss their observations using appropriate flower vocabulary.

V Potential discussion prompts

* *Are all the flowers the same size/shape/colour?*
* *Do they all have the same parts?*
* *What differences can you see?*

Identify how you might group the flowers together, for example petal shape/size/colour, stem length, smell/no smell, pleasant/not pleasant fragrance etc.

Select one of these groups and direct teams to, with their work sample, group themselves according to the category.

For example: *"All teams whose flowers have white petals, stand by the door. Teams whose flowers have yellow petals stand near the sink."* etc.

Re-group students into different categories as appropriate and time permitting.

**Optional:** Ask students to nominate a category and to group themselves according to this category if appropriate.

**Optional:** Retain the flower parts to use in other ways such as:

* allowing them to dry.
* pressing the flower parts between 2 layers of clear contact.
* placing flower parts in the compost or garden beds (excluding weeds).

**Reflect on the lesson**

You might:

* discuss if it was difficult to find, collect and dissect flowers.
* review the features of seeds and plants, and compare them to the features of flowers.
* add words and images to the class word-wall of vocabulary related to senses and flowers.

**Year F**

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Description automatically generated with medium confidenceFinding features • Lesson 4 • Plants we can eat

**lesson 4**

**inquire**

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| To read the most recent version of this task, download associated resources, and view embedded professional learning including classroom videos and work samples, visit:  [https://primaryconnections.org.au/teaching-sequences/foundation/finding-features/lesson-4-plants-we-can-eat](https://primaryconnections.org.au/teaching-sequences/foundation/finding-features/lesson-4-plants-we-can-eat?utm_source=docx&utm_medium=lesson_4&utm_campaign=FF) |

# Lesson overview

Focusing on the senses of sight and taste, students explore edible parts of plants and sort the components of a salad bowl. Alternatively, take a closer look at the mysterious underground parts of plants (the roots).

## Key learning goals

Students will:

* identify the external features of a plant.
* categorise plants based on their external features.
* identify the salad items as different parts of plants.

Students will represent their understanding as they:

* sort plants into groups.
* label the different parts of a plant.
* engage in group discussions to compare their ideas.
* explore how to record scientific findings (through teacher modelled class science journal).

## Assessment advice

In this lesson, assessment is formative.

Feedback might focus on:

* students' identification of the external features of a plant.
  + Can they identify the leaves, fruit, stems, roots?
  + Can they identify any similarities/differences between roots on various plants?
* students' categorising of the edible plants parts.
  + Can they group (leaves, fruit, stems, roots) the edible external parts of different plants?

This could also be considered summative assessment of the *Science understanding:* observe external features of plants and animals and describe ways they can be grouped based on these features.

Refer to the Australian Curriculum content links on the [Our design decisions](https://primaryconnections.org.au/teaching-sequences/foundation/finding-features?utm_source=docx&utm_medium=lesson_4&utm_campaign=FF) tab for further information.

## List of materials

**Whole class**

* Class science journal (digital or hard-copy)
* Seeds planted in Lesson 2

For **Sorting salad** investigation

* A variety of edible pant parts for students to taste and sort into categories, including:
  + leaves: spinach, lettuce, parsley etc.
  + fruit: apple, tomato, orange, capsicum etc.
  + stems: celery, spring onion, chives etc.
  + roots: carrots, radish, turnip, beetroot. Note potatoes are not a root, but a tuber.
* See safety notes in *Preparing to teach this sequence* tab in the sequence overview for allergy warnings and considerations.
* Plates/bowls for sorting plant parts
* Large labels: leaves, fruit, stem, roots
* Access to water, soap and/or hand sanitiser for hygiene purposes

For alternative **Investigating roots** investigation

* Plants with roots attached, for example, hydroponic lettuce, bunch of carrots/radish/beetroot with the leaves still attached, weeds carefully pulled from the garden
* Demonstration copy of What parts of a plant can I eat? Resource sheet
* Demonstration copy of Parts of a plant Resource sheet

**Each group**

For alternative **Investigating roots** investigation

* a plant with roots still attached to examine
* a viewing device
  + No tech option: Magnifying glasses (several to share)
  + Low tech option: iPads or digital cameras (several to share)
  + High tech option: Microscope

**Each student**

* Individual science journal (digital or hard-copy)
* **Parts of a plant Resource sheet**

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| **Lesson Routine** | **Estimated time** | **Task type** |
| Re-orient | 5 minutes | Whole class |
| Question | 15 minutes | Whole class |
| Investigate | 25 minutes | Whole class |
| Investigate (alternative) | 15 minutes | Collaborative teams, Whole class |
| Integrate | 15 minutes | Whole class, Individual |

# Inquire

## Re-orient

Add to the 'How seeds grow - Observation recording table' in the class science journal, modeling how to draw a diagram showing the changes that have occurred to the seed/plant, or adding a photograph. Add labels such as ‘stem’ and ‘leaves’ if enough growth has occurred and these are visible.

If concluding the seed growth observation today, write a final observation explaining the growth of the red kidney bean. For example: *“We observed a red kidney bean grow into a small plant. First the bean grew one small white root. It then continued to grow more roots downwards, as well as a light green stem upwards. Lastly it grew new green leaves.”*

**Optional:** Students might draw and write their own observations in their individual science journals if appropriate.

Remind students what they have been learning about during this sequence.

**Potential discussion prompts:**

* *What parts of plants have we been studying in science so far?* 
  + Seeds, leaves, flowers.
* *Which senses have we used?*
  + Touch, sight, smell, hearing.

## Question • Eating plants

In the class science journal, refer back to the page ‘What do we want to learn about plants and animals?’ referring to a question about how plants taste, if there is one.

**Pose the questions:**

* *Which parts of a plant can I eat?*
* *What do plant parts that grow in the ground look like?*
* *Can we eat the plant parts that grow in the ground?* 
  + Omit this question if only undertaking the **Investigating roots** alternative investigation.

Add them to the class science journal if needed.

## Investigate • Sorting salad

Inform students that, for safety reasons, we do not usually taste things in science because they might be dangerous or poisonous or contaminated. But today is a special lesson and we will be tasting/eating things that scientists have shown are safe for us to eat. Remind students that they should only ever taste or eat things if a trusted, responsible adult or elder has given permission.

Discuss edible plants with students, including the dangers of eating unknown plants.

**Potential discussion prompts:**

* *Do you have something in your lunchbox that has come from a plant?*
* *What have you eaten that comes from a plant?*
* *Do we eat plants every day?*
* *Do we think plants are healthy for us? Why or why not?*
* *Can we eat any/all plants? Why not?*
  + Some plants are poisonous and can cause us to get very sick. Some people are allergic to some plants and should not eat or even touch them.
* *How do we know if a plant is safe to eat?*
  + Our parents, grandparents, and other trusted adults teach us which plants are safe to eat when we're young. We learn about other plants that are safe to eat as we get older.
  + We can try new plant food we find in the supermarket, because we know they have been tested to make sure they are safe to eat.

Ensure all students have washed their hands well in preparation for the following activity.

View and discuss the variety of plant foods you have prepared for students to eat.

Potential discussion prompts:

* *Have you eaten any of these foods?*
* *Do you know their names?*
* *Do we need to cook it or can we eat it raw (uncooked)?*
* *How do you know?*

Show students the prepared labels: leaves, stalks/stems, fruit, roots. As a class, sort the foods into these categories, placing them near the corresponding label. Do not correct errors at this stage. Remind students that we can re-arrange the different food items at any time.

**Note:** To support recording later, you might like to organise the labels and food samples into columns and rows to simulate a table. After sorting, take a photo and use photo editing software to create a simple table by add dividing lines. This shows students an explicit example of creating a table and demonstrates how tables are helpful for recording and sorting information.

Discuss safety around eating (e.g. not walking around or talking with food in our mouth). After ensuring that all possible safety precautions regarding food allergies have been taken, allow students to taste the foods. This could be very structured, with students tasting one food at a time under the teachers' direction. Alternatively students could be allowed to individually select items for tasting. This decision should be made in consideration of the students' and the school/class context.

Determine if there are any foods should be moved to a different category based on how they taste. If students have categorised food incorrectly, take the opportunity to question them and allow them to rethink their answers.

Record the final decision about the categories the foods belong in, either by taking another photo, or by using a data table in the class science journal titled "The parts of plants that we can eat".

**Optional:** Use the opportunity to clarify the difference between flower, fruit and seed. Show students a cut piece of fruit with the seeds visible, then discuss the following points:

* Part of a flower (the ovary) becomes the fruit.
* Fruits contains seeds.
* Seeds are spread by wind, water and animals (including humans) to grow new plants.
* Some seeds can be eaten by humans (such as pumpkin seeds and sunflower seeds) but some seeds are poisonous, so we must never eat seeds unless we have been told they are safe by a trusted adult.

## Investigate • Investigating roots (alternative investigation)

This investigation has been designed as an alternative to **Sorting salad**. Undertake this investigation if **Sorting salad** is not suitable for your students or context. If time and resources permit, you might undertake both investigations.

Discuss what roots are. Ask students to predict whether all plants’ roots look the same/similar.

If you have completed **Sorting salad**, let students know their opportunity to taste things is now finished.

If you have not completed **Sorting salad**, explain to students that they will only use their sense of sight for this part of the activity, and discuss why it is important not to taste things during this investigation:

* We don’t know if all of the roots are edible—some might be poisonous.
* The roots are not washed and clean.
* They might have dirt or bacteria on them which could make us sick.

**Optional:** Take students weed gathering to gather more weeds with roots. Rinse roots to make the roots more visible.

Present students with a range of roots to observe and compare, such as: lettuce with roots still attached, a carrot, parsnip, weeds with roots attached.

**Potential discussion prompts**

* *Which part is the root?*
* *What similarities can you see?*
* *What differences can you see?*

In collaborative teams, students take a closer look at the roots, using:

* NO TECH: magnifying glasses
* LOW TECH: digital camera/iPad zoom
* HIGH TECH: microscope

On a page in the class science journal entitled “What do plants look like under the ground?” record observations of roots and write one sentence that evaluates the findings.

## Integrate • So what can we eat?

Using the **What parts of a plant can I eat? Resource sheet:**

* If students have engaged in **Sorting salad**, review how they sorted their salad items, moving any if required. Add the names of other parts of the plants students can identify to the correct category.
* If students have engaged in **Investigating roots**, discuss the information on the resource sheet, identifying the foods they recognise, categorising which part of the lettuce is edible, and adding other plant items students know are edible. Discuss how we know which plants are edible, and which are not, and rules around being safe when trying out new plant food. See the **Sorting salad** lesson step for question prompts.

Using the **Parts of a plant Resource sheet**, students label the parts of the plant correctly by drawing a line between the label and the correct plant part.

**Reflect on the lesson**

You might:

* add relevant words and images to the class word wall.
* reflect on how students were working like scientists, using their senses to study and group the external features of animals.

**Potential discussion prompts**

* *Which of our senses did we use today? How were they helpful?*
* *Can we identify a root just by looking at it? Or do we also need to taste it?*
* *Do scientists always use all their senses? Or do we sometimes just use some of our senses?*

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**Year F**

Finding features • Lesson 5 • Animal features

**lesson 5**

**inquire**

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# Lesson overview

Focusing on the sense of sight, students identify and group animals based on their external features such as tails, fur, legs, etc.

## Key learning goals

Students will:

* explore the varying external features of animals.
* identify the distinguishing external features by which some animals can be grouped.
* explore the depiction of animal features by Aboriginal and Torres Strait Islander Peoples.

Students will represent their understanding as they:

* share their ideas for comparisons of animals and their features during group discussions.
* contribute to a class ideas map about animal features.

## Assessment advice

In this lesson, assessment is formative.

Feedback might focus on:

## Are students able to recognise the basic vocabulary of animal features?

## Are students able to group animals according to more obvious features (horns, tails, fins etc.)

## Did students identify multiple ways to group the same animals?

## List of materials

**Whole class**

* Class science journal (digital or hard-copy)
* Optional: Seeds planted in lesson 2
* Demonstration copy of **Who am I? Resource sheet**
* Images of art created by Aboriginal and Torres Strait Islander Peoples. Trusted sources include:
* [Aboriginal artwork in the Kimberley could be among oldest in the world, scientists say](https://www.abc.net.au/news/2015-11-02/indigenous-rock-art-could-be-among-oldest-in-world/6906476) (ABC)
* [Animals in Aboriginal Art - The Turtle](https://mbantua.com.au/aboriginal-art-blog/animals-in-aboriginal-art-the-turtle/) (Mbantua Gallery)
* [Old Masters: Australia’s Great Bark Artists](https://www.nma.gov.au/exhibitions/old-masters) (National Museum of Australia)
* Australian coins which depict native animals for coin rubbings
* Individual animal cards created using the **Animal cards Resource sheet**, laminated to support reuse

**Each group**

* **Who am I? Resource sheet**

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| **Lesson Routine** | **Estimated time** | **Task type** |
| Re-orient | Variable | Whole class |
| Question | 15 minutes | Whole class |
| Investigate | 25 minutes | Collaborative teams, Whole class |
| Integrate | 15 minutes | Whole class |

# Inquire

## Re-orient

If you are still observing the growth of students' planted seeds, add to the 'How seeds grow - Observation recording table' in the class science journal, drawing a diagram showing the changes that have occurred to the seed/plant, or adding a photograph. Add labels that show any visible growth that has occurred.

If concluding the seed growth observation today, write a final observation explaining the growth of the red kidney bean.

For example: *“We observed a red kidney bean grow into a small plant. First the bean grew one small white root. It then continued to grow more roots downwards, as well as a light green stem upwards. Lastly it grew new green leaves.”*

**Optional:** Students might draw and write their own observations in their individual science journals if appropriate.

Refer to the ‘What do we want to learn about plants and animals?’ page in the class science journal.

Remind students that in the previous lessons they looked at the features of plants, and revise some of the specific parts of plants that students have identified, such as seeds, leaves, fruits, roots etc.

Explain to students that they will now look more closely at the features of animals. Highlight this by focusing on the questions students have asked about animals.

## Question • Who am I?

**Pose the question:** *What parts/features can you observe on animals?*

Identify the parts of animals that students know by discussing any recent animal encounters students have had, including through media.

**Potential discussion prompts**

* *Have you seen any animals in real life recently? Or on a TV show?*
* *Can you name the animal?*
* *How would you describe your animal? What features did you see?*

Referring to the **Who am I? Resource sheet**, students talk with a partner and identify as many of the features they can see, and (if they can) the animals each features belong to:

* snake: skin/scales
* bull: horns, hair/fur
* cat: eyes, ears, fur
* frog: feet, toes/digits
* butterfly: wing, patterns
* magpie/bird: beak, eye
* rabbit: ears, fur
* penguin: webbed feet/flippers, wings, feathers

## Investigate • Australia’s unique animals

Discuss Australian native animals, asking students to identify any if possible.

**Potential discussion prompts**

* *Do you know the names of any animals that are 'special'/native to Australia?*
  + Use language that is suitable to your students here, re-wording the question as required to frame it in a way they will understand.
  + Kangaroo, wallaby, koala, emu, cassowary, wombat, possum, kookaburra, magpie, crocodile etc. Student responses will vary based on their location in Australia, and their past experiences.
* *Do you know what makes these animals special? Do you know what being a 'native animal' means?*
  + It means that the animal only lives in the wild in that particular place. You might see them in other countries now, but that is because humans have taken them there.

Discuss how First Nations Peoples made observations about the features of native animals by displaying some First Nations traditional art, as well as modern art.

**Potential discussion prompts**

* *What features can you see on this animal?*
* *Which First Nations Peoples would have drawn this animal?*
* *Looking closely at the features of the animal, what animal do you think it is?*
* *What senses did Aboriginal and Torres Strait Islander Peoples people use when they were observing animals?*
* *Art (dance) was represented differently during different seasons, why do you think this may have been so?*

Highlight that Aboriginal and Torres Strait Islander Peoples have been building their scientific knowledge for thousands of years, using scientific observations of what was happening around them to learn all about plants and animals.

Alternatively, students can examine the images on Australian coins by:

* using a magnifying glass to make observations, identifying the animals on the coins and any features that can see.
* making a coin rubbing by placing a coin under the paper and rubbing/colouring with pencil, using medium pressure.

Discuss why the animal identified are important enough to be on an Australian coin.

Using the cards created with the **Animal Cards Resource sheet**, play a game of *Who am I?*: A student pulls a card from a lucky dip and describes the animal’s features without saying its name. The remaining students use the information to figure out what animal it is. Repeat with more cards. You might choose to only play lucky dip with the Australian native animal cards, you might use the common animal cards, or a combination of both.

Provide each student/pair of students with an animal card. Students discuss the animal on their card, identifying the features of that animal together.

Students sort the animal cards into categories by 'buddying' up with another pair based on a teacher given prompt. For example, *Find another pair whose animal...*

* *has a tail.*
* *has the same number of legs as your animal.*
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  Description automatically generated*lives in the water/sky/on land* etc.

Record the responses after each round on an ideas map entitled "Sorting animal features", organising them so that students can see the categories clearly.

## Integrate • Australia’s unique animals

Discuss the groupings recorded on the mind map.

**Potential discussion prompts**

* *Do any of the animals belong in two categories? Which ones can you see?*
* *Why do they fit into more than one category?*
  + Animals have more than one feature, and are all different from each other. For example, a magpie has a tail, and a dog has a tail. But a magpie has two legs and a dog has four.
* *What features do all/most of the animals you looked at today have in common?*
  + Most have eyes and a mouth at least, and many will have ears, noses and some sort of body covering as well.
* *What other ways could you have sorted the animals?*
* *If all the animals were baby animals, would that change any of the groupings?*
* *Do humans have any of the same features as the animals you looked at today?*
* *How were you observing like scientists today? What sense did you mostly use?*
  + We used our sense of sight to look at the features of animals, and group animals together with other animals with the same features. Scientists like to group things together.

**Reflect on the lesson**

You might:

* add relevant words and images to the class word wall.
* discuss whether the students have any new questions about animal features and add them to the first page of the class science journal.
* group similar questions to identify whether any of the new student questions are likely to be answered in the upcoming lessons.

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**Year F**

Finding features • Lesson 6 • Animal movement

**lesson 6**

**inquire**

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# Lesson overview

Focusing on the sense of sight, students explore animal movement and the features that make movement possible.

## Key learning goals

Students will:

* explore the varying movements of animals based on their features.
* identify that humans are animals, and that we have some features the same as other animals.
* explore the depiction of animal features and movement in dance by Aboriginal and Torres Strait Islander Peoples.

Students will represent their understanding as they:

* mimic the movement of different animals.
* engage in group discussions to compare their ideas.
* contribute to a class ideas map about animal features that enable movement.

## Assessment advice

In this lesson, assessment is formative.

Feedback might focus on:

* Can students recognise humans as animals?
* Can students group animals according to movement (walk, fly, swim, wriggle/muscular contractions)?

## Resources

**Whole class**

* Class science journal (digital or hard-copy)
* Optional: Seeds planted in Lesson 2
* Demonstration copy of **Animal Movement Resource sheet**
* **Animal Cards** created for Lesson 5
* Demonstration copy of **Code for caring and hygiene Resource sheet**
* Optional: glass if undertaking the no-tech critter expedition
* Videos of Aboriginal and Torres Strait Islander Peoples traditional dances depicting animal movement & features, for example:
* [Seagulls Dance—Naidoc Week 2020](https://www.youtube.com/watch?v=HCgBSLyWSTg)
* [Brolga Dance—during the Barunga Festival](https://ictv.com.au/video/item/10721)
* [Goanna, kangaroo, emu, echidna—at the Wagga Wagga Corroboree](https://www.abc.net.au/news/2019-10-28/dancers-at-the-wagga-corroboree/11645202)
* Videos showing animal movement, for example:
* [How do Earthworms Move?](https://youtu.be/UCrSQghJe54) (0:22)
* [Earthworm Under a Microscope](https://youtu.be/ltRaTNdjaiM) (2:36)
* [Slater Features](https://youtu.be/-OVhoSGP6OI) (1:04)
* [Ladybug Wings](https://youtu.be/WyM-2BkQom8) (1:25)

**Each group**

* Parent/older student helpers for the critter expedition
* Digital devices for filming videos and/or taking photographs

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| **Lesson Routine** | **Estimated time** | **Task type** |
| Re-orient | 10 minutes | Whole class |
| Question | 10 minutes | Whole class |
| Investigate | 20 minutes | Whole class, Collaborative teams |
| Investigate | 25 minutes | Whole class, Collaborative teams |
| Integrate | Variable | Whole class |

# Inquire

## Re-orient

If you are still observing the growth of students' planted seeds, add to the 'How seeds grow - Observation recording table' in the class science journal.

Revisit the mind map created in the previous lesson when students sorted animals with similar features.

Review the questions students asked about animals by referring to the class science journal page ‘What do we want to learn about plants and animals?’

## Question • Animal movement

**Pose the question:** *How do animals move around?*

Referring to the **Animal movement Resource sheet**, discuss how animals move.

**Potential discussion prompts**

* *What animals can you see here?*
  + Note if students recognise humans as animals.
* *How are the animals moving?*
  + They're walking.
* *What feature do they use to do this?*
  + They use their legs.
* *How do you know they're walking?*
  + Discuss and model with students to figure out the movements the body makes when walking.
* *Why do animals need to move?* 
  + To find food, water, shelter, mates. Students might not offer mates as a response, and that it okay.
* *What is similar about the way the elephant moves and the way the human moves?*
* *What is different about the way the elephant and human move?*
* *Can you think of another animals that moves in the same or similar way to a human?*
* *With all those animals that move the same way as humans, would you also consider a human an animal? Why? Why not?*

If required, confirm that, scientifically, humans are animals. Scientists study features of humans in the same way they study other animals, with the hope of understanding humans better.

## Investigate • Animal parade

Using the **Animal cards** created for the previous lesson, select a random card, and without giving any clues, ask students to demonstrate how that animal moves around. If, after this first attempt, students require a prompt, provide ones such as ‘crawl like a crocodile', 'fly like a bat' or 'Swim like a fish'. Repeat with a variety of animals cards.

**Optional:** Afterwards, discuss if students were really moving like their animal, and why they were not. Asked what body movements they used to simulate the movement of the animals, and why they chose those movements.

Play a game of animal charades. Show 1 or 2 students a prompt card (and whisper the wording if needed). That student(s) then moves around the room like the animal while other students guess what animal it is. If students cannot guess by movement alone, the actors can also make animal sounds.

**Optional:** View and discuss Aboriginal and Torres Strait islander peoples traditional dances depicting animal movement & features.

**Potential discussion prompts**

* *Which animal features have the dancers shown in this video?*
* *How did they learn about these movements?* 
  + Close observation of animals and learning the dances from their elders.

## Investigate • Critter expedition

Take students on a 'critter expedition' through the school grounds, looking for small animals (slaters, snails, ants, lady bugs, worms, birds, etc.) for students to film and photograph. A No-tech investigation alternative is described below.

You might like to partner/group students and assign them an adult or older (Year 5 or 6) student helper to support them. If there are not enough iPads/digital cameras are available, multiple pairs/groups can share the available resources.

Before beginning the 'critter expedition', explain the meaning of the word critter if necessary, or simply use the term animal if more appropriate for your students.

Use the **Code for caring and hygiene resource sheet** to discuss safety and hygiene rules.

Also remind students:

* which areas of the school they will visit (and any that are out-of-bounds).
* to stay with their partner/team and/or helpers at all times.

Upon return to the classroom, direct each pair/group to select one image or video to share with the class.

Share the videos in a yarning circle or via a gallery walk. Focus students with discussion prompts and specific vocabulary.

**Potential prompting questions**

* *What animal have you observed?*
* *Where was it found?*
* *How long did you observe it for?*
* *What would you like to tell us about the observation?*
* *What are the animal's features?*
* *How does the animal move? Do they walk, fly, swim, wriggle?*
* *What features of their bodies did they use to help them move?*
* *How could the animals be grouped together based on their movements?*

### Optional no tech investigation

As a class sort the **Animal cards** into two groups:

* Likely to be in the school yard
* Not likely to be in the school yard

Take the critter expedition as a whole class, keeping together to spot animals.

When a critter is located, if practical, place a glass over it, then provide an opportunity for all students to observe how it moves.

Students then use their own bodies to replicate the movement of the animal.

After all students have had a change to mimic the animal’s movements, assign a small group of students to that animal. These students will 'act' as this animal in a 'critter concert' upon returning to the classroom. Record student names and the animal they will be 'acting' if required.

Repeat as needed until enough animals have been spotted and all students have been assigned a role in the 'critter concert'.

Find a location to stage the 'critter concert', either inside or outside—perhaps in a yarning circle*.*

Students act out the body movements of their assigned critter. You may do these individually, in groups, or all together. Consider grouping the animal performances according to their movements, for example creatures that hop/jump such as grasshoppers and crickets can act together, or animals that fly such as birds, butterflies, flies and bees.

**Optional:** Students can mimic the noises (known or imagined) that their animal makes.

## A diagram of different types of animals Description automatically generatedIntegrate • Exploring movement

Referring back to the ideas map created in Lesson 5 highlight the features of animals that help them move, for example legs, wings, tails etc.

Create a new ideas map where the organising categories focus exclusively on the features of animals that support movement. Start with the movement, and further categorise the features that enable that movement to happen. See sample ideas map below.

If the mind map created in the previous lesson is already organised into appropriate categories that will support the recording of ideas this way, add to that instead of creating a new one. The ideas map will be added to in subsequent lessons, adding categories about animal body coverings and features that enable them to eat.

**Optional:** Discuss which animals move in multiple ways and the features they use to make these movements. For example a duck can walk (legs), swim (webbed feet) and fly (wings).

**Optional:** Discuss the differences and similarities between arms and legs, and how they can be tricky to categorise sometimes, like, for example, on a kangaroo.

Further explore some of the students’ interests and clarify student understanding of how different animals move by viewing and discussing videos showing animal movement, or the features that make movement possible.

**Optional:** Sing and dance to critter songs such as

* [The Millipede March](https://www.youtube.com/watch?v=U_Ld1L6c1p4) (3:13)
* [The Ants go Marching- The Wiggles](https://www.youtube.com/watch?v=CwjD3l0OVi4) (4:23)

**Optional:** View this animation of the children’s book, [The Very Hungry Caterpillar](https://www.youtube.com/watch?v=75NQK-Sm1YY) (3:13), discussing how the caterpillar/butterfly moves.

**Optional:** Group all the animals on the **Animal cards** according to movement.

**Reflect on the lesson**

* add to the class word wall of vocabulary related to malleable.
* add relevant words and images to the class word wall.
* discuss whether the students have any new questions about animal features and add them to the first page of the class science journal.

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**Year F**

Finding features • Lesson 7 • Body coverings and feeding

**lesson 7**

**inquire**

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| To read the most recent version of this task, download associated resources, and view embedded professional learning including classroom videos and work samples, visit:  [https://primaryconnections.org.au/teaching-sequences/foundation/finding-features/lesson-7-body-coverings-and-feeding](https://primaryconnections.org.au/teaching-sequences/foundation/finding-features/lesson-7-body-coverings-and-feeding?utm_source=docx&utm_medium=lesson_7&utm_campaign=FF) |

# Lesson overview

Focusing on the senses of sight, hearing and touch, students explore the features of body coverings and those that enable animals to feed.

## Key learning goals

Students will:

* explore the varying body coverings and/or feeding features of animals.
* group together animals with similar body coverings and/or feeding features.

Students will represent their understanding as they:

* engage in group discussions to compare their ideas.
* contribute to a class ideas map about animal body coverings, and/or features that enable feeding.

## Assessment advice

In this lesson, assessment is formative.

* Feedback might focus on:
* Can students group animals according to body coverings (fur, feather, scales) and/or feeding features (mouth, beak)?
* Do students recognise that listening is a scientific method of observation?

## Resources

**Whole class**

* Class science journal (digital or hard-copy)
* Optional: Seeds planted in lesson 2

**Animal body coverings investigation (optional)**

* At least two samples to simulate animal body coverings, such as artificial fur and a ball of wool
* A box to use as a mystery box that can conceal the simulated animal body coverings
* **Animal Cards** created for Lesson 5
* Optional: An earthworm
* Optional: Organise a therapy dog to visit the class if appropriate

Note: A therapy dog is not the same thing as a service dog/animal. Therapy dogs undertake specific training to ensure they act appropriately in a wide range of situations with a wide range of people. They should be trained to be accustomed to accepted pats/affection from people. Service animals are trained to support people with specific disabilities or challenges. These dogs are in fact working dogs, and have a specific job to do. They should not be touched or distracted from the important task of providing support to their owner.

Safety measures must be taken to ensure the safety of students near dogs. These include:

* each pupil-dog interaction must be based on voluntariness on the part of the dog.
* interactions must be supervised by the dog owner.
* the dog owner must react as appropriate to any sign of concern, even to subtle signs, especially withdrawal behaviour.

**If completing the How animals eat investigation**

* Videos depicting birds eating, loaded at the appropriate timings if indicated below
* [Glossy Black cockatoos eating](https://www.youtube.com/watch?v=rq3svGtvm04) (1:05)
* [Lorikeet drinking- close up](https://www.youtube.com/watch?v=pfjabJh4Dl8) (4:13) – first 1 minute is sufficient
* [Australian pelican eating fish](https://www.youtube.com/shorts/TOmhk5fQC6E) (0:08)
* [Kookaburra eating mouse](https://www.youtube.com/watch?v=F7m6utIxXP0) (0:14)
* [Zebra finch eating seed](https://www.youtube.com/shorts/RYYsIkdJ8Dk) (0:05)
* Optional: [Top 40 Bird Songs](https://www.birdsinbackyards.net/birds/featured/Top-40-Bird-Songs)
* Demonstration copy of **Bird beaks Resource sheet**

**Per student**

If completing the Animal body coverings investigation

* Craft feather

|  |  |  |
| --- | --- | --- |
| **Lesson Routine** | **Estimated time** | **Task type** |
| Re-orient | 10 minutes | Whole class |
| Question | 5 minutes | Whole class |
| Investigate | Variable | Whole class, Individual |
| Integrate | 15 minutes | Whole class |
| Investigate | 25 minutes | Whole class |
| Integrate | 15 minutes | Whole class |

# Inquire

## Re-orient

If you are still observing the growth of students' planted seeds, add to the 'How seeds grow - Observation recording table' in the class science journal.

Revisit the mind map created in the previous lesson when students sorted animals according to how they moved.

Review the questions students asked about animals by referring to the class science journal page ‘What do we want to learn about plants and animals?’

## Question • Observing external features

This lesson describes two potential investigations, one which explores animal body coverings and one which explores ways animals eat. You can choose to do either or both investigations with your students.

When beginning the body coverings investigation, **pose the question:** *What do animals feel like if I pat them?*

When beginning the investigation into ways animals eat, **pose the questions:** *Who can eat things the same way we do?* and *How do birds eat?*

## Investigate • Exploring animal body coverings

Discuss experiences where students have patted or held an animal in their hands.

**Potential discussion prompts**

* *What did its fur/scales/skin feel like?*
* *What other animal might feel similar to that? Why?*

Remind students of safety around animals, specific to the animals they are likely to encounter in their local area.

Possible animals to discuss may include:

* biting insects
* venomous spiders
* snakes
* jelly fish
* blue-ringed octopus
* dogs (remind students that they must always ask for permission before patting an unknown dog)
* in northern areas, crocodiles, cassowaries and cane toads

Without letting students see, place one of the simulated animal body coverings into the mystery box.

Show students the mystery box and explain that inside is an item that represents an animal’s body covering. Invite a student to place their hand inside the mystery box, feel the item, and describe it for classmates. Repeat this with multiple students.

Ask those who have heard the descriptions to guess the type of covering being described and the animal/s it might belong to.

Reveal the item and discuss it further, identifying the animals that have this type of body covering.

**Potential discussion prompts**

* *How did (students' names) describe this body covering when they could feel it?*
* *Do you agree with the description?*
* *Now that you can see the body covering, what else would you add to the description?*
* *What animals' bodies have this type of covering?*

Repeat with the other simulated body covering you have prepared.

Next ask students to close their eyes and distribute a craft feather to each one. Without opening their eyes, call on students to describe the item and guess what it might be.

Allow students to open their eyes, and using similar question prompts to the ones above, discuss the feather.

**Optional:** Discuss camouflage—when animals disguise their appearance, usually by blending in with their surroundings.

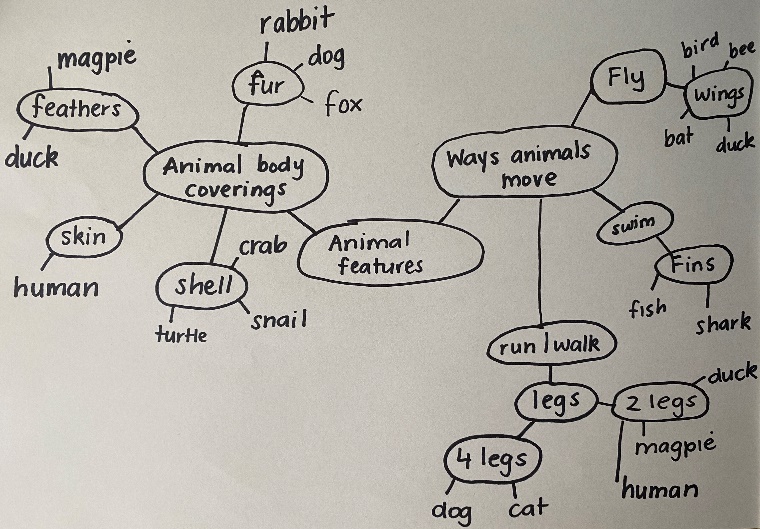
**Optional:** Introduce the visiting therapy dog/pet to the class. Possible ways to interact with the visiting dog include:

* Discuss the features of the animal, including its body covering (fur, feathers, skin etc).
* If appropriate, and if the dog volunteers, allow students to gently touch the animal and describe how the body covering feels (soft, furry, fluffy, smooth, hard, rough).
* Discuss which animals might feel similar.

## Integrate • What do we now know about animal body coverings?

On a new page in the class science journal titled ‘What do animals feel like when I pat them?’, create a table to compare the body coverings students have just described.

|  |  |  |
| --- | --- | --- |
| **Body covering** | **Description** | **Animals with this body covering** |
| Fur | Feels like: Soft, warm, fuzzy, fluffy, smooth  Looks like: Short hairs very close together, brown, curly | some dogs, cats, kangaroo, etc. |
|  |  |  |

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**Optional:** Student(s) hold an earthworm in their hands with their eyes open. Discuss how the worm feels and add to the table.

Group the animals in the **Animal cards** set, based on body coverings: feathers, skin, scales, shell.

Add the groupings to the ideas map begun in Lesson 6.

## Investigate • Exploring how animals eat

Discuss foods the students have eaten recently and which animals have a mouth similar to a human mouth.

**Potential discussion prompts**

* *What food did you eat?*
* *Did you need to chew it, or could you just swallow it? Why/why not?*
* *Which part of your mouth did you use for eating?* 
  + Lips, tongue, teeth.
* *What other animals have teeth, lips and/or tongues?*
* *What animals have a different kind of ‘mouth’?*
* *Do birds have a mouth like a human mouth?*
* *What is the same? What is different?*

Show videos depicting birds eating (see materials list) to confirm or challenge students' ideas about birds' mouths before discussing further.

**Potential discussion prompts**

* *What is the bird using to eat?*
* *What is similar about the way a bird eats and the way humans eat?* 
  + We both have/use tongues.
* *Why do birds and humans need a tongue?* 
  + To move food around in our mouth when we are chewing and swallowing, to help us makes different sounds when we talk/sing.
* *Do other animals also have a tongue? Which ones?*

Take students on a bird watching expedition around the schoolyard.

### Before the bird watching expedition

Discuss how some animals can be difficult to see when they are hidden in bushes and grasses, and that as scientists we need to also use our hearing.

On a new page in the class science journal entitled 'What birds are in our schoolyard?', use the Predict, Reason, Observe, Explain (PROE) strategy to record students' predictions about what birds might be heard and seen in the schoolyard in the P and R sections of the chart.

**Optional:** Listen to the calls of the birds you have predicted you will see, from the [Top 40 Bird Songs](https://www.birdsinbackyards.net/birds/featured/Top-40-Bird-Songs).

### During the bird watching expedition

Observe which birds can be heard and seen, reminding students to sit quietly, and sometimes close their eyes. Record observations by writing notes (teacher) and/or taking videos and photographs on a digital device.

### After the bird watching expedition

Complete the O and E sections of the PROE chart. See example below.

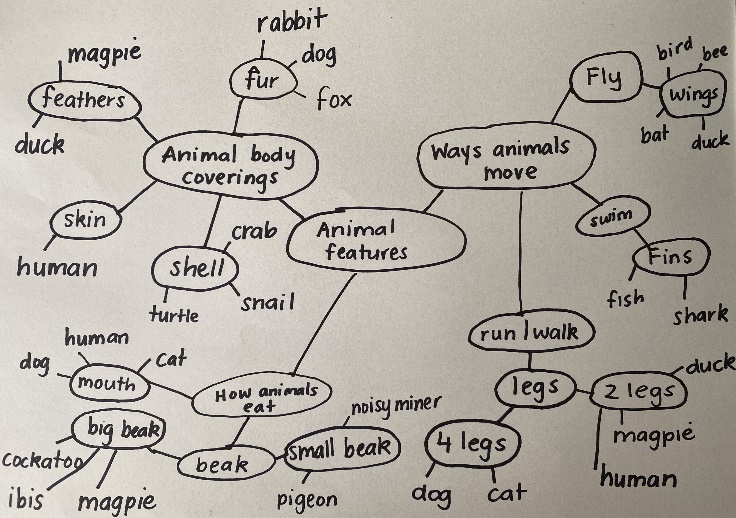
|  |
| --- |
| **What birds are in our schoolyard?** |
| **Predict- what birds will we see?** magpies pigeons kookaburras ibis |
| **Reason- why do we think that?** James' favourite birds are magpies. Siena saw a pigeon on the playground yesterday. Jihan saw a kookaburra when the family was camping by the river. Tien sees ibis when he goes to shops with his mum. |
| **Observe- what did we see?** pigeons noisy miners magpie |
| **Explain- why do we think we saw those birds? Why did we not see birds we thought we might see?** Pigeons eat all the scrap food left behind after lunch. The noisy miners live in the big trees near the back oval. We saw them chasing other birds away. The magpies live on the back oval too. They're too big for the noisy miners to scare off. We didn't see any kookaburras because they usually live near rivers or creeks. Our school is not close to water. |

## Integrate • What do we now know about how animals eat?

Referring to the **Bird beaks Resource sheet**, discuss the different shapes of the bird beaks.

**Potential discussion prompts:**

* *What birds could we hear on our bird watching expedition?*
* *What kind of beaks do these birds have? How would you compare them to the ones in the picture?*
* *How would we describe the bird beaks in the pictures?*
  + Big, small, long, curved.
* *Why do you think bird's beaks are shaped differently?*
  + Because they eat different foods, and their beak helps them do that.
* *What does a magpie eat?*
  + Worms and bugs from the ground.
* *How does their long, sharp beak help them with that?*
  + They can easily stick it into the group and catch the bugs.



Add students’ ideas about different ways animals eat and different beak types to the ideas map begun in Lesson 6.

**Optional:** Further discuss which bird beaks suit particular food types.

**Potential discussion prompts**

* *Which beak do you think would be best for cracking open hard nuts and fruits?* 
  + Red-tailed Black-Cockatoo.
* *Which beak do you think would be best for sucking nectar from flowers?* 
  + Eastern Spinebill.
* *Which beak do you think would be best for eating tiny insects or small seeds?*
  + Superb Fairy-wren.
* *Which beak do you think would be best for eating small lizards, worms, frogs, beetles?* 
  + Australian Magpie—its beak is big and strong enough to hold larger catches such as lizards, and pointy enough to also catch insects and their larvae.

**Optional:** Research to find which beak shapes the schoolyard birds have and group them accordingly.

**Reflect on the lesson**

You might:

* add relevant words and images to the class word wall.
* discuss whether the students have any new questions about animals features and add them to the first page of the class science journal.
* revisit the question ‘Do other animals eat things the same way we do?’ Discuss and record the findings in the class science journal:
  + No, not all animals eat things the same way we do…
  + Some animals have mouths like us with teeth for chewing…
  + Birds have beaks, which come in different shapes… and a tongue…

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**Year F**

Finding features • Lesson 8 • Modelling plant or animal features

**lesson 8**

**ACT**

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| To read the most recent version of this task, download associated resources, and view embedded professional learning including classroom videos and work samples, visit:  [https://primaryconnections.org.au/teaching-sequences/foundation/finding-features/lesson-8-modelling-plant-or-animal-features](https://primaryconnections.org.au/teaching-sequences/foundation/finding-features/lesson-8-modelling-plant-or-animal-features?utm_source=docx&utm_medium=lesson_8&utm_campaign=FF) |

# Lesson overview

Students (as scientists) create and share a model of a plant or animal explaining its external features.

## Key learning goals

Students will:

* create a model of a plant or animal.
* identify the external features of that plant/animal.
* identify models as a physical representation of scientific ideas.

Students will represent their understanding as they:

* construct an age-appropriate scientific model of a plant of animal with explanation (verbal or written with assistance).

## Assessment advice

In the Act phase, assessment is summative.

Students working at the achievement standard should have:

* created a model that shows some external features of a plant or animal.
* represented their understandings in the **My Scientific Model Resource sheet** (and/or verbally).
* communicated their observations with others.

Refer to the Australian Curriculum content links on the [Our design decisions](https://primaryconnections.org.au/teaching-sequences/foundation/finding-features?utm_source=docx&utm_medium=lesson_8&utm_campaign=FF) tab for further information.

## List of materials

**Whole class**

* Class science journal (digital or hard-copy)
* **Animal cards** created for Lesson 5

**Each student**

* **My scientific model Resource sheet**
* Model making materials
* No Tech option: items to make a physical model, such as:
  + boxes
  + craft supplies
  + playdough, air dry clay etc.
  + Lego etc.
* Low Tech option: technology, such as iPads or laptops, with required programs installed such as drawing apps to make a digital/virtual model.

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| **Lesson Routine** | **Estimated time** | **Task type** |
| Anchor | 5 minutes | Whole class |
| Connect | 5 minutes | Whole class |
| Design | Variable | Whole class, Individual |
| Communicate | Variable | Whole class, Individual |

# Act

## Anchor • Plant and animal features

Briefly revisit the questions that were asked and answered over the course of the sequence. Add any further questions that the students pose, to honour their interest and curiosity.

Anchor to the core science concept by reminding students that all of our investigations in this unit have been about:

* the features of plants and animals.
* using our senses as scientists to make observations about their features.
* grouping plants and animals with similar features.

## Connect• Favourite plants and animals

Remind students that their knowledge of plant and animals features can be used to make scientific models.

Discuss their favourite plant or animal that they learned about during this teaching sequence.

**Potential discussion prompts**

* *What did your plant/animal look like?*
* *What was special about it?*
* *How was your plant/animal different to other plants/animals?*
* *What parts/features of the plant/animal did you particularly like?*
* *Where there any other plants/animals that had the same feature?*

Discuss that as scientists, they are going to make a model of their favorite plant or animal to help inform other people about the special features.

## Design • Modelling plants and animals

### Define

Define the challenge, such as: How can we use the available materials to make a model that shows the features of a plant/animal for our (selected audience)?

### Ideate

As a class, brainstorm ideas related to the plant/animal model. To encourage creative thinking at this stage, every idea offered by students should be recorded in the class science journal. No idea is discounted.

Then, at the end of the brainstorming, revisit the list and discuss opportunities/challenges with the available materials.

**Potential discussion prompts**

* *How can we show fur on an animal?* 
  + Using a toothpick to scratch a texture onto clay or sticking on felt etc.
* *Which of these ideas would be easy/difficult to make?*
* *Which model can you make that will show something new or interesting that you have learned?*

### Prototype

Students use the **My scientific model Resource sheet** to outline the details of the animal that they will model. Support them to record their ideas by scribing and labelling as required.

Students construct their plant/animal model.

## Communicate • Sharing models

### Test and share

Students share their designs with the selected audience (see the *Preparing for this sequence* tab on the [sequence overview](https://primaryconnections.org.au/teaching-sequences/foundation/finding-features?utm_source=docx&utm_medium=lesson_8&utm_campaign=FF%20)) to communicate their ideas, advance science and influence the community in general. They should be encouraged to identify the features of their plant or animal by answering questions from the audience.

**Optional:** Photograph the student with their model and explanatory sheet for assessment, display, student & parent feedback etc.

Discuss how students’ models show the features of the plant and what they don't show. For example, students can show a plant’s stalk/stem and leaves, but the model doesn't show how the plant 'drinks' water. Or, a model might show a bird's feathers, beak and feet, but it might not show how the wings move to help the bird fly.

### Reflect on this sequence

You might:

* refer back to the list of student questions asked in Lesson 1. Determine which questions have been answered over the course of the learning sequence, what the ‘answers’ to the questions are, and the evidence that supports these claims.
* address questions that have not been answered during the learning sequence, discuss why they might not have been addressed and potential investigations that might support students to answer them.
* consider what students have learnt about plant and animal features, and how they can be grouped according to these features.
* consider what students have learnt about using their senses to make observations about plants and animals.
* ask students to represent this learning in words, symbols and pictures.