



Lesson plan – how living things grow and change

Year: 2

Lesson overview:

In this lesson students will learn that all living things grow, change and have offspring. They will investigate how living things have predictable characteristics at different stages of development, using the example context of the life cycle of a frog. Students will gain an understanding of the water cycle and its importance to the Murray–Darling Basin. They will begin to connect the combination of droughts and floods with the pressure placed on the Murray–Darling Basin and the living things contained within it. Students will observe the wetlands of the Murray–Darling Basin, discovering their diverse ecosystems and how the millennium drought affected the environment and the plants and animals contained within it. They will also investigate the ways water can be saved in both the home and school environment and then plan a water monitoring system to conserve water.

Aims and objectives:

Upon completion of this lesson students will demonstrate an understanding of:

- how living things grow, change and have offspring (breeding)
- the water cycle and its importance to the Murray–Darling Basin
- how rainfall is unpredictable, leading to periods of both drought and flood
- how the combination of droughts and floods has put pressure on the Murray–Darling Basin
- the diverse ecosystems of the Murray–Darling Basin's wetlands
- effects of drought on the wetlands and the plants and animals contained within it
- how water can be used wisely and their individual responsibility in conserving this precious resource
- ways in which we as individuals can become aware of water usage in the home and school environment.

Key learning areas/subjects/strands: English | Science

Australian curriculum codes:

Science ACSSU030, ACSSU032; **English** ACELT1591, ACELY1670

Curriculum content description

[ACSSU030](#) – Living things grow, change and have offspring similar to themselves

[ACSSU032](#) – Earth's resources, including water, are used in a variety of ways

[ACELY1670](#) – Use comprehension strategies to build literal and inferred meaning and begin to

analyse texts by drawing on growing knowledge of context, language and visual features and print and multimodal text structures

[ACELT1591](#) – Discuss the characters and settings of different texts and explore how language is used to present these features in different ways.



General capabilities:

Literacy, Critical and creative thinking, Information and communication technology capability, Personal and social capability

Cross-curriculum priorities:

Sustainability

Curriculum connections:

Literacy

ScOT catalogue terms:

Growth (animals), animal reproduction, plant reproduction, plant growth

Resources/materials:

Interactive whiteboard technology; natural and man-made materials for mini wetland i.e. dug out space, garbage bags, leaves, sticks, soil, water, flowers, spade, pen and paper

Language/vocabulary:

Living, growth, change, cycle, water, cloud, rainfall, drought, flood, wetland, feed, nest, breed, birds, fish, plants, species

Higher order thinking skills: (Bloom's taxonomy):

- knowledge
- comprehension
- application
- analysis

Lesson introduction:

1. Conduct the pre-lesson pop quiz.
2. Explain to the students that they are going to participate in an activity where they carefully observe the person sitting next to them by focussing on their main characteristics/features. Explain that this includes the colour of their eyes, the length of their hair, the sound of their voice, their height, etc.
3. Pose the question: 'Do you think that this person always looked and sounded exactly like this from the moment they were born?' After a class discussion explain that all living things undergo a process of growth and change, which starts from birth and continues throughout their lives.
4. Introduce the concept of a life cycle. Ask students to identify some common creature life cycles that they may have learned about before, e.g. chicken, frog or butterfly.
5. Using the interactive whiteboard, read to the students the story of Sloaney the Frog (slides 6–9).



6. They then use the information they have heard to complete the interactive 'Life cycle of a frog' activity on the next slide. (Students click and drag each image onto the diagram to see how eggs grow into a tadpole, the tadpole changes and then grows into a frog).

Main body of teaching:

7. Ask the students if they have heard of the term 'water cycle'. Compare this with the term 'life cycle'. Ask whether the students think that there may be any similarities or differences between the two. Then briefly define the water cycle as 'a process by which water moves around our Earth'.
8. Using the slide 'The water cycle' (11) on interactive whiteboard, students view a (zoomable) diagram of the way water circulates around the earth. Explain to the students that the water cycle is very important to the Murray–Darling Basin (a large area of land covering parts of Queensland, New South Wales, Victoria, South Australia, and the entire Australian Capital Territory).
9. Using the next slide on the interactive whiteboard, read the story 'The cloud that didn't want to rain' (four slides). Talk about how the story reflects the water cycle.
10. Pose the following questions to the class:
 - What did you learn from the story?
 - What message is it trying to teach us?
 - How did the lack of rain affect the communities and farms?

(From this, students begin to realise that rainfall is unpredictable. Sometimes it rains a lot, sometimes clouds do not appear and release rain when and where we want, leading to dry years and droughts, and wet years and floods.)

11. Next, explain to the students that pressure is now being placed on the water of the Murray–Darling Basin. Natural droughts and floods always affected the water cycle, but now we dam the floods, use lots of the water, and sometimes don't leave enough in the rivers for other creatures and plants.
12. Display the slide 'Wetlands in the Murray–Darling Basin' (16) showing a picture of a wetland. Ask students to describe what they can see. Click on each hotspot on the image and elaborate. Ensure all the following points are discussed. Wetlands:
 - are areas of flat ground that are sometimes completely covered with shallow, still, or slow-moving water
 - contain special trees that store flood water during wet times, then let it go slowly – so they play a natural role in reducing the effects of flooding
 - absorb, recycle and release nutrients – this helps provide food for many animals and plants



- trap sediment – so act as natural filters that improve water quality
- provide homes, nesting and breeding grounds for many species of birds, fish and plants (some of which need it very wet to breed)
- are diverse ecosystems (contain many different living things that depend on one another for growth and survival – are interconnected)
- and so, to be healthy, wetlands need a natural cycle of floods and droughts.

13. Using the next activity slide on the interactive whiteboard, students work together to create their own mini wetland. Ask them to choose various items from the collection of images provided on the right, and click and drag them onto the space provided. They should choose materials that they think would attract living things to the wetland, provide shelter and homes as well as food.

Extension: as a year group students create their own mini wetland in the school environment:

1. *prepare a space in the garden by digging out a shallow hole*
2. *place a garbage bag inside the hole*
3. *cover the garbage bag with soil*
4. *use the variety of natural materials found in their environment to create a beautiful sanctuary for birds and insects.*

14. Explain to the students that there are over 30,000 wetlands in the Murray–Darling Basin. They attract a wide variety of water birds that come to the area to feed, nest and breed. Some even fly from overseas, and so it is really important that there is water in the wetlands when they arrive as they need to feed and rest.

15. Next display the slide with the map illustrating the location of wetlands throughout the Murray–Darling Basin. (Zoom in on the map to see if there are wetlands around your area.) Around the map, show students the images of a wide variety of native Australian and migratory birds. Ask: ‘Which ones do you think live in the Basin?’ These images can be clicked and dragged onto the map. Note that only those that don’t live in the Basin remain.

16. Remind students that all living things grow, change and have offspring (babies) including the water birds of the Murray–Darling Basin. Pose the question: ‘Water birds need healthy wetlands, which join up sometimes to rivers. This happens when rivers are full, so water can spill out onto wetlands. With the water comes waterbugs and nutrients. This tells fish and waterbirds it’s time to breed. What would happen to the birds if the wetlands were damaged or destroyed?’ Students



may suggest possible outcomes, e.g. death, no food...but should be led to the understanding that if no breeding occurs, then populations die out.

17. Leading on from this, explain that both human and natural activities can damage and/or destroy wetlands, and this in turn affects all of the living things that use the area for their habitat.
18. Move to the next slide on the interactive whiteboard, share the story of the drought, with Sloaney the Frog as the central character (six slides).
19. Pose the questions:
 - What is the message in this story?
 - What is it trying to teach us?
20. From this story and explanations, students should understand that natural activities, such as droughts, impact the Murray–Darling Basin. Living things in this region rely on the environment for growth and reproduction. Changes to the physical environment affect their lifecycle.
21. In the story, Sloaney the Frog ends by exclaiming: ‘We need to do something about this...our future depends on it.’ Explain to the students that although it would be impossible for one individual alone to change the Murray–Darling Basin environmental situation, together we can all play our part in conserving this precious water resource.
22. Using the next slide on interactive whiteboard ‘Ways we can save water’, students brainstorm ways in which people can save water around the home. Students click and drag on each image and match it to its correct statement.
23. Pose the question: ‘Do you want to know what happens to Sloaney the Frog?’ Wait for responses and finish the lesson by reading the final slide in the story. The students are left with the notion that there are already plans and actions that are occurring in the Basin which address the concerns of water quality and land degradation. Briefly explain how the Murray–Darling Basin Authority is an organisation which is designed to protect and maintain the sustainability of the Murray–Darling Basin resources.

Extension activity: In groups, students construct a water monitoring system within their school environment or classroom. For example, a record sheet tallying the number of times the taps are turned on in their classrooms per day/week or a roster for students to ensure that the taps in the school are turned off properly after each use.

Conclusion:

24. Conduct the post-lesson quiz.



Answers

Pre-lesson quiz questions	Answers		
1. All living things _____, change and have offspring.	see	grow	eat
2. All living things undergo a process of change called a _____.	life cycle	water cycle	
3. The water cycle is a process in which water circulates around the Earth.	true	false	
4. The water cycle is not important in the Murray–Darling Basin.	true	false	
5. Wetlands are a type of _____ in the Murray–Darling Basin.	water	ecosystem	soil

Post-lesson quiz questions	Answers		
1. Wetlands are homes, feeding and breeding ground for a variety of plants and animals in the Murray–Darling Basin.	true	false	
2. _____ is a term used to describe a group of plants and animals living together.	shelter	ecosystem	
3. Only human activities impact the ecosystems of the Murray–Darling Basin.	true	false	
4. It is important to use water wisely.	true	false	
5. Pick a way you can conserve water: _____	turning off taps	washing your bike on the pavement	