Name: _____ Date: _____

GREEN ORANGE BLUE BRONZE SILVER GOLD

Science: Indigenous Research Methodology – Groundwater

Water stored underground is called groundwater. Groundwater can protect and environment from the devastating impacts of drought. But how does the water get there?

In this activity you will be closely observing Country and use an Indigenous Research Method to explore how surface water can get deep down into the groundwater. Just like the CSIRO scientists who are using these methods to study Australia's water and its history, you will collect data from your observations on Country to learn about how water has and is shaping our world.

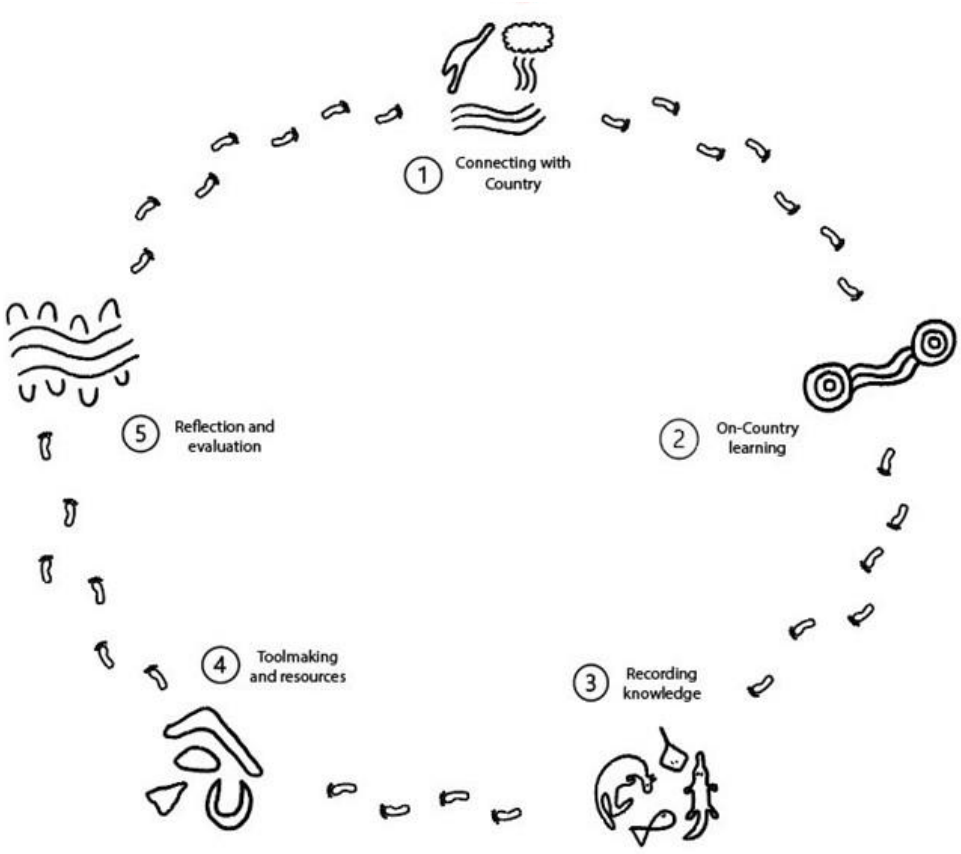

Figure 1: Indigenous Research Methodology[1]

[1]Fabila M, Moggridge B, Braedon P, Akeroyd M, Connolly M, Court Z, Gilbey S (2025). Indigenous research methodology for drought resilience, CSIRO, Australia.

Aim	In this activity you will use an Indigenous Research Methodology to explore how ground cover affects the amount of rain water that can reach groundwater supplies.
Inquiry question	**Does ground cover influence how much water can soak into groundwater?**

Connecting with Country

Who are the Traditional Owners of the Country you are on?

What does Country mean to you?

What observations have you made of Country?

What issues have you seen or heard of from the media or classroom discussions?

On-Country learning

What do you know about water that is found under the ground?

What have you learnt about groundwater on Country from discussions, walking on Country

and listening to stories?

Have you learnt some language words from the Country you are on?

On-Country learning

Conducting investigation on Country

Fair Test

A scientific experiment must be a fair test. That means that in the experiment, only one variable is *changed*, at least one is *measured* or *observed*, and as much as possible, all other variables are kept the same.

How will you ensure this experiment is a fair test?

In this investigation, I am going to:

Change _____ ,and

observe _____

while keeping _____ The same.

Prediction

How do you think the water will impact each tray?
Why do you think this will happen?

The water will:

_____

_____

_____

_____

_____

On-Country learning

Conducting investigation on Country

Inquiry question

Does ground cover influence how much water can soak into groundwater?

1. Collect all your equipment.
2. Prepare two trays:
   a. Cut a small hole (about 4 cm long × 2 cm high) near the top edge on one short side of each tray. This lets extra water, "runoff" drain out.
   b. Poke 3 small holes in the middle of the tray's base. These will collect "groundwater."
3. Fill both trays with damp peat moss.
4. Set up your test trays:
   a. Tray 1: Uncovered peat moss.
   b. Tray 2: Peat moss covered with a layer of leaf litter.
   c. Tray 3: Pre-prepared grass tray.
5. Place the container/beaker inside the large tray.
6. Stand Tray 1 on top of the container/beaker. Make sure the holes in the bottom line up so water can drip into the beaker, and the side hole lets runoff flow into the large tray.
7. Fill the watering can with 500mL water.
8. Slowly pour the water over Tray 1 and watch what happens, photograph and record your observations.
9. Measure how much water ends up in the beaker (groundwater) and in the large tray (runoff).
10. Repeat steps 5 – 9 for Tray 2 (with leaf litter) and then for Tray 3 (pre-grown grass).

Equipment

(your group will need)

- Safety equipment: safety glasses, mask and gloves
- 2 plastic or aluminium trays
- Scissors
- Peat moss – moistened to reduce dust
- Propagating sand
- Pre-prepared grass trays
- Leaf litter
- Container/beaker (approx 1L capacity)
- Large tray
- Measuring cup/cylinder
- Watering can
- Camera

Safety note: Peat moss can irritate airways. Keep it moist and wear gloves, mask and safety glasses. Wash hands after use. Cutting trays with scissors – use scissors carefully.

Recording Knowledge

Record observations

Results

Sample	Runnoff (mL)	Groundwater (mL)	Observations
Plain Soil			
Leaf Litter/ Pebbles			
Grass			

Toolmaking and resources

Create a photo story or
sketch your observation

Reflection and evaluation

Reflect on what you have learnt, develop new ideas to build knowledge

Analysis

What did you observe when you poured water over the different samples?

Did your observations support your prediction? Why/Why not?

Discussion

What do your results tell you about how ground cover impacts whether rain fall can reach groundwater? What evidence do you have?

Evaluation

Are your results reliable, why, or why not?

Describe any problems you encountered during this investigation and outline what changes you would make to overcome them next time.

If you were going to do this investigation again, what changes would you make?

Conclusion

What conclusion can you make about the relationship between ground cover and groundwater, was it supported by the data you collected from conversations?

Extension activity

1. Design a rain garden.
2. Test with native plants/grasses.
3. Test with soil samples from the local environment.
4. Create recommendations for water/erosion management.

Additional Inquiry Task

Research local, or Australian, Dreaming Stories related to water – what do you think they are telling us about water on Country?

Bedtime Stories | Common Ground