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 own observations on Country.

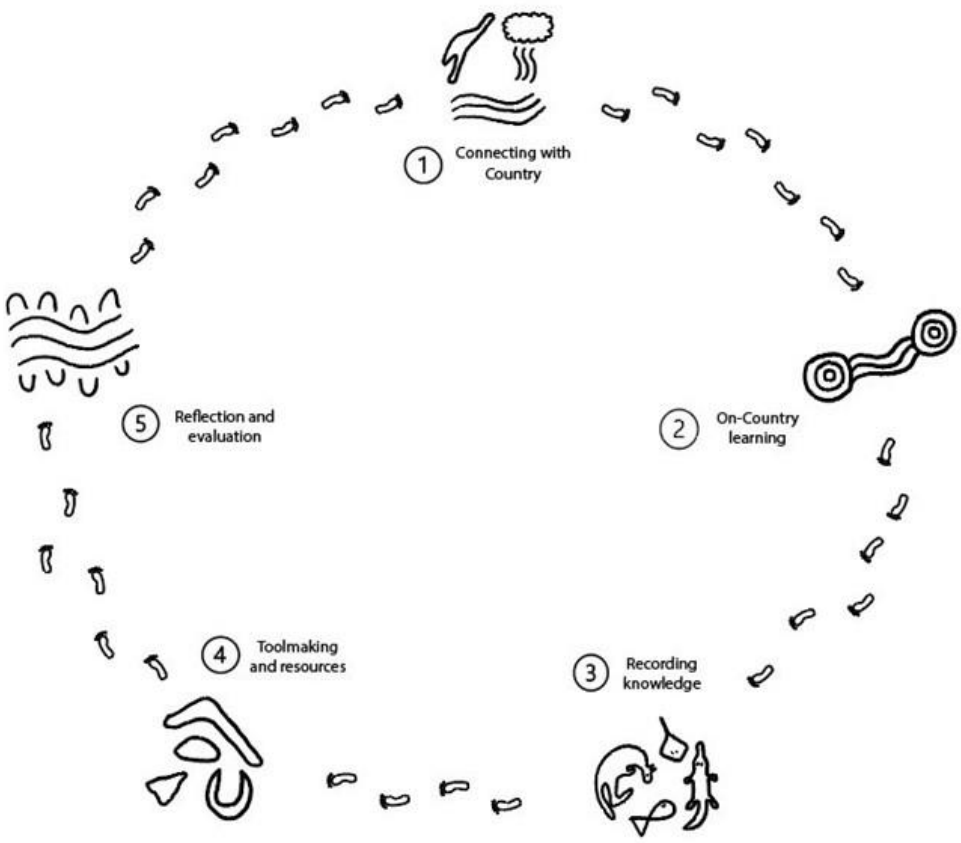


Figure 1: Indigenous Research Methodology[1]

[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 rainwater that can reach groundwater supplies.
Inquiry question	**Does ground cover influence how much water can soak into groundwater?**

On-Country learning

Investigate

1. Use the following prompts to guide you in developing your solution. They are all important considerations when looking at how to design your solution.
   - What might affect how water accesses the water table?
   - How can ground cover (concrete, soil, plants etc.) influence the way water moves through the environment?

Design

2. Considering the equipment provided, brainstorm different design options. Use the following to guide you.
   - Which items might influence how the water moves through the test samples?
   - Which items might be a model for soil?
   - How will you know water has soaked sown into the soil?
   - How much water will you use?

Create

3. What does your test look like? Draw your test.
4. Once you are satisfied with your experiment, and the teacher has approved it, it's time to create! Safely use the equipment to construct your design. Try to use only the materials you need and share with others.

Equipment

(your group will need)

- 2 Plastic or aluminium trays
- Scissors
- Peat moss – moistened to reduce dust
- Propagating sand
- Pre-prepared grass trays
- Leaf litter
- Measuring cup/cylinder
- Watering can
- Container/beaker (approx 1L capacity)
- Large tray
- Camera

On-Country learning

Testing aspects

How can you test to see if your design works, and how can you be sure that you are measuring water reaching the 'water table' (the bottom of the test sample).

5. Design a test that will allow you to accurately assess how water is moving in your test samples. It is important to remember that testing should include several considerations.
   - What are you changing in the test? (The independent variable.)
   - What will you measure? (The dependent variable)
   - What will you keep constant? (The control variables.)
   - How will you know if your results are reliable?

It is important to note that a scientific investigation must be a fair test. That means that in the investigation, only one variable is *changed*, at least one is *measured*, and as much as possible, all other variables are kept *constant*.

Recording Knowledge

Record observations

Toolmaking and resources

Results

1. Construct a table for your observations before you start. If possible you should try to collect both qualitative (words, pictures, descriptions) and quantitative (numbers) data.
2. You could use Microsoft Excel or Google Sheets to develop a table and graph or to make any calculations.
3. Consider how you will communicate your findings – create a visual representation e.g. photo story, video or sketches.

Reflection and evaluation

Reflect and share back

Conclusion

What conclusion can you make about the ways water moved under different conditions?

Evaluation

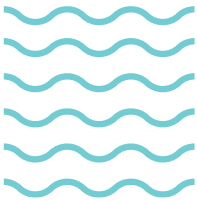
1. If you were to repeat the investigation, what other changes could you make?
2. Describe any problems you encountered or mistakes you made during the testing stage. Did these have a big impact on your final results?
3. What further investigations could be done to study the effectiveness of different materials and/or reaction conditions?

Extension Inquiry Task

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

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