



Run the river: Water in the landscape

Lesson overview

In this activity students will investigate:

- how water shapes the landscape
- the impact of freezing and thawing on shaping the landscape.

Australian curriculum outcomes

Science (years 7 and 8)	ACSSU222/225, ACSIS125 and science inquiry skills
Geography (years 7 and 8)	ACHGK038, ACHBS048, ACHGK050 and gathering geographical information
Cross curriculum priority	Sustainability (systems, world views and futures)

Lesson components

- discussion about water in different landscapes
- hands-on activity
- further investigation

Notes

Start the class with a discussion about water and where in the landscape it can be found. Students then work in small groups to look at the different properties of rocks and the impact of water on different rock types.

Look at the Murray–Darling Basin as an example and discuss the different type of landscapes found in the Basin.

Useful web links and resources

[The Basin environment](#)
[Understanding groundwater](#)



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Part 1: experiment

In this activity you will be conducting an experiment to learn what rocks can tell us about the water cycle.

You will need

- small rock samples such as granite, siltstone, or any locally available rock, include a highly permeable rock such as sandstone
- sealable plastic bags
- water
- freezer
- notebook for observations

What to do

- Soak all the stone samples overnight.
- Next day place the rocks into sandwich bags while making sure they are sealed tightly.
- Place the bags in a freezer overnight.
- Next day take them out.
- Write down or draw your observations.

Part 2: explain

What is happening?

Some rocks can soak up water (porous rocks) and others do not (non-porous rocks). Sandstone is a highly porous rock because there are lots of gaps between the sand grains. It absorbed water when it was soaked overnight. Water moved into the pore spaces in the rock.

When the stones were placed in the freezer, the water froze and expanded. As this happened, it caused the rocks to break because of the expansion of water in tiny joints and pore spaces. This is called the 'freeze-thaw' principle and plays a big role in shaping the landscape.

What happened to the other rocks? Were they affected by the ice? Explain your observations.

Part 3: Further investigation

Are there any examples of freeze-thaw weathering near where you live?

Peeling or exfoliating rocks, scree, crumbling roads and concrete can all be symptoms of freeze-thaw weathering. What part of the water cycle plays the most significant role in shaping your local landscape?