



MODULE 01 | TEACHER GUIDE

Riverside Water Mystery

Water our most valuable resource | English B2–C1 | Ages 15–18 | 45 minutes

A closed school records unexpected water use. Students investigate this fictional case, evaluate competing explanations and advise the caretaker. They connect the school to the wider water cycle and turn their findings into an evidence-based exhibition panel.

Learning outcomes

Students can explain water pathways, interpret numerical evidence and distinguish observations from assumptions. They can qualify a claim, justify a practical recommendation and communicate uncertainty clearly to a non-specialist audience.

Lesson sequence

Time	Activity	Product
0–4 min	Show the school board on p. 3. Ask: where could water be used?	Initial hypotheses
4–13 min	Read p. 2 in pairs. Complete the routes and challenge the inland-school claim.	Completed diagram
13–23 min	Teams use the board on p. 3, clue cards on p. 4 and tasks on p. 5.	Evidence-based judgement
23–37 min	Draft the three-part panel on p. 6. Use the optional language support.	Exhibition panel
37–43 min	Exchange panels. Check a route, a number and a claim. Revise one overstatement.	Reviewed panel
43–45 min	Compare explanations. What do we know? What should staff check next?	Class discussion

Preparation

Print pp. 2–6 for each team; keep p. 7 for answers. Print the cards on p. 4 single-sided, cut along the dashed lines and shuffle. Provide pens, calculators and optional coloured pencils.

Support and challenge

B2 support: use the technical glossary and optional sentence frames. Allow paired planning before writing. Assign roles: evidence reader, data analyst and editor. Each student contributes to the final explanation.

C1 extension: identify a hidden assumption, specify evidence that could challenge the preferred explanation, and qualify a public claim precisely. Core tasks are designed for B2; extension prompts provide additional depth for C1 learners.

Keep access to drinking water and handwashing unchanged. Only authorised staff may inspect equipment or pipes. This lesson uses invented data and does not require a real school inspection.

Ocean Literacy principles 1 and 6: connected water systems and the relationship between people and the ocean.



STUDENT SHEET 1 | FOLLOW THE WATER

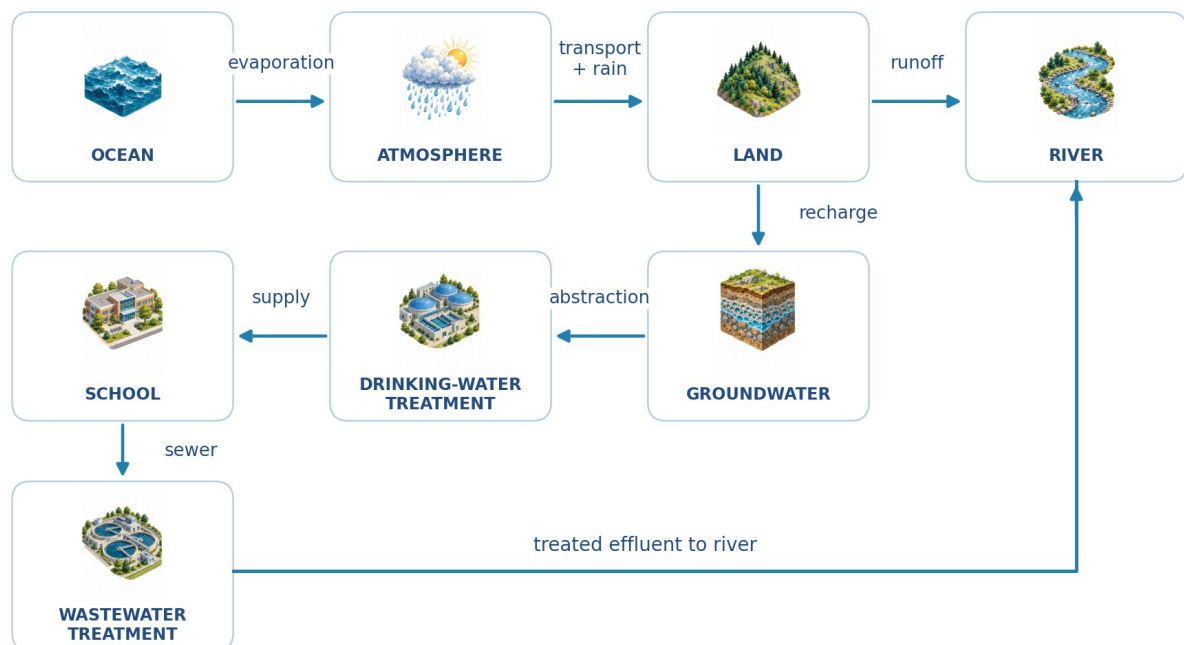
From school to sea

Water may be abundant on Earth without being available for everyday use. Much is salty, frozen or difficult to access. Even freshwater may need treatment. A reliable supply depends on its quality, location and availability when it is needed. [1]

The water cycle connects the ocean, atmosphere and land. Evaporation moves water into the air; rain and snow return it to the surface. Water may flow into rivers or enter underground stores. Some groundwater feeds rivers, while some remains underground for long periods. [1]

Riverside School receives treated groundwater. Used water enters a sewer, passes through wastewater treatment and reaches a river connected to the sea. However, returning water to the cycle does not restore its original quality or make it immediately available to the same community.

Meter readings make water use visible, but do not identify its cause. An unexpected total may suggest a leak, automatic use or incomplete records. A convincing explanation must consider these alternatives and identify what further evidence is needed. [2]



This diagram shows the fictional school system. Two connections are missing.

1 Add the missing river-to-ocean and groundwater-to-river arrows. 2 Explain a natural route and a route through the school. Why does water remaining in the cycle not guarantee a reliable local supply?

Technical glossary

evaporation: water changes into vapour • runoff: water flows over land • recharge: water enters underground stores • abstraction: taking water from a river or the ground • treatment: cleaning water • effluent: water leaving a treatment centre • sewer: a pipe carrying used water

Challenge: “Our school is inland, so saving water makes no difference.” Give a reasoned response.

C1: identify one limitation of the diagram.



STUDENT SHEET 2 | EXPLORE THE SCHOOL

Where did the water go

Riverside School reports unexpected weekend water use, although no occupants were recorded. Your team must advise the caretaker before the school launches a water-saving campaign. The school and all records are fictional.



Select two locations for staff to investigate and explain your priorities. The board shows possible water-use points; it does not establish where the unexplained water was used.

Plan your investigation

Match the clues on p. 4 to specific locations or to the whole site. For each proposed check, explain what staff should measure or record and how it could help distinguish between explanations.

“We would prioritise ... because ...” / “If staff recorded ..., we could assess whether ...”

C1 extension: Which proposed check could show that your preferred explanation is wrong? Describe a possible result and explain how it would change your judgement.



STUDENT SHEET 3 | CUT-OUT CLUE DECK

Six clues one mystery

01  FRIDAY READING Friday 18:00 Main meter: 2,480.000 m³ RIVERSIDE WATER MYSTERY	02  MONDAY READING Monday 06:00 Main meter: 2,493.200 m³ RIVERSIDE WATER MYSTERY
03  SITE LOG No students, visitors or cleaning staff were recorded on site during the weekend. RIVERSIDE WATER MYSTERY	04  AUTOMATIC USE An automatic flushing system used 2,400 litres during the first weekend. RIVERSIDE WATER MYSTERY
05  A HYPOTHESIS The caretaker estimates a possible continuous leak at 3 L/min. This flow rate has not been measured. RIVERSIDE WATER MYSTERY	06  FOLLOW-UP After an inspection, another 60-hour weekend used 3,000 L, including 2,400 L of automatic use. Occupancy was unchanged. The inspection record is incomplete. RIVERSIDE WATER MYSTERY

Cut along the dashed lines. Sort the cards into recorded observations, estimates and follow-up evidence. Discuss what each clue can establish. All records are fictional.



STUDENT SHEET 4 | SOLVE THE MYSTERY

What do the numbers tell us



Use the six clues to develop an explanation. Show units in your calculations.
Conversion: 1 m³ = 1,000 litres. 1 hour = 60 minutes.

1 Find the water use

Calculate the time between the readings, total use in litres and the amount left after subtracting automatic use.

Elapsed time: _____ Total use: _____ Unexplained: _____

2 Test the caretaker's idea

Calculate the volume a constant 3 L/min leak would produce. Compare it with the unexplained amount. Explain why a matching result does not prove the cause. Give one alternative explanation.

Optional support: "The result is consistent with ... However, it does not prove ..."

3 Look at the next weekend

Both weekends lasted 60 hours. Calculate the decrease in total use, the percentage decrease and the second unexplained amount. Does the lower reading prove that the inspection caused the change?

Name one record you would request.

Decrease: _____ Percentage: _____ Unexplained: _____

Calculation support: percentage decrease = decrease ÷ first total × 100.

4 Decide what we know

Label each claim: supported / possible but unconfirmed / not supported.

A The school used water over the weekend.

B A leak explains the unexplained amount.

C The school has permanently solved its water-waste problem.

Justify one decision. C1: identify an assumption behind the leak calculation and explain how changing it would affect your conclusion.

Use the meter readings as correct for this activity. "Unexplained" means we do not know the cause yet; it does not always mean waste.



STUDENT SHEET 5 | CREATE A POSTER

Tell the water story

Create a three-part exhibition panel called “The missing water”. Write 25–35 words per part and add sketches or arrows. Explain the water route, interpret one calculated figure and recommend an action. Clearly distinguish what is known from what is only possible.

Optional language: “The evidence suggests ...” • “Although ..., we cannot conclude ...”
“We recommend ..., provided that ...” • “To check this explanation, staff should ...”

1 FOLLOW THE WATER

Sketch + arrows

Caption • 25–35 words

2 SHOW THE CLUES

Sketch + arrows

Caption • 25–35 words

3 SUGGEST AN ACTION

Sketch + arrows

Caption • 25–35 words

Make your action clear

On separate paper, add a 40–60-word action note: identify who should act, what they should record and when they should review the results. Explain how to make a fair comparison. Protect drinking water and handwashing.

Check with another team

Check a water route, a numerical claim and a recommendation. Find a statement that is too certain or unclear. Suggest a precise change, then revise your own panel.

C1 extension: address one possible objection to your recommendation without overstating what the evidence proves.



TEACHER SHEET | ANSWERS AND SOURCES

Answers and model language

Water routes and school board

Add river → ocean and groundwater → river. Possible school route: groundwater → drinking-water treatment → school → sewer → wastewater treatment → river → ocean. Saving water matters inland too: clean water is needed locally, and rivers connect inland places to the ocean. Water in the cycle is not always clean or available where needed.

Board: A could be checked for running taps or toilets; D for automatic use. Accept other justified ideas. Cards 01–02 belong to M, 03 to building records, 04 to D, 05 has no known location, and 06 concerns the whole school. Sorting: 01–04 recorded facts; 05 a possible explanation; 06 the next check.

Calculations and conclusions

1 Time: 60 hours = 3,600 minutes. Meter difference: $13.200 \text{ m}^3 = 13,200 \text{ litres}$. Unexplained amount: $13,200 - 2,400 = 10,800 \text{ litres}$.

2 Possible leak: $3 \times 3,600 = 10,800 \text{ litres}$. The numbers match, but the flow rate is only an estimate. A second automatic process or missing information about people in the building could also explain some water use.

3 Decrease: $13,200 - 3,000 = 10,200 \text{ litres}$. Still unexplained: $3,000 - 2,400 = 600 \text{ litres}$. Percentage decrease: $10,200 \div 13,200 \times 100 \approx 77.3\%$. Ask what staff found, whether anything was repaired and whether equipment settings changed. The lower total alone does not prove the check caused the change.

4 A supported / B possible but unconfirmed / C not supported. The meter supports the first statement. A leak is possible but unconfirmed. Two weekends cannot show that every problem is solved. The final 600 litres are unexplained, not necessarily wasted.

C1 extensions: the diagram leaves out many routes and timescales. The calculation assumes a constant 3 L/min flow for all 60 hours; a shorter leak would explain less water. Direct flow measurements could challenge that estimate. For a fair comparison, check similar occupancy and automatic use.

Example poster captions

1 Our school receives treated groundwater. After use, water travels through a sewer and wastewater treatment before reaching a river and the sea. Its quality and location change along the route.

2 The meter recorded 13,200 litres over one weekend. Automatic use explains 2,400 litres. A leak could explain the rest, although the estimated flow rate still needs to be checked.

3 Report dripping taps and ask the caretaker to record inspections and repairs. Compare water use over two similar weekends while checking automatic systems. Keep drinking water and handwashing available.

Action note: The caretaker should record any repairs and compare the next two 60-hour weekends with the first one. Staff should record occupancy, automatic use and total litres each time. Review the results after two weeks, but investigate other changes before attributing a reduction to repairs.

Assessment

Give 0–2 points each for water pathways, numerical accuracy, evidence-based reasoning, a feasible action and clear English (10 total). B2: connected explanations with reasons and appropriate caution. C1: precise qualification, evaluation of assumptions and a well-supported response to an objection.

Sources

[1] USGS. Water cycle. <https://www.usgs.gov/water-science-school/water-cycle>

[2] US EPA. WaterSense: Getting Started. <https://www.epa.gov/watersense/getting-started>

Last visited: 13 October 2026.