

Rivers, Valleys & Canyons

Arch Canyon with Landing

Learning target

Explain how rivers can shape land.



Before you begin

Use the reference page and discussion prompts on their own, or open the optional browser adventure. No earlier lesson or physical kit is required.

For online play: use an internet-connected current browser with local storage enabled. Read the three-part Gemling briefing, answer the quick check, and apply the evidence at three checkpoints. Retry feedback supports review; results are not a secure test or gradebook.

Use for teacher-led review, science centers or partner practice. Independent readers may need support with the vocabulary below. The design target is grades 3-5; choose support based on the learner.

Vocabulary and concepts to discuss

Flowing water; channels; erosion; deposition; valley and canyon forms

Open Arch Canyon - direct lesson link

Scan the QR code or use the clickable link. This guide is usable offline; the adventure runs on an external educational website.



Rivers, Valleys & Canyons - key ideas

1. The first clues

Flowing water can erode rock and carry sediment, helping cut channels, valleys and canyons. These changes often build up over long periods.

2. How the clues connect

When water loses the ability to carry sediment, some material settles. That deposition can build bars or other deposits along a river.

3. Our evidence record

Our model's fast section carries sand away; its slower section gains a sandbar. Removing and depositing material can happen at different places along one river.

Keep the science accurate

Keep map reading and observable forms central. Detailed plate mechanics and contour calculations are extensions.

Apply the evidence

Use a specific observation from this lesson to explain one choice. Point to a clue, then connect that clue to a scientific idea.

Curriculum reference: <https://www.nextgenscience.org/dci-arrangement/4-ess2-earths-systems>

Talk through the evidence

1. What helps a river cut a channel?

Expected answer: Erosion

Reasoning: Flowing water can erode rock and carry sediment, helping cut channels, valleys and canyons. These changes often build up over long periods.

2. Where does the model's sandbar grow?

Expected answer: The slower depositing section

Reasoning: Our model's fast section carries sand away; its slower section gains a sandbar. Removing and depositing material can happen at different places along one river.

3. Can one river erode and deposit?

Expected answer: Yes, in different places or times

Reasoning: Our model's fast section carries sand away; its slower section gains a sandbar. Removing and depositing material can happen at different places along one river.

4. Which explanation fits a growing sandbar?

Expected answer: Carried sediment settles

Reasoning: Flowing water can erode rock and carry sediment, helping cut channels, valleys and canyons. These changes often build up over long periods.

Guide the discussion

Ask learners to name the evidence that supports their answer. If an answer differs, revisit the matching key idea on page 2 and invite a revised explanation.

Online rewards: this lesson grants one fixed digital Expedition Discovery. Five saved digital Gemling friends become available only after all six distinct subject lessons are complete, in any order. Digital rewards do not establish physical ownership.