Lake Landform

Earth & Space Science | Lesson Guide

2nd Grade

Photo Description

This image shows a beautiful lake surrounded by trees with colorful fall leaves in shades of red, orange, and brown. A fallen tree branch stretches into the calm water, and a sandy beach is visible in the foreground. The trees around the lake show that seasons change and affect the land and water around us.

Scientific Phenomena

Anchoring Phenomenon: A lake is a natural body of water surrounded by land, and it changes with the seasons.

Why This Happens: Lakes form when water collects in low areas on Earth's surface. Water comes from rain, streams, and groundwater that fills these natural "bowls" in the land. The trees and plants around lakes grow in response to the water being nearby, and they change colors with the seasons as temperatures drop in fall and winter. The fallen tree branch shows that trees naturally lose branches over time due to wind, age, and weather—this is part of the water cycle and how ecosystems change.

Core Science Concepts

* Landforms and Water: Lakes are landforms (shapes of land) that hold fresh water. They are surrounded by soil, rocks, and plants that make up the landscape.

* Seasonal Changes: The colorful leaves visible in this photo show how plants and trees respond to seasonal temperature changes. In fall, days get shorter and cooler, so trees stop making food and their leaves change color before falling off.

* Erosion and Natural Processes: The fallen tree in the water and the sandy beach demonstrate how water and weather slowly change landforms over time. This process is called erosion.

* Habitats and Ecosystems: Lakes provide homes for many living things—fish, plants, birds, and insects depend on the water and the surrounding land to survive.

Pedagogical Tip:

For Second Grade, avoid using the term "erosion" initially if students haven't been exposed to it. Instead, use simpler language like "water helps change the land slowly" or "falling trees show nature is always changing." Use this photo as a springboard for sensory discussions: "What do you think this place would feel like? Sound like? Smell like in fall?"

UDL Suggestions:

Representation: Provide a labeled diagram of a lake showing where water comes from (rain, streams) and identify key vocabulary with pictures. Action & Expression: Let students draw their own lake and add seasonal details, or create a "lake in a cup" using sand, soil, rocks, and water. Engagement: Connect to students' personal experiences by asking if they've visited a lake, beach, or pond—this builds relevance to their lives.

Zoom In / Zoom Out

Zoom In: Tiny Life in the Lake Water
Even though we can't see them, there are millions of tiny living things in this lake—so small you need a microscope to see them! These creatures are called microorganisms. Fish and plants in the lake eat these tiny organisms, and the tiny organisms eat dead leaves and branches that fall into the water. It's like a super-small food chain happening right in front of us, but invisible to our eyes!

Zoom Out: The Water Cycle and Watershed
This lake is part of something much bigger called a watershed. A watershed is all the land and water in an area that are connected together. When it rains on the hills and forests around this lake, the water flows downhill into the lake. The water in the lake evaporates (turns into invisible water vapor) and floats up into the sky to form clouds, which eventually bring rain again. This lake is one small part of Earth's giant water cycle that keeps our whole planet alive!

Discussion Questions

1. What do you think happens to the lake when it rains a lot? (Bloom's: Understand | DOK: 1)

2. Why do you think the trees around this lake have different colored leaves than trees in your yard might have right now? (Bloom's: Analyze | DOK: 2)

3. How do you think the fallen tree branch got into the water, and what might happen to it over a long time? (Bloom's: Analyze | DOK: 2)

4. If you were a fish living in this lake, what would you need to survive here? (Bloom's: Evaluate | DOK: 3)

Potential Student Misconceptions

Misconception 1: "Lakes are made by people, like swimming pools."
- Clarification: Lakes are natural and form on their own over a very, very long time. Water collects in low spots on Earth's surface because of rain, streams, and underground water. Some lakes are millions of years old and formed long before people were here!

Misconception 2: "The fallen tree branch will just stay in the lake forever and never change."
- Clarification: Even though it looks solid, water, wind, and tiny living things (like bacteria and bugs) slowly break down the tree branch into smaller and smaller pieces over months and years. Eventually it becomes part of the soil at the bottom of the lake. This is how nature recycles!

Misconception 3: "All the water in a lake stays in one place and doesn't move."
- Clarification: Lake water is always moving, even if we can't see it! Wind pushes it around, streams bring new water in, and water evaporates into the air. The water in this lake is part of a journey that never stops.

Extension Activities

1. Create a Lake Model in a Tray: Provide students with a shallow pan or tray filled with sand and soil. Have them use their hands or tools to make a "lake" by creating a dip, then slowly pour water into it. Ask them to observe where the water goes and discuss why it collects in the lower area. This hands-on experience builds understanding of how lakes form in natural low spots.

2. Seasonal Leaf Collection and Sorting: Take students on a nature walk around the school to collect fallen leaves in different stages of color change (green, yellow, orange, red, brown). Back in the classroom, sort them by color and discuss why leaves change. Create a classroom display showing the progression of fall colors, and connect it to how the trees in the lake photo are changing.

3. "Water Homes" Drawing and Writing Activity: Have students draw their own lake or pond scene with plants, animals, and fallen branches. Ask them to label or dictate 2–3 sentences about what lives in their water habitat and why those animals need water. This integrates literacy with Earth and Life Science concepts.

Cross-Curricular Ideas

Math Connection: Measuring and Graphing Seasonal Changes
Have students keep a weekly tally of fall colors they observe in leaves outside the school or in photos. Create a simple bar graph showing "green leaves," "yellow leaves," "orange leaves," and "brown leaves" to track how the seasons change over time. This builds graphing skills while reinforcing the science concept of seasonal patterns.

English Language Arts Connection: "Day in the Life" Writing
Ask students to write from the perspective of the fallen tree branch, the lake, or a fish living in the lake: "What is my day like?" Students can dictate or write simple sentences about what happens to their chosen object throughout a day or season. This combines narrative writing with scientific thinking and builds empathy for natural systems.

Social Studies Connection: Community Water Resources
Invite a local park ranger, water treatment specialist, or environmental scientist to visit the classroom and talk about lakes and water in your community. Students can create thank-you letters or drawings. This helps them understand how their community depends on and cares for natural water resources like lakes and rivers.

Art Connection: Seasonal Collage and Color Mixing
Provide students with paint, colored paper, and natural materials (fallen leaves, twigs, sand) to create a mixed-media collage of a lake in different seasons. Have them practice mixing paints to create the autumn colors shown in the photo (mixing red and yellow for orange, etc.). Display the artwork alongside the original photo and have students explain their color choices.

STEM Career Connection

Lake Scientist / Hydrologist
A hydrologist is a scientist who studies water in lakes, rivers, and underground. They visit lakes like the one in this photo to measure how deep the water is, test if the water is clean and safe for fish and people, and watch how lakes change over time. They might use special tools to catch fish and count them, or collect tiny water samples to look at under a microscope. Average Salary: $83,000–$90,000 per year

Park Ranger or Naturalist
Park rangers take care of natural places like lakes and forests. They teach visitors about the plants and animals that live there, keep the area clean and safe, and protect the lake from pollution. They might lead nature walks like the one you could take to see a lake like this, or teach kids about why fallen trees are important to the ecosystem. Average Salary: $38,000–$52,000 per year

Environmental Engineer
Environmental engineers design systems to keep lakes and water clean for people and animals. They figure out how to prevent pollution from getting into lakes, how to clean up lakes that have been damaged, and how to protect fish and plants. They might work with parks, towns, or governments to solve water problems. Average Salary: $92,000–$108,000 per year

NGSS Connections

Performance Expectation:
K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.

Disciplinary Core Ideas:
- K-ESS2.D (Weather and climate can be observed, described, and predicted)
- 2-ESS2.A (Maps show where things are located; water is found in many places)
- 2-LS4.D (Every organism has different structures that help it survive in its environment)

Crosscutting Concepts:
- Patterns (Seasonal patterns affect living things and landscapes)
- Systems and System Models (A lake is a system with water, land, and living things connected together)

Science Vocabulary

* Lake: A large area of water surrounded by land on all sides.

* Landform: A natural shape or feature of Earth's surface, like a lake, mountain, or valley.

* Seasonal: Having to do with the four seasons (spring, summer, fall, winter) and how things change during each season.

* Erosion: The slow process of water, wind, or weather wearing away and changing rocks and soil.

* Habitat: A place where plants and animals live and find everything they need to survive.

* Ecosystem: A community of living things (plants and animals) and the nonliving things (water, soil, air) in their environment that all work together.

External Resources

Children's Books:
- Come to the Lake by Jane Kurtz (explores lake ecosystems and seasonal changes)
- At the Pond by Anne Vittur Madison (simple introduction to water habitats)
- Fall Leaves by Loretta Holland (seasonal change and trees)

Teacher's Note: This photo is an excellent anchor for a unit on Earth's water, landforms, and seasonal changes. Use it at the start of a lesson cycle, return to it frequently as students learn, and encourage them to make predictions about what will happen to this lake in winter or spring!