Lake Landform

Earth & Space Science | Lesson Guide

Kindergarten

Photo Description

This image shows a calm lake surrounded by trees and land. We can see brown and orange leaves on the trees because it is fall. A large fallen tree branch is resting in the water, and the shoreline has sand and pebbles where the water meets the land.

Scientific Phenomena

Anchoring Phenomenon: Why do trees fall into lakes, and what happens to the land and water where they meet?

This image illustrates how landforms—the natural shapes of Earth's land—interact with water. Trees naturally fall due to wind, age, disease, or erosion. When they fall into water bodies like lakes, they become part of the landscape. The sandy/pebbly shoreline (the edge where land meets water) shows how water and weather continuously shape Earth's surface. Fallen trees slow water movement, provide habitats for aquatic life, and eventually decompose, returning nutrients to the ecosystem. This is a natural cycle that helps ecosystems function.

Core Science Concepts

1. Landforms and Water Bodies
   - Lakes are large areas of water surrounded by land (a type of landform).
   - Shorelines are the edges where water meets land, and they can be made of sand, pebbles, rocks, or soil.

2. Objects and Their Position in Nature
   - Trees and logs are natural objects that can be in different positions—standing, falling, or in water.
   - Objects interact with water and land in the environment.

3. Seasonal Changes
   - Fall brings changes in plants (leaves turn brown and orange, trees lose leaves).
   - These visible changes help us observe and learn about the world around us.

4. Erosion and Natural Change
   - Water and weather slowly change the shape of land over time.
   - Shorelines naturally change as water moves and objects move within it.

> **Pedagogical Tip:**
>
> For Kindergarten learners, anchor all observations to what they can directly see, touch, and experience. Use repetitive language and encourage students to use their senses (observe colors, textures, shapes) before introducing abstract concepts like "erosion." Short field walks to local water bodies or water tables in the classroom create powerful concrete experiences that make this image meaningful.

UDL Suggestions:

Multiple Means of Representation: Show this image alongside real-world photos or video clips of local lakes. Use a sensory word bank with pictures (calm, bumpy, smooth, cold, wet) so all learners can describe the water and shore. Multiple Means of Action and Expression: Allow students to show understanding through drawing, building with blocks, or acting out "falling tree" movements rather than requiring verbal explanations only. Multiple Means of Engagement: Connect the lesson to students' personal experiences: "Have you ever seen water? Have you ever played in sand?"

Zoom In / Zoom Out

Zoom In: The Microscopic World

When we look very, very closely at the fallen tree in the water, we can't see it with just our eyes, but there are teeny-tiny living things called bacteria and fungi that are eating the wood and breaking it down into smaller and smaller pieces. These invisible helpers turn the hard wood into soft, crumbly material over many months. It's like nature's recycling crew! We can't see them working, but they're always busy in the water and soil.

Zoom Out: The Watershed System

This lake is part of a much, much bigger system called a watershed. Imagine all the rain that falls on the hills and trees around this lake—it all flows downhill into the lake, like water flowing down a slide. The water in the lake is connected to underground water, streams, rivers, and even the ocean far away. Everything that happens on the land (like fallen trees, leaves, and soil) eventually affects the water. The lake is like the "catching place" for all the water and materials that flow down from the land around it.

Discussion Questions

1. What do you notice about the trees in this picture? (Bloom's: Remember | DOK: 1)
2. Why do you think the big tree fell into the water? (Bloom's: Analyze | DOK: 2)
3. How is the sandy shore different from the water? (Bloom's: Compare | DOK: 2)
4. What do you think lives in or near this lake, and why would they want to live there? (Bloom's: Evaluate | DOK: 3)

Potential Student Misconceptions

1. Misconception: "The tree fell because it's old and tired, and now it's sleeping in the water."
   - Clarification: Trees fall for reasons like strong wind, heavy snow, disease, or because roots get weak from water or soil washing away. The tree isn't alive anymore—it's no longer growing. It just stays in the water because it's heavy and can't move on its own.

2. Misconception: "The water will wash the tree away, and it will disappear."
   - Clarification: The tree will stay in the water for a very long time. Very, very slowly, tiny living things (too small to see) and weather will break it into smaller and smaller pieces over many years. But it doesn't just vanish—it becomes part of the lake ecosystem and eventually turns into soil nutrients.

3. Misconception: "The sand on the shore is the same as the sand in a sandbox at home, and it doesn't change."
   - Clarification: The sand on a shoreline is always changing, but so slowly we can't see it happening. Water, waves, wind, and rain move the sand around. Over time, the shoreline shape changes—sometimes more sand appears, sometimes it washes away.

Extension Activities

1. Water Table Exploration
Set up a water table with sand, pebbles, sticks, and containers of water. Let students build their own shorelines, place fallen "trees" (sticks) in the water, and observe how water interacts with land. Ask: "Does the sand stay still or does it move?"

2. Seasons Tree Collage
Display this image and have students create a fall tree using brown, orange, and yellow paper or leaves. Compare their trees to trees outside the window. Discuss what happened to the leaves and why.

3. Nature Walk and Observation Sketch
Take students on a short walk to a local park, pond, or stream (if available). Have them observe the shoreline, fallen branches, trees, and water. Return to class and draw or paint what they observed. Create a class "Nature Book" with their pictures.

Cross-Curricular Ideas

Mathematics Connection: Sorting and Counting
Collect fallen branches, leaves, and pebbles from outside or use classroom materials. Have students sort them by color (brown, orange, yellow), size (big/small), or type (wood/stone). Count and compare: "How many brown leaves? How many orange leaves? Which group has more?" Create a simple bar graph with pictures to show the data.

ELA Connection: Sensory Word Stories
Read the photo together and ask students to describe what they see, hear, and feel using sensory words. Create a word web on chart paper: "The water looks _____. The leaves feel _____. The shore sounds _____." Use these descriptive words to build a class story about a day at the lake. Students can draw pictures to go with the story for a class Big Book.

Art Connection: Nature Collage and Color Mixing
Have students create a fall lake scene using torn paper in autumn colors (brown, orange, yellow, red). Provide real leaves, twigs, and sand to glue onto paper. Alternatively, explore color mixing with watercolors: "How do we make orange? What happens when we mix blue and yellow (to make the water)?" Display finished artwork as a gallery walk.

Social Studies Connection: Our Community Spaces
Discuss local water bodies, parks, and natural spaces in your community. Show photos or take a virtual tour of a nearby lake, pond, or stream. Talk about who uses these spaces (families, animals, plants) and how we take care of them. Create a simple classroom "community map" with the water body, trees, and homes. Discuss: "Why is it important to keep our lakes and parks clean?"

STEM Career Connection

1. Forest Ranger or Park Naturalist
Forest rangers take care of forests, lakes, and parks. They walk through nature, watch for fallen trees, help keep water clean, and teach people like you about animals and plants. They might help remove a big fallen tree if it's blocking a path or causing problems. Average Salary: $38,000–$48,000 USD per year

2. Hydrologist (Water Scientist)
Hydrologists study water—where it comes from, how it moves, and how clean it is. They visit lakes and rivers to test the water and learn about the plants and animals living there. They help make sure lakes stay healthy for fish and other creatures. Average Salary: $82,000–$95,000 USD per year

3. Environmental Biologist or Ecologist
Environmental biologists study how plants, animals, water, and land all work together. They might visit this lake to count the fish, watch the birds, or see how the fallen tree helps create homes for tiny creatures in the water. They help us understand and protect nature. Average Salary: $65,000–$78,000 USD per year

NGSS Connections

Grade Band: K–2

Relevant Performance Expectation:
- K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.
- K-ESS3-1: Use a model to represent the relationship between the needs of different plants or animals and the places they live.

Disciplinary Core Ideas:
- K-ESS2.A Earth's materials (land, rocks, water) are all around us.
- K-ESS2.B Plants and animals depend on water, air, and land to grow and survive.

Crosscutting Concepts:
- Patterns Patterns in nature (seasons, water features, fallen trees) repeat and can be observed.
- Systems and System Models A lake is a system with living and nonliving parts that interact.

Science Vocabulary

* Lake: A large body of water surrounded by land.
* Shoreline: The edge where water meets the land.
* Landform: A natural shape or feature of Earth's land, like a lake, hill, or valley.
* Fall (season): The time of year when leaves change color and drop from trees; also called autumn.
* Erosion: The slow wearing away of land by wind, water, and weather.

External Resources

Children's Books:
- A Tree Is Nice by Janice May Udry (celebrates trees in all seasons)
- Come On, Rain! by Karen Hesse (explores water and weather)
- Seasons by Manya Stojic (observing seasonal changes in nature)

Teacher Tip: This image is rich with fall and water science concepts. Use it as a springboard for sensory exploration, seasonal observation, and outdoor discovery. Kindergarteners learn best through hands-on play—water tables, nature walks, and open-ended art activities will deepen their understanding far more than direct instruction alone.