

Photo Description



Trees around a lake have leaves that changed from green to yellow, orange, and red colors. Some leaves have fallen off the trees. The trees look different than they do in summer.

Scientific Phenomena

The anchoring phenomenon is seasonal change in deciduous trees during autumn. This happens because as daylight hours shorten and temperatures drop, trees stop producing chlorophyll (the green pigment that helps make food). Without green chlorophyll, other pigments like yellow and orange become visible. The trees also begin to seal off their leaves to conserve water and energy for winter, causing leaves to fall off. This is an adaptation that helps trees survive cold winter months when water may be frozen and unavailable.

Core Science Concepts

1. Seasonal Changes: Trees change appearance throughout the year as seasons change from summer to fall to winter
2. Plant Adaptations: Deciduous trees lose their leaves as a survival strategy for winter months
3. Observable Patterns: Leaf color changes and leaf drop happen in a predictable pattern each year
4. Living vs. Non-living: Trees are living things that respond to changes in their environment

Pedagogical Tip:

Use real leaves collected from your schoolyard to let students physically examine the different colors and textures. This hands-on exploration helps kindergarteners make concrete connections to abstract concepts.

UDL Suggestions:

Provide multiple ways to represent this concept: use actual leaf samples, color sorting activities, seasonal photos, and simple songs about fall changes to support different learning preferences and abilities.

Zoom In / Zoom Out

1. Zoom In: Inside each leaf are tiny parts called chloroplasts that contain green chlorophyll. When the tree stops making new chlorophyll, the green color disappears and we can see the yellow and orange colors that were always there.
2. Zoom Out: This seasonal change is part of a larger ecosystem cycle. Fallen leaves decompose and provide nutrients for the soil, which helps other plants grow. Animals use fallen leaves for shelter and nesting materials.

Discussion Questions

1. What do you notice about the trees in this picture that looks different from summer trees? (Bloom's: Observe | DOK: 1)
2. Why do you think trees change colors in the fall? (Bloom's: Analyze | DOK: 2)
3. What patterns do you see when you look at trees during different seasons? (Bloom's: Analyze | DOK: 2)
4. How do you think animals might use these fallen leaves? (Bloom's: Apply | DOK: 2)

Potential Student Misconceptions

1. Misconception: Trees are dying when their leaves change colors and fall off
Clarification: Trees are healthy and preparing for winter by going dormant, like animals that hibernate
2. Misconception: All trees lose their leaves in fall
Clarification: Only deciduous trees lose their leaves; evergreen trees (like pine trees) keep their needles all year
3. Misconception: Leaves change colors because they get old
Clarification: Color change is caused by the tree stopping chlorophyll production in response to shorter days and cooler temperatures

Cross-Curricular Ideas

1. Math - Sorting and Counting: Collect fallen leaves and have students sort them by color (red, orange, yellow, green). Count how many leaves of each color they found. Create a simple bar graph showing which color had the most leaves. This connects to K.MD.B.3 (classifying and counting objects).
2. ELA - Descriptive Language and Storytelling: Read fall-themed books like Leaf Man and have students dictate or draw stories about what the leaves might be doing or where they're going. Create a class book titled "Our Fall Observations" where each student contributes one page describing something they noticed about autumn using sensory words (crunchy, colorful, cool).
3. Art - Leaf Collage and Nature Crafts: Use real fallen leaves to create autumn collages and artwork. Students can arrange leaves by color, size, or shape. This hands-on artistic activity reinforces observation skills while allowing creative expression and fine motor skill development.
4. Social Studies - Community Helpers: Discuss how people in the community prepare for fall and winter (rake leaves, harvest crops, prepare homes). Invite a local gardener or park ranger to visit and explain how they care for trees and parks during seasonal changes.

STEM Career Connection

1. Forest Ranger/Park Naturalist (\$35,000-\$45,000 annually): Forest rangers take care of trees and plants in parks and forests. They watch the trees through all four seasons, help keep the forest healthy, and teach visitors like us why trees change colors in the fall. They work outside and get to learn about nature every day!
2. Botanist (\$42,000-\$65,000 annually): Botanists are scientists who study plants and trees. They ask questions like "Why do leaves change color?" and "How do trees know when it's fall?" and then do experiments to find the answers. They might work in laboratories or outdoors collecting plants and observing how they change with the seasons.

3. Environmental Educator (\$32,000-\$50,000 annually): Environmental educators teach people of all ages about nature and seasons. They might work at nature centers, museums, or schools and help kids understand why trees look different in fall. They use pictures, real leaves, and outdoor activities to help others learn to appreciate and care for the natural world.

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
- Crosscutting Concepts: Patterns

Science Vocabulary

- * Deciduous: Trees that lose all their leaves each fall
- * Seasons: Different times of year with different weather patterns
- * Adaptation: Ways living things change to survive in their environment
- * Chlorophyll: The green substance in leaves that helps trees make food
- * Pattern: Something that happens the same way over and over

External Resources

Children's Books:

- Why Do Leaves Change Color? by Betsy Maestro
- Leaf Man by Lois Ehlert
- Fletcher and the Falling Leaves by Julia Rawlinson