

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

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

YouTube Videos:

- "Why Do Leaves Change Color? | SciShow Kids" - Simple explanation of chlorophyll and seasonal changes: <https://www.youtube.com/watch?v=CpEzQMp58Cg>
- "Fall Songs for Children - Autumn Leaves are Falling Down" - Educational song about fall changes: <https://www.youtube.com/watch?v=qOLPCdVGLB0>