Fall Seasons

Earth & Space Science | Lesson Guide

2nd Grade

Photo Description

This image shows a yard covered with colorful fallen leaves in red, yellow, orange, pink, and brown. The grass is still green underneath, and you can see a house with a basketball hoop in the background. The leaves have changed colors and fallen from the trees—this is what happens during autumn, or fall.

Scientific Phenomena

Anchoring Phenomenon: Why do leaves change color and fall off trees in autumn?

Scientific Explanation: As days get shorter and temperatures drop in fall, trees prepare for winter by stopping the flow of water and nutrients to their leaves. The green color in leaves (chlorophyll) breaks down, revealing hidden yellow and orange colors underneath. Eventually, the leaves dry out and fall to the ground. This is a natural cycle that helps trees survive the cold winter months when there is less sunlight and water available.

Core Science Concepts

* Seasonal Changes: Earth's position relative to the sun changes throughout the year, causing seasons. Fall is a season with cooler temperatures and shorter days.

* Plant Life Cycles: Trees go through changes each season. In fall, trees drop their leaves as part of preparing for winter.

* Color Changes in Nature: Leaves contain different pigments (colors). When chlorophyll (green) breaks down, yellow, orange, and red colors become visible.

* Observable Patterns: Seasons follow a predictable pattern that repeats every year—fall always follows summer and comes before winter.

Pedagogical Tip:

Use this image as an opportunity to connect the abstract concept of "seasons" to students' direct experiences. Ask students to think about what they've noticed changing in their own neighborhoods. Create a classroom "season anchor chart" together where students can add drawings or descriptions of fall signs they observe over several weeks. This builds ownership of scientific observation skills.

UDL Suggestions:

Multiple Means of Representation: Show the image on a large screen and use a pointer to highlight different elements (leaves, grass, house). Pair the visual with tactile experiences—bring in real fallen leaves for students to touch, examine with magnifying glasses, and sort by color.

Multiple Means of Action & Expression: Allow students to show understanding through drawing, verbal discussion, or sorting activities rather than writing-only responses. Create a leaf-sorting station where students organize leaves by color, size, or shade rather than requiring written descriptions.

Multiple Means of Engagement: Connect to student interests by asking, "Have you jumped in a pile of leaves?" or "What's your favorite fall color?" Personal connections increase motivation and engagement.

Discussion Questions

1. What changes do you see happening to the leaves in this picture, and why do you think that's happening?
   (Bloom's: Analyze | DOK: 2)

2. If you collected these leaves and kept them in a warm, sunny place, do you think they would change back to green? Why or why not?
   (Bloom's: Evaluate | DOK: 3)

3. Where do you think all these leaves came from, and what do you think happens to them after they fall on the ground?
   (Bloom's: Understand | DOK: 2)

4. How is fall different from summer? What would you expect to see in this same yard during summer?
   (Bloom's: Compare | DOK: 2)

Extension Activities

1. Fall Color Walk & Collection: Take students on a neighborhood walk to observe and collect fallen leaves of different colors. Return to class and sort leaves by color, size, and shape. Press leaves between wax paper using a warm iron (teacher-supervised) to create a fall display. Students can draw predictions about what will happen to fresh leaves left in a dry, warm place versus a cool, damp place.

2. Seasonal Comparison Photo Project: Take photos of the same outdoor location (school playground, nearby tree, etc.) once per week for 4-6 weeks. Display photos in order and discuss changes. Create a class book titled "Our Neighborhood Through the Seasons" with student illustrations and simple captions describing what changed.

3. Tree Study Over Time: Adopt a tree outside the classroom to observe throughout fall. Students sketch the tree weekly, noting colors, number of leaves, and ground coverage. Create a simple bar graph showing how many leaves they estimate are on the tree each week. Discuss patterns they notice.

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 (seasonal patterns)
* 1-LS1.A - Structure and Function (plants have different parts and needs)

Crosscutting Concepts:
* Patterns - Seasons follow patterns that repeat every year
* Cause and Effect - Shorter days and cooler temperatures cause changes in plants

Science Vocabulary

* Autumn (or Fall): The season after summer when leaves change color, the weather gets cooler, and days get shorter.

* Chlorophyll: The green color in leaves that helps plants make food using sunlight.

* Deciduous Trees: Trees that lose all their leaves in fall and grow new ones in spring.

* Season: A time of year with its own weather patterns and changes in nature (spring, summer, fall, winter).

* Pigment: Natural colors found in plants and other living things.

* Leaf: The flat green part of a plant that makes food for the plant using sunlight.

External Resources

Children's Books:

Fall Leaves* by Loretta Holland (simple, beautifully illustrated board book perfect for Second Grade)
Why Do Leaves Change Color?* by Betsy Maestro (explains the science in accessible language)
Come On, Rain!* by Karen Hesse (celebrates seasonal weather changes through poetic language)

YouTube Videos:

* "Why Do Leaves Change Color?" by National Geographic Kids (2:30 minutes, animated explanation with clear visuals) — https://www.youtube.com/watch?v=Dh-zCzSSi0U

* "The Seasons Song" by CoComelon (3:00 minutes, engaging song about all four seasons with clear visual examples) — https://www.youtube.com/watch?v=8bngVfWQPSo