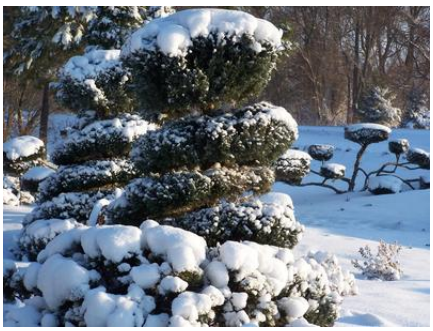
Winter Seasons

Earth & Space Science | Lesson Guide

Kindergarten

Photo Description



This image shows evergreen trees covered with thick, fluffy snow during winter. The white snow sticks to the dark green branches and needles, creating a beautiful contrast. You can see the trees are still standing tall even with all the heavy snow on top of them.

Scientific Phenomena

Anchoring Phenomenon: Snow accumulation on evergreen plants during winter

Why This Is Happening:
When winter arrives, temperatures drop below freezing (32°F or 0°C). Water in the air forms ice crystals instead of rain—this is snow. The snow falls and collects on the branches and needles of evergreen trees because the trees stay green all year long, unlike deciduous trees that lose their leaves. The shape of evergreen branches (especially on conifers like pines and spruces) naturally catches and holds snow. This is a normal seasonal change that happens every winter in cold climates.

Core Science Concepts

* Seasonal Weather Changes: Winter is a season when temperatures become very cold, and water falls as snow instead of rain. Snow only forms when it is cold enough.

* Properties of Snow: Snow is frozen water that falls from clouds. It is white, cold, and can pile up on surfaces like branches, ground, and roofs.

* Evergreen Trees: Some trees keep their leaves (needles) all year long, even in winter. These are called evergreens. Deciduous trees lose their leaves in fall, but evergreens do not.

* Seasonal Plant Adaptations: Evergreen trees have special needles and waxy coatings that help them survive cold, snowy winters. Their branches are shaped to shed heavy snow so they don't break.

Pedagogical Tip:

For Kindergarteners, focus on observable, sensory-friendly language: "Look at the white, fluffy snow!" rather than abstract concepts. Use real objects like branches and artificial snow in your classroom to let children touch and explore. Kinesthetic experiences help young learners understand seasonal changes better than pictures alone.

UDL Suggestions:

Multiple Means of Engagement: Bring in branches from outside (safe, clean ones) and let students feel the texture. Allow them to build mini snow scenes with cotton balls and green paper to represent the image. For students who may not have experienced real snow, provide tactile substitutes (shaving cream, cotton, foam) so all learners can connect to the phenomenon.

Discussion Questions

1. What do you notice on the branches of these trees? (Bloom's: Remember | DOK: 1)

2. Why do you think snow stays on evergreen trees better than it would on a tree with no leaves? (Bloom's: Analyze | DOK: 2)

3. How is snow different from rain? (Bloom's: Compare | DOK: 2)

4. What happens to snow when the weather gets warmer? (Bloom's: Predict | DOK: 3)

Extension Activities

1. Snow Sensory Exploration: If you live in a snowy climate, take students outside to observe and touch real snow (with proper clothing and safety). Have them notice how cold it is, how it feels, and where it accumulates. If snow is unavailable, use shaving cream or cotton balls indoors as a safe alternative.

2. Evergreen Branch Decorating: Collect safe, clean evergreen branches from outside. Let students decorate them with cotton balls (to represent snow), paper snowflakes, and other winter decorations. Display in the classroom as a winter science center.

3. Sorting Activity - Evergreen vs. Non-Evergreen: Show pictures of different trees. Have students sort them into two groups: "Keeps leaves all year" (evergreen) and "Loses leaves in fall" (deciduous). Discuss why evergreens are better at holding snow.

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 (Snow and cold are patterns we observe every winter)
* Cause and Effect (Cold temperatures cause water to become snow)

Science Vocabulary

* Snow: Frozen water that falls from clouds when it is very cold.
* Winter: The coldest season of the year when snow often falls.
* Evergreen: A plant that stays green all year long and does not lose its leaves or needles in winter.
* Freeze: When something gets so cold that water turns into ice.
* Needles: The thin, pointy leaves on evergreen trees like pine and spruce trees.
* Accumulate: When something piles up or gathers in one place over time.

External Resources

Children's Books:
Stranger in the Woods* by Carl R. Sams II and Jean Stoick (features forest animals and winter scenes)
Snow* by Manya Stojic (explores winter weather and what happens in snow)

Winter is Here* by Jean McElroy (introduces seasonal changes appropriate for Kindergarten)

YouTube Videos:
* "Seasons Song for Kids" - CoComelon (2:15 minutes) — A catchy, animated song about all four seasons with clear visuals. https://www.youtube.com/watch?v=o_eJ6wm6Iyo

* "What is Winter? | Seasons for Kids" - Kids Learning Videos (4:30 minutes) — Explains winter weather, snow, and how animals and plants adapt. https://www.youtube.com/watch?v=p5fXgwLqTdw