

## Photo Description



This image shows snow falling on a brick building surrounded by ivy-covered trees and courtyard spaces. You can see white snowflakes actively falling from the sky, covering the ground, roof, and trees in a winter weather event. This is a perfect example of precipitation—water falling from clouds to Earth's surface.

## Scientific Phenomena

Anchoring Phenomenon: Active snowfall (frozen precipitation occurring in real time)

Why It's Happening:

Snow forms when water vapor in clouds freezes into ice crystals because the air temperature is below 32°F (0°C). As these ice crystals grow larger and heavier, they fall to Earth as snowflakes. This is part of the water cycle—a continuous process where water evaporates, forms clouds, and returns to Earth as precipitation.

## Core Science Concepts

- \* The Water Cycle: Water moves between Earth's surface and atmosphere through evaporation, condensation, precipitation, and collection. Snow is one form of precipitation.
- \* States of Matter and Temperature: Water can exist as a solid (ice/snow), liquid (rain), or gas (water vapor). Temperature determines which state water is in.
- \* Weather Patterns and Precipitation Types: Different types of precipitation (rain, snow, sleet, hail) form under different atmospheric conditions. Snow occurs when it's cold enough for water droplets to freeze.
- \* Cloud Formation: Clouds form when water vapor condenses around tiny particles in the air. Different cloud types produce different types of precipitation.

### Pedagogical Tip:

Fourth graders benefit from concrete, observable examples. Use this snowy image to anchor abstract water cycle concepts. Ask students to trace a water molecule's journey: "If that snowflake melts, where does the water go?" This helps them see the cycle as continuous and connected to their world.

### UDL Suggestions:

To support diverse learners: (1) Provide visual water cycle diagrams alongside the photo for students who need visual scaffolding; (2) Allow students to draw or label the water cycle stages rather than write; (3) Offer tactile experiences like handling ice cubes or observing water evaporation in sealed bags to engage kinesthetic learners; (4) Use multiple representations—photos, diagrams, and real objects—to make the concept accessible to all learners.

### Discussion Questions

1. "What do you think happens to all this snow when spring arrives and the weather gets warmer?" (Bloom's: Understand | DOK: 1)
2. "Why do you think snow falls in winter but rain falls in other seasons? What's different about the air?" (Bloom's: Analyze | DOK: 2)
3. "If you traced one snowflake from the moment it forms in a cloud until it melts in spring, what journey would it take?" (Bloom's: Evaluate | DOK: 3)
4. "How might this snowy weather affect the plants and animals shown in the picture over the next few months?" (Bloom's: Analyze | DOK: 2)

### Extension Activities

1. Snowflake Study: If snow is available, collect fresh snowflakes on dark paper or cloth and observe them with magnifying glasses. Compare different snowflakes and discuss why each one has a unique pattern. Connect to the idea that ice crystals form in different shapes based on temperature and humidity conditions.
2. Water Cycle in a Bag: Create a mini water cycle experiment by placing water in a sealed plastic bag, taping it to a sunny window, and observing evaporation and condensation over several days. Have students draw and label what they observe, connecting it to the snowfall phenomenon in the photo.
3. Snow Measurement and Prediction: If snow falls during the school year, have students measure snowfall daily using a ruler or snow gauge. Create a graph to track accumulation over time and make predictions about when snow might melt based on temperature forecasts. This connects to weather patterns and data collection.

### NGSS Connections

Performance Expectation:

4-ESS2-1: Make observations and measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

Disciplinary Core Ideas:

- 4-ESS2.A Earth's materials are made from minerals and rocks. Different kinds of rocks form from different processes.
- 4-ESS3.B Natural hazards are processes or events in the physical environment that humans find inconvenient, damaging, or fatal.

Crosscutting Concepts:

- Patterns Weather patterns repeat in predictable ways; snow is more common in winter.
- Cause and Effect Cold temperatures cause water vapor to condense and freeze into snow.
- Systems and System Models The water cycle is a system where water continuously moves between Earth and atmosphere.

### Science Vocabulary

- \* Precipitation: Water that falls from clouds to Earth in the form of rain, snow, sleet, or hail.
- \* Snowflake: A single crystal of ice that forms when water vapor freezes in cold clouds.

- \* Condensation: The process where water vapor (a gas) cools and turns into liquid water droplets or ice crystals.
- \* Evaporation: The process where liquid water turns into water vapor and rises into the atmosphere.
- \* Freezing Point: The temperature (32°F or 0°C) at which water turns from a liquid into a solid (ice).
- \* Weather: The condition of the atmosphere at a specific place and time, including temperature, precipitation, and wind.

### External Resources

#### Children's Books:

- The Snowy Day by Ezra Jack Keats — A classic picture book showing a child's winter adventure and how snow changes the landscape
- Snow by Manya Stojic — A picture book that explores snow and winter from multiple perspectives
- Come On, Rain! by Karen Hesse — While focused on rain, this book beautifully illustrates precipitation and the water cycle in poetic language

#### YouTube Videos:

- "The Water Cycle for Kids" by National Geographic Kids — A clear, animated explanation of evaporation, condensation, and precipitation (approximately 3 minutes). URL: <https://www.youtube.com/watch?v=BkqJOVVH5mk>
- "How Snowflakes Form" by Crash Course Kids — An engaging explanation of how water vapor freezes into snowflakes in clouds (approximately 4 minutes). URL: [https://www.youtube.com/watch?v=h\\_-FIJG8o8E](https://www.youtube.com/watch?v=h_-FIJG8o8E)