

## Photo Description



This image shows snow falling on a brick courtyard surrounded by ivy-covered trees and buildings. You can see white snowflakes falling from gray clouds, landing on the ground, buildings, and plants below. The snow is a type of precipitation—water falling from clouds to Earth's surface.

## Scientific Phenomena

Anchoring Phenomenon: Snowfall (frozen precipitation)

### Why It's Happening:

Snow occurs when water vapor in the atmosphere condenses into ice crystals instead of water droplets. This happens when temperatures in the clouds and air are cold enough (below 32°F/0°C). The ice crystals stick together, becoming heavy enough to fall to the ground as snowflakes. Snow is part of the water cycle—a continuous process where water evaporates from Earth's surface, forms clouds, and returns to Earth as precipitation in different forms depending on temperature.

## Core Science Concepts

1. Precipitation Types: Water falls from clouds in different forms—rain, snow, sleet, and hail. Snow is precipitation that forms when it's cold enough for water to freeze into ice crystals.
2. Temperature and State of Matter: Water changes form based on temperature. When it's very cold, water freezes into solid ice crystals that make snowflakes. When it's warmer, water stays liquid or becomes a gas (water vapor).
3. The Water Cycle: Water continuously moves between Earth's surface and the atmosphere. Evaporation (water rising), condensation (forming clouds), and precipitation (falling water/snow) are all connected stages.
4. Weather Patterns and Observation: Snow is a visible weather event that students can observe and measure. Recording precipitation helps us understand weather patterns and seasons.

### Pedagogical Tip:

Start by activating prior knowledge: Ask students "What do you already know about snow?" before diving into the science. This honors their lived experiences and creates a foundation for new learning. Many third graders have personal memories of snow play, which makes this phenomenon personally relevant and motivating.

### UDL Suggestions:

Representation: Provide a visual water cycle diagram showing how snow fits into the larger cycle. Use multiple modalities—show the image, draw it together, and use a physical model (cotton balls as clouds, water droplets, etc.) so students can engage visually, kinesthetically, and verbally. Action & Expression: Allow students to choose how they demonstrate understanding: they can draw snow falling, write observations, create a model, or act out the water cycle.

## Discussion Questions

1. "What has to happen to the water in the clouds for it to become snow instead of rain?" (Bloom's: Analyze | DOK: 2)
2. "If it was warmer outside, what do you think would fall instead of snow? Why?" (Bloom's: Evaluate | DOK: 3)
3. "Where do you think the water in this snow came from before it was a cloud?" (Bloom's: Understand | DOK: 1)
4. "How could we measure how much snow falls in our schoolyard, and why would that be helpful?" (Bloom's: Create | DOK: 3)

## Extension Activities

1. Snow Observation & Measurement Station: After a snowfall (or using ice/crushed ice as a substitute), have students measure snowfall depth using a ruler or stick marked with inches. They can record their measurements in a chart and make predictions about future snowfall. This builds data collection and graphing skills while connecting to the NGSS PE.
2. Make a Snow Crystal Model: Provide pipe cleaners and string to students. They'll design their own "snowflake" by arranging materials into six-pointed shapes (reflecting real snowflake geometry). Discuss why snowflakes have patterns and connect this to how ice crystals form in specific shapes due to cold temperatures.
3. Water Cycle in a Bag Experiment: Create a sealed plastic bag with a small amount of water and tape it to a sunny window. Students observe evaporation, condensation on the bag's sides, and the continuous cycle. They can draw and label the process, connecting it to the snow in the photo as another part of the same water cycle.

## NGSS Connections

Performance Expectation:

3-ESS2-1: Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

Disciplinary Core Ideas:

- 3-ESS2.D (Weather and Climate) – Students observe that weather varies day-to-day and across seasons, and that precipitation appears in different forms.

Crosscutting Concepts:

- Patterns – Snow and precipitation follow patterns related to seasons and temperature  
- Cause and Effect – Cold temperatures cause water to freeze into snow rather than fall as rain

## Science Vocabulary

- \* Precipitation: Water that falls from clouds to Earth, such as rain, snow, sleet, or hail.
- \* Snowflake: A small crystal of ice that forms in clouds and falls as snow.
- \* Freezing: The process when a liquid (like water) turns into a solid (like ice) because it gets very cold.
- \* Water Vapor: Invisible water in the form of a gas that rises from Earth into the atmosphere.
- \* Condensation: The process when water vapor cools down and turns into tiny water droplets that form clouds.
- \* Temperature: How hot or cold something is, measured with a thermometer.

## External Resources

Children's Books:

- Snowflakes by Loretta Holland (National Geographic Little Kids)
- Up in the Clouds: Individual Stories of Snowflakes by Jonathan Adolph
- Come On, Rain! by Karen Hesse (explores precipitation and water cycle through narrative)

### YouTube Videos:

- "The Water Cycle Song" by Have Fun Teaching – A catchy, animated explanation of evaporation, condensation, and precipitation. Approximately 3 minutes. <https://www.youtube.com/watch?v=cbV44pFc5b8>
- "How Snowflakes Form" by National Geographic Kids – Shows the science behind snow crystal formation with clear visuals. Approximately 4 minutes. [https://www.youtube.com/watch?v=1W\\_z1l3Uxs0](https://www.youtube.com/watch?v=1W_z1l3Uxs0)

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Teacher Tip: This image is ideal for a seasonal lesson during winter months or as an introduction to precipitation. Consider having students compare this snow photo to images of rain or hail to build understanding of how temperature affects precipitation type. You might also have students collect and observe real snowflakes with magnifying glasses if your region experiences snow!