



## Weather Changes

### Science

It has been stated that fog comes on “little cat feet.” The same can be said for snow, falling softly in silence. Snow, made of water and crystals, each flake so unique, and making for a winter wonderland.

### National Standards > Science

#### **NS.K-4.4 Earth and space science (Grades K-3)**

- Properties of earth materials
- Objects in the sky
- Changes in earth and sky

#### **NS.K-4.1 Science as inquiry (Grades K-3)**

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

### Kentucky: Science Standards > Earth and Space Science

2. Students shall develop their abilities to apply core concepts and principles from mathematics, the sciences, the arts, the humanities, social studies, practical living studies, and vocational studies to what they will encounter throughout their lives.

#### **Conceptual Understandings > Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.2-2.6) Grades K-3**

#### **2.2 Patterns of Change, 2.6 Change Over Time**

- 2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.
- 2.6 Students understand how living and nonliving things change over time and the factors that influence the changes.

**SC-E-2.3.1** The surface of the Earth changes. Some changes are due to slow processes such as erosion or weathering. Some changes are due to rapid processes such as landslides, volcanic eruptions, and earthquakes.

**SC-E-2.3.2** Weather changes from day to day and over seasons. Weather can be described by observations and measurable quantities such as temperature, wind direction and speed, and precipitation.

#### **Scientific Inquiry, Scientific Ways of Thinking and Working (2.1) Grades K-3**

2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems.

- Ask simple scientific questions that can be investigated through observations combined with scientific information.
- Use simple equipment (e.g., magnifiers, magnets), tools (e.g., metric rulers, thermometers), skills (e.g., classifying, predicting), technology (e.g., electronic media, calculators, World Wide Web), and mathematics in scientific investigations.

- Use evidence (e.g., observations, data) from simple scientific investigations and scientific knowledge to develop reasonable explanations.
- Design and conduct simple scientific investigations.
- Communicate (e.g., draw, graph, write) designs, procedures, observations, and results of scientific investigations.
- Review and ask questions about scientific investigations and explanations of other students.

**Ohio: Science>Earth and Space Sciences**

- Demonstrate an understanding about how Earth systems and processes interact in the geosphere.
- Understanding the properties and interconnected nature of Earth's systems, processes that shape the Earth and Earth's history.
- Demonstrate an understanding of how the concepts and principles of energy, matter, motion and forces explain Earth systems.

**Benchmark(s) Grades K-2**

C. Observe, describe and measure changes in the weather, both long term and short term.

*Note: Grade 1 science emphasis is on resources obtained from living and nonliving things.*

**Benchmark(s) Grade 3**

C. Describe Earth's resources including rocks, soil, water, air, animals and plants and the ways in which they can be observed.

*Note: Grade 3 science emphasis is on Earth's resources—rocks, soil and water and air, and the effect of weathering on rock formation.*

**Ohio: Science>Scientific Inquiry**

- Develop scientific habits of mind as they use the processes of scientific inquiry to ask valid questions and to gather and analyze information.
- Develop hypotheses and make predictions.
- Reflect on scientific practices as they develop plans of action to create and evaluate a variety of conclusions.
- Communicate findings to others.

**Benchmark(s) Grades K-2**

A. Ask a testable question

B. Design and conduct a simple investigation to explore a question.

C. Gather and communicate information from careful observations and simple investigation through a variety of methods.

**Benchmark(s) Grade 3**

B. Organize and evaluate observations, measurements and other data to formulate inferences and conclusions.

**Objective**

Students will:

- Understand and explore the concept of weather and weathering.
- Understand and explore the role of weather in the formation of snowflakes.

## **Assessment**

Student will be able to:

- Recognize weather elements.
- Observe and describe local weather conditions
- Classify criteria for “good” and “bad” weather
- Research authentic questions about the formation of snowflakes

Sample items to gauge student understanding:

1. What is a word we use to tell what is happening outside with regards to how hot or cold it is, or how sunny or cloudy it is? (*weather*)
2. Explain why is it important to study weather? (*Understand its impact on shaping and reshaping the Earth; understand how the Earth renews its natural resources*)
3. Describe (tell about) your understanding of how snow/snowflakes are formed? (*key points—made of frozen water; involves the formation of crystals.*)

## **Vocabulary**

- Weather
- Weathering

## **Materials**

- Weather log handout for duplication to create student weather logs
- K-W-L graphic organizers (1 per student)

## **Activity 1**

### **Rain, rain go away, freeze and make snowflakes**

**The teacher will:**

1. Introduce/review the concept of weather through class discussion of what makes weather—temperature, moisture, winds and other meteorological phenomena.
2. Have students describe their conception of “good” vs. “bad weather.”
3. Discuss with students terms used to describe both concepts.
4. Have students observe and describe weather conditions for several days and record observations in a weather log. Students will also indicate if the observed weather was “good” or “bad”.

**Students will:**

1. Explore the concept of weather.
2. Observe and describe local weather conditions over several days.
3. Classify weather conditions as either “good” or “bad” and explain criteria for each.

## **Activity 2**

### **Sun, Clouds, Rain, Snow**

**Teacher will:**

1. Continue with students the exploration of weather conditions.
2. Have students to reflect and describe the weather depicted in the setting for the Children's Theatre production, Frosty: A Magical Adventure. (*frosty, snowy winter*)
3. Ask students if they know how snowflakes are made, and record their answers in the first column of a 'K-W-L' organizer (What I Know, What I Want to Know, What I Learned)
4. Have students generate questions regarding snowflake formation for what they want to know. (Second column > What I Want to Know).
5. Have students research their questions with age appropriate resources and record relevant information on the K-W-L organizer. (Third column > What I Learned)
6. Have students share their findings using both text and graphics to design a poster, booklet or multimedia project explaining how snowflakes are made.

**Student will:**

1. Explore the formation of snowflakes through research and use of authentic questioning.
2. Record prior knowledge, questions and findings on a K-W-L organizer.
3. Create a product using text and graphics to explain the formation of snowflakes.

**Grade 3 (extension)**

**Teacher will:**

1. Introduce/review the concept and term, "weathered".
2. Have students explore and research the impact of weather and snow on natural settings.

**Students will:**

1. Extend their research to discover the role of weather and snow for soil and rock formation in natural settings.





**Student Handout: Science  
K-W-L Organizer**

Name \_\_\_\_\_

**K-W-L**

<b>What I Know (my prior knowledge)</b>	<b>What I Want to Know (my questions)</b>	<b>What I Learned (my discoveries)</b>