

Observing Weather

OBJECTIVES

Students discuss weather and its effect on their lives.

The students

- ▶ observe, describe, and record the weather using words and pictures
- ▶ discuss how weather affects everyday life
- ▶ conclude that weather changes from day to day
- ▶ discover that weather varies from place to place

SCHEDULE

Session I About 30 minutes, followed by daily weather observations for 5 days

Session II About 20 minutes

VOCABULARY

air
observe
record
weather

MATERIALS

For each student

- 1 Activity Sheet 1

For each team of two

- 1 box crayons or colored pencils*

For the class

- 1 calendar sheet
- 1 map, United States outline, laminated
- 1 set markers, erasable, assorted colors
- 1 roll tape, masking
- 1 weather page, national, newspaper or Internet*

*provided by the teacher

PREPARATION

Session I

- 1 Make a copy of Activity Sheet 1 for each student.
- 2 You will need to hang the first monthly calendar sheet in a convenient location for long-term use recording daily weather conditions. Decide whether you will add the month and year at the top and the numbers of the days in the grid squares ahead of time or during class with student participation.

Session II

You will need the weather page from a newspaper or an Internet weather site showing national weather conditions; the laminated outline map of the United States; and erasable markers.

BACKGROUND INFORMATION

Weather is the condition of the **atmosphere**—the blanket of **air** that surrounds Earth—at a certain time and place. Earth's atmosphere is approximately 1,000 kilometers (600 miles) thick and is made up of several layers. Weather occurs in the troposphere, the lowest and densest of the atmospheric layers. The

troposphere is between 10 and 20 kilometers (6 and 12 miles) thick and contains about 95 percent of all the air in the atmosphere.

Weather is different from climate. **Climate** is the average weather in an area over a long period of time. Climate, which is described in terms of the average temperature of a region and the average amount of rain or snow a region receives, generally stays the same from year to year.

In contrast, weather is the condition of the air over a brief period of time and can change from day to day—even hour to hour. Weather also changes markedly from season to season. Of course, at any given time the weather varies from place to place, too. For example, it may be warm and sunny in New York City while it is cloudy and cool in San Francisco; it may be raining in one part of town and dry just a few blocks away.

The weather affects almost every aspect of our lives, from what we wear and what we do, to where we go and how we get there. Farmers and sailors watch the weather closely. So do construction workers and airline pilots. People leaving for work and people leaving on vacation are also interested in the weather.

In addition, weather in one part of the country can affect people in another part of the country. For example, a cold snap in Florida can cause an increase in the price of oranges in Maine. Heavy winter snowfall in the Rocky Mountains can cause spring flooding on the plains. A hurricane over Bermuda can cause heavy surf along the mid-Atlantic coastline.

In this activity, students **observe** and describe the weather and its effects on their lives. They also **record** each day's weather on a class calendar and become aware that weather can change from day to day and can vary from place to place.

▼ Activity Sheet 1

Observing Weather

Tell about the weather. Use a weather word. Draw a weather picture. Do this for 5 days.

| Day | Weather Word | Weather Picture |
|-----|--------------|---|
| 1 | _____ | Students' weather words and pictures will vary depending on the weather each day. |
| 2 | _____ | |
| 3 | _____ | |
| 4 | _____ | |
| 5 | _____ | |

Guiding the Activity

Session I

1

Look around the classroom and comment on some of the clothing that children are wearing. Ask, **How did you decide what to wear to school today?**

Ask, **Did you wear anything especially because of today's weather?**

Ask, **What do you wear on a rainy day?**

Ask, **What do you wear on a very cold day?**

Ask, **What do you wear on a very hot day?**

Tell students that they will be going outdoors to observe what the weather is like today. Write *observe* on the board. Explain that when we **observe**, we use our senses to learn what something is like. Discuss the five senses: seeing, hearing, tasting, smelling, and touching or feeling. Ask, **What senses can we use to observe what the weather is like today?**

Take the students outdoors and have them describe the weather today. Encourage them to use words like *sunny, cloudy, windy, rainy, foggy, snowy*, and so forth.

Additional Information

Students may mention specific activities that they are participating in, or they may say they are wearing favorite clothes or something new. Steer discussion toward clothing choices based on weather.

Answers will vary. Students may mention short-sleeved shirts, jackets, hats, coats, and so forth.

raincoat, boots, umbrella

coat or jacket, hat, mittens, scarf (depending on your geographic location)

shorts, sundress, T-shirt, sandals

Students may mention seeing clouds or sunshine, hearing wind or rain, feeling warm or cold, or touching rain.

Guiding the Activity

- 2 Back in the classroom, write these and other weather words in a list on the board (see Figure 1-1). As a class, come up with a simple picture or symbol for each weather word. Then write the word *weather* at the top of the list. Ask, **What is weather?**

Tell students that **weather** is what the air outside is like at a certain place and time. Write *air* on the board, and explain that air is all around us. **Air** is the mix of gases that surrounds Earth. Invite students to share what they know about air. Point out that we cannot see air, but we know it is there. We can feel it when it blows against our faces as wind. We can see it move objects, such as flags and leaves. Have students think about a balloon or a bicycle tire. These things are filled with air, so we know that air takes up space.

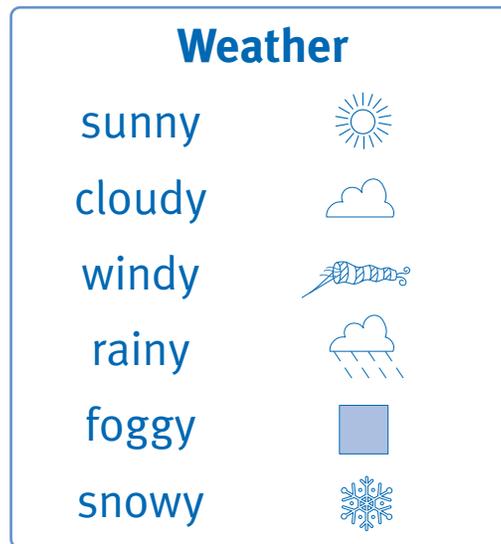
Weather includes how hot or cold the air is, how the air moves as wind, and what the air carries in the sky—such as clouds, rain, and snow. Weather is what the sky and air are like each day.

- 3 Direct students' attention to the calendar sheet. Review with students the names of the months. Ask a student volunteer to identify the current month, and then write the month and the year on the calendar. Next, review the days of the week. Show students the names of the days on the calendar, and ask a volunteer to identify the current day of the week. Find the square representing today. Invite a student to record today's weather in that square using a weather word or picture from the list on the board.

Tell students that you will be using the class calendar to record weather every day. Later, you can compare the weather from day to day and from month to month and see if and how it changes.

Additional Information

Students may say sunny or cloudy, or they may describe what is happening in the sky or in the air outdoors. Accept all reasonable answers.



▲ *Figure 1-1. Some common words and pictures used to describe the weather.*

See Preparation, page 13, for options in preparing the calendar for use.

Guiding the Activity

Have students take turns observing and recording the weather on the calendar each day throughout the year.

- 4 Remind students that they observed weather with their senses. Ask, **What did you observe about the weather when we were outdoors?**

Distribute a copy of **Activity Sheet 1** to each student. Tell students to observe the weather each day for the next 5 days and record their observations—in words and pictures—on the activity sheet. Fill in Day 1 together, using the observations on the class calendar as a guide.

Write *record* on the board. Explain to students that when they **record** what they observe, they are writing it down in words or pictures or both. Point out that recording helps them remember what they observed. It also lets them share their observations and ideas with others.

Have students make and record weather observations for the next 4 days, at the same time each day, if possible.

Session II

- 5 On the fifth day, have students retrieve and complete their activity sheets. Review their observations, both those on the activity sheets and those on the ongoing calendar record. Ask, **What did you notice about the weather this past week?**

Confirm that weather can change from day to day. Then ask students, **Do we know for certain what the weather will be like tomorrow or the next day?**

Additional Information

Save the calendar sheets for each month so that you can display them in sequence and compare weather in different seasons.

Accept all reasonable answers.

Leave the list of weather words and pictures on the board, or create a weather word wall for use throughout the module. Students can refer to this list when they record their observations.

Students may say that it was rainy or sunny or windy on different days this past week. Accept all reasonable answers, but elicit that the weather can change from day to day.

Generally, no. Students may say that sometimes they see a weather report on TV that tells what the weather will be, but we do not know for certain.

Guiding the Activity

Explain that scientists who observe and measure weather are called meteorologists. Meteorologists use this information to make predictions about future weather. The predictions are called forecasts. Weather forecasts are a regular part of TV news programs and may also be heard on the radio and viewed on the Internet.

Ask, **Why are weather forecasts important? Why is it helpful to know what the weather will be?**

Elicit that knowing what the weather will be can help people plan activities and decide what to wear. Some people have jobs that are affected by the weather—for example, people who work outdoors, such as farmers and builders. Pilots need to know if the weather will be safe for flying.

6 Ask, **Do you think today's weather is the same everywhere?**

Ask if anyone can tell you what a map is. Elicit that a map is a drawing of an area. Sketch a simple map of the school grounds on the board as an example of a map. Identify such landmarks as the school building, parking lot, playground, and the like. Invite students to tell about times when their families have used maps.

Display the outline map of the United States, and ask, **What do you think this map shows?**

Work as a class to locate your state on the map. Use an erasable marker to label it and to mark the approximate location of your community. Invite a volunteer to record today's weather word or symbol on the map near where you live.

Additional Information

Accept all reasonable responses. For example, if we know it will be rainy all day, we know we cannot play outside, our soccer game will be cancelled, we need to wear a raincoat to school, the school bus may be late, and so on.

Accept all answers. Some students may know that weather is different in different places.

Some students may recognize it as a map of the United States.

Guiding the Activity

Show students the national weather page that you have obtained from the newspaper or Internet and explain to them what it is. Using the weather page, give examples that show the variety of weather that occurs in the United States every day. For example, describe today's weather in California and Florida. Point to the states on the map so that students can see whether they are near or far from your location. Ask, **Is today's weather in California (or another state) the same as ours?**

Review that weather is what the sky and air are like each day. Weather can change from day to day and can vary from place to place. Explain to students that in the coming activities they will learn more about weather and the sky.

Additional Information

Elicit that weather is different in different places. This is true all over the world, not just in the United States.

REINFORCEMENT

Students can make a bulletin board of "weather webs." Have them cut pictures from magazines showing different types of weather. Next to each picture, have them attach pictures of clothing, activities, and foods for each type of weather. For example: sunshine → beach, picnic, swimsuit, ice cream.

SCIENCE NOTEBOOKS

Have students place their completed activity sheets in their science notebooks.

SCIENCE AT HOME

Encourage students to ask their parents or grandparents if they remember any big weather events from when they were younger and to find out about their weather-related memories.

Connections

Science Challenge

Tell students that the Moon does not have a layer of air surrounding it. Ask students to recall the definition of *weather* (the condition of the air). Then ask them what the weather is like on the Moon. (Because the Moon has no air, it also has no weather.)

Science Extension

- Write the word *weathering* on the board. Explain that over a long period of time, weather elements such as rain, wind, moving water, and ice can wear away rocks and soil and even break rocks apart. Weathering also wears away at buildings, sidewalks, statues, and other things that people have made.

Take students on a tour of the school grounds to find examples of weathering—gullies cut into an embankment by runoff after a rain, weathered boards or bricks on the school building, or a sidewalk with cracks and pieces broken off, for example. Ask students to look for examples of weathering in their own neighborhoods and to draw pictures of what they find.

- In this activity students have developed a set of weather symbols to represent different weather conditions. Discuss the importance of symbols as a way to convey information at a glance, understandable in any language. Discuss some common symbols that students see in everyday life, such as the universal symbols for restrooms, no smoking, railroad crossing, danger or poison, and recycling. Ask students to draw one of these symbols. Help them label each picture to identify where it is found and what it means. Use the pictures to create a “Symbols and What They Stand For” bulletin board.

Science and Careers

Review that scientists who study weather are called meteorologists. Meteorologists use many kinds of weather instruments to gather weather data. Based on this information and what they know about weather patterns, meteorologists make predictions, called forecasts, about weather that is coming. Invite a local meteorologist to visit your class to talk about his or her job. Students benefit greatly from hearing firsthand what it is like to work as a weather scientist.

Moreover, visiting meteorologists are often able to present complex weather concepts in engaging ways that students can understand. Ahead of time, have the class prepare a list of weather questions they wonder about.

Science, Technology, and Society

Show students some examples of Internet sites that provide weather forecasts. Compare the forecasts on two or three sites. Then, when tomorrow’s weather is observed, discuss whether any one site seemed more accurate than another. A list of related, age-appropriate websites is provided in the References and Resources section.