

# OVERVIEW

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WEATHER DETECTIVES exposes your students to a scientific mystery. Mention to a class of students that they are about to begin solving a mystery and you will be met with enthusiasm and excitement! Most students are fascinated by mysteries because they are able to take pieces of information and see how they fit together as they attempt to solve a problem. Unfortunately, some students have the impression that all mysteries are connected with murder and suffering because that is what they have been exposed to on television and in movies. WEATHER DETECTIVES will help students realize that mysteries are worked on and solved daily in many different disciplines including science, history, archeology, health, and education.

WEATHER DETECTIVES begins with a request for student help in discovering who stole carefully researched weather documents from McGee's Weather Company. During Weeks 1 and 2 your students work as real scientists to solve the mystery, completing daily investigations, building model weather measurement instruments, and accumulating suspect information and clues. During Week 3 students demonstrate their understanding of weather systems by developing their own weather reports using all the information they have learned. Depending on your schedule, students share these weather report presentations with parents or other classes. Assign or distribute the optional extensions to further expand student understanding.

This unit will excite and challenge students as they actively increase their understanding of the weather. Since weather influences many aspects of our lives—from what we wear to what we are able to do, students have a natural interest in learning about the weather. Students are motivated as they uncover clues and gain information about weather just as a detective (and scientist) does.

### **Differentiated Instruction**

Like all Interact units, WEATHER DETECTIVES provides differentiated instruction through its various learning opportunities. Students learn and experience the knowledge, skills, and attitudes through all domains of language (reading, writing, speaking, and listening). Adjust the level of difficulty as best fits your students. Assist special needs students in selecting activities that utilize their strengths and allow them to succeed. Work together with the Resource Specialist teacher, Gifted and Talented teacher, or other specialist to coordinate instruction.

# DAILY DIRECTIONS

## DAY 1



Make a large wall chart of the TOMORROW'S WEATHER PREDICTION CHART.



This paper will act as the first page of their Science Journals so if you are using a composition book be sure to distribute those now and have students use the first page.

### Day 1

#### Materials

- Student Guide — *class set*
- TODAY'S WEATHER — *transparency*
- MY SCIENCE JOURNAL COVER — *class set*
- WHAT I KNOW, QUESTIONS I HAVE, WHAT I LEARNED — *class set + transparency*
- TOMORROW'S WEATHER PREDICTION CHART — *one*
- Pencils — *class set*
- Sticky notes (3" x 3") — *class set*
- Thermometer — *one (placed in the shade outside the classroom)*

#### Science Journals

- Spiral-bound composition book — *class set*
- OR—
- Construction paper (assorted colors, 11" x 17") — *class set*
- Lined paper (8.5" x 11") — *10 sheets per student (minimum)*
- Stapler — *one*

#### Teacher Reference

- **Today's Weather Guideline** — *transparency*
- **Suspect Profile: Bob Blizzard** — *one (to read; then post)*

#### Preparation

1. In the morning before class, read the weather report in the paper or watch a weather forecast on the news for your area.
  - a. Note information about high/low temperature, humidity, wind, the forecast for the week and any other information of interest.
  - b. On the day you start this simulation, make note of what the clouds look like outside.
2. Place a thermometer outside in a shady spot. Later, when you take your class outside to observe the weather, students will look at the thermometer to determine the current temperature today.
3. Before class starts, pull shades down over your classroom windows and close doors that lead outside. This will give you a more accurate assessment of student's observation skills.

#### Procedure

1. Instruct students to take out paper and record today's date at the top as you put the transparency entitled **Today's Weather Guideline** on the overhead projector. Tell the students that they should draw a line down the middle of the page and write what they **remember** on the left side of the page.

2. After students have finished writing what they remember, have them share these with one another. Point out similarities and differences in what students remember.
3. Open the shades or allow the students to go outside to look at the clouds, observe the wind, and look at the thermometer that you placed outside to determine the exact temperature.
4. Share the weather report that you watched or read this morning. Fill in details about the humidity level, the predicted high and low temperature for today, and any other weather information included in the weather report you watched.
5. Have the class fill in the right side of their paper with accurate information about the clouds, temperature, wind conditions, and humidity (and any other weather information they completed on the left side of the page).
6. Illuminate TODAY'S WEATHER graph. Using the information just learned, have students graph the date, the temperature (noting the time of day that the temperature was taken), and the weather conditions on another piece of paper.
7. Read or tell:

“The point of the exercise we just did is to help you realize that observations are an important part of a detective’s job—even when that detective is a scientist. Scientists make observations regularly. They must carefully write down exactly what they see and conclude in any experiment they do. It is important to be as accurate as possible when making observations so that this information can lead to reliable conclusions. In the next few weeks when you are asked to make scientific observations, you will have advanced warning to carefully observe and make notes in a science journal. This journal will help keep us organized. As we make observations or do experiments, we will carefully write down what we see and any conclusions we might make. We will keep all of our notes in this science journal.

As you might have guessed, we are going to become science detectives as we learn about weather for the next few weeks.”



*This paper will act as the second page of their Science Journals. Students monitor the weather each day for 15 days. Allow 1–2 pages (front and back) for this activity.*



Student Name: \_\_\_\_\_

# WEATHER DETECTIVES



## STUDENT GUIDE

*Dear Students,*

*I am writing to ask for your help to solve a mystery. I own McGee's Weather Company. We are a non-profit business. Our goal is to inform the public about the weather. For the last five years, we have researched and experimented on the weather. As you might guess, we have a lot of information about the weather and weather safety.*

*We have been using this information to make booklets about the weather. Our goal was to give away the booklets free of charge, starting next month. To our shock, last week someone broke into our office and took all of our data. We can think of no reason why anyone would want to steal our weather data!*

*Local detectives are on the case, but they have other crimes to solve. I would search for the thief myself, but I do not have the time or the resources. All of my employees have been with me for at least five years, and I know they were not involved in this crime.*

*I hope that you can help me. I know that schools have lots of science resources. I also know about your great teacher. Would your class like to become science detectives? Can you find who has taken my weather data?*

*It is crucial that this mystery is solved soon. I need the stolen weather data. I hope you will find the thief in the next three weeks. We hope to give out our booklets on schedule next month. Thank you for your help.*

*Sincerely,  
Michael McGee*

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## DROUGHT INFORMATION

Precipitation (rainfall) varies around the world. The amount of precipitation considered to be “normal” also varies from place to place. A drought occurs when there has been little or no precipitation in an area for at least three months. The lack of precipitation creates a water shortage. The water shortage impacts people, plants, and animals. A drought becomes serious when it has been dry in an area for a long time (usually for a whole season). The larger the area impacted, the more serious the drought.



### What Defines a Drought?

There are many ways to define a drought:

- *Meteorologists* define a drought by measuring the precipitation in an area. This amount is compared to normal precipitation for the area. *A drought in one area of the world is not always a drought in another area of the world.*
- *Farmers* define drought as a lack of moisture in the soil that becomes so great that the soil can no longer support a certain crop.
- *Hydrologists* study water. Hydrologists define a drought by how far below normal the surface water and subsurface water falls.
- *Sociologists* and *economists* define a drought by its effect on the people and how it limits the normal use of water.

### Weather Information You Should Know

- Droughts occur in every climate zone.
- More states have become aware of the need to be prepared for a drought. In 1980, there were only three states with drought plans. In 2004, 38 states have drought plans.
- The states in the western part of the United States are more likely to have a drought than other states.

### Did You Know?

Some people think droughts are rare, but they naturally occur in all climate areas. A famous drought occurred in the 1930s in the United States. There was little rainfall for eight years, which caused a drought. This drought ruined many farming areas. The land areas affected by this drought were known as the “dust bowl.” It was named the Dust Bowl because there was so little rain and when it was windy, dust blew all around. The Dust Bowl affected many states—Texas, Oklahoma, Kansas, Colorado, and New Mexico. Even though many people love sunny weather, if it is sunny all the time without precipitation, a weather disaster can occur.