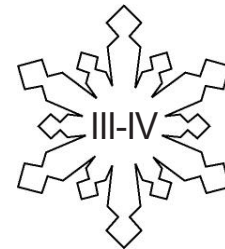


Testing Weather Proverbs

Levels



Overview:

This activity should be done after “Weather Proverbs.” In “Weather Proverbs” students explored various proverbs for weather. They learned some proverbs from their local community and from around the world, then wrote their own proverb. In this activity, students will pick a weather proverb and use the scientific method to test its accuracy.

Objectives:

The student will:

- use the scientific method; and
- conduct an experiment.

GLEs Addressed:

Science

- [5-8] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [6] SA1.2 The student demonstrates an understanding of the processes of science by collaborating to design and conduct simple repeatable investigations.
- [7] SA1.2 The student demonstrates an understanding of the processes of science by collaborating to design and conduct simple repeatable investigations, in order to record, analyze (i.e., range, mean, median, mode), interpret data, and present findings.
- [8] SA1.2 The student demonstrates an understanding of the processes of science by collaborating to design and conduct repeatable investigations, in order to record, analyze (i.e., range, mean, media, mode), interpret data and present findings.

Materials:

- STUDENT WORKSHEET: “Test a Weather Proverb”

Critical Thinking Question:

Paradox Method

An article titled “Environmental engineers unravel a weather ‘evaporation paradox’” from the *Cornell Chronicle* on December 17, 1998, explained the following: “Scientists studying global warming in recent years have found much data in support of a trend showing that temperature, precipitation, stream-flow and cloud-cover records all indicate that warmer, rainy weather is now more common in many regions of the world. But one set of figures has left them baffled: The readings from the simple metal pans used to measure evaporation at weather stations indicate that less moisture has been rising back into the air from the pans.”

Read the above quote to students and discuss as a class how one would go about solving this paradox. Read how the researchers Brutsaert and Parlange solved the problem:

“To explain the paradox, Brutsaert and Parlange looked at the way evaporation is recorded. Weather stations throughout the world usually place water-filled metal pans, about a foot deep and three feet in diameter, outdoors on wooden platforms. Each day, a technician measures how much water has disappeared from the pan.

Brutsaert and Parlange found that decreasing pan evaporation does not necessarily mean that less evaporation is occurring in the surrounding landscape. A key reason is that the interpretation of the pan measurements has not taken into account the role of humidity in the air or the moisture that is already present in or missing from the surrounding landscape. For example, a pan of water placed outside in a hot, dry desert would evaporate very quickly. But in a cool rain forest the water would evaporate much more slowly. Thus, evaporation figures might drop in some areas merely because more rain and snow have saturated the terrain.”

Activity Procedure:

1. Ask students to think about why scientists conduct experiments. Explain that experiments are conducted to test a hypothesis or educated guess.
2. As a class, discuss the elements of an experiment. Explain that not all experiments require one to actively do something. Many experiments are conducted by making observations.
3. Divide students into groups. Ask students to share some of the weather proverbs they wrote during the Weather Proverbs activity. Refer back to the STUDENT WORKSHEET: “Weather Proverbs” if necessary.
4. Hand out the STUDENT WORKSHEET: “Test a Weather Proverb.” Instruct students, as a class, to select a weather proverb they would like to conduct an experiment on to prove or disprove by observation. Guide students to a proverb that is testable within the constraints of the class time and resources. As a class, complete the STUDENT WORKSHEET: “Test a Weather Proverb” by designing an experiment.
5. Explain to the class that after they decide the steps of their experiment, they will need to decide what type of data to collect.

Teacher’s Note: Depending on the proverb selected and the experiment devised, it may take students some time to observe the weather phenomena referred to in the proverb. If this is the case, delay in completing the experiment until the weather is right.

6. When all experiments have been conducted and worksheets completed, discuss the use of the testable question, hypothesis, experiment procedure, data collection, data analysis, and conclusion. Ask students to identify what observations they made and how those observations supported or disproved their hypothesis.
7. Remind students of the Critical Thinking Question and discuss how and why data collection and notation is important. Discuss how an understanding of the way data is collected can influence data analysis.

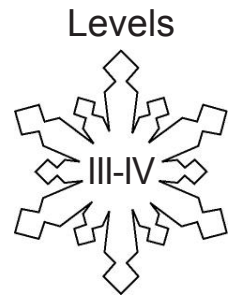
Answers:

Answers will vary.

Name: _____

Test a Weather Proverb

Student Worksheet (page 1 of 2)



Testable Question:

A testable question is a question that is tested by experimentation.

Write the proverb that you will be testing. _____

Write the proverb in the form of a question.

Hypothesis:

The weather proverb I am testing is _____ (true/false).

Experiment:

Procedure: Write the steps needed to test the hypothesis. For more paper, use the back of this sheet.

STEP 1 _____

STEP 2 _____

STEP 3 _____

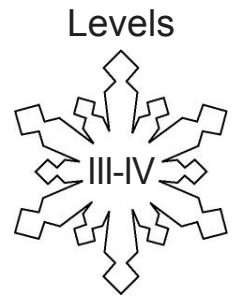
STEP 4 _____

STEP 5 _____

Name: _____

Test a Weather Proverb

Student Worksheet (page 2 of 2)



List the data to be collected during the above experiment procedure.

Data:

Conclusion:

1. The proverb I was testing is _____ (true/false)?
2. Was the hypothesis proved or disproved? _____
3. Explain what evidence supports your conclusion. Use complete sentences.
