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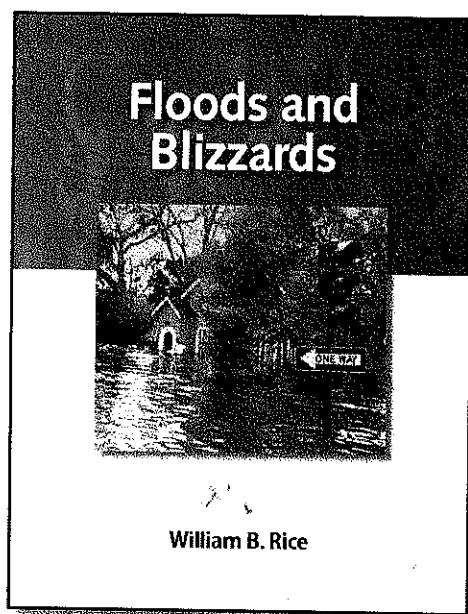
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Science Readers: A Closer Look

Lesson Plans for

Floods and Blizzards



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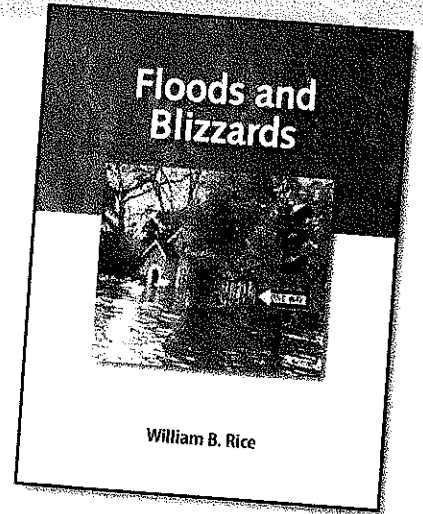
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Floods and Blizzards

Learning Objectives

- Students identify the main ideas and details in text.
(Nonfiction Reading Objective)
- Students use strategies to write for a variety of purposes.
(Writing Objective)
- Students know how features on Earth's surface are constantly changed by a combination of slow and rapid processes.
(Science Objective)
- Students understand the effects of climate and weather on vegetation, agriculture, and human activity.
(Science/Geography Objective)
- Students read and interpret simple bar graphs and data tables.
(Mathematics Objective)



Materials

- *Floods and Blizzards* Reader
- chart paper and sticky notes
- notebook paper and blue colored pencil, crayon, or marker
- *A Blizzard to Boast About* resource page (page 13)
- *A Blizzard to Boast About* activity sheet (pages 5–6)
- *Hold the Water* activity sheet (page 7)
- *Ready for Disaster* activity sheet (page 8)
- *Reader Quiz* (page 9)
- materials for lab activity (page 12)

Before Reading

Introduce vocabulary words that students will encounter in the text. Write on the board, the four boldface words below. Take time to discuss each word. Have students share what they think the words mean and have them try to use the words in sentences. Use the glossary in the back of the reader to go over additional words as needed.

Vocabulary

flood	evaporates	condenses
precipitate	cumulonimbus	flood plain
flash flood	mudslide	tsunami
blizzard	drifts	prevailing winds
hypothermia	frostbite	sediments
eroded	fertile	

Before Reading (cont.)

- 2 Display a chart similar to the one shown below. Ask students to think about how floods and blizzards are helpful and harmful. They should write one to three ideas, each on its own sticky note. When called on, a student can stick his or her idea on the appropriate area of the chart. As different group members share, students can discard any repeated ideas. (Each idea should be listed on the chart only once.) Point out any of the quadrants that are less filled than others. Explain to students that as they read, they will learn about both the helpful and harmful effects of both floods and blizzards.

	Helpful Effects (+)	Harmful Effects (-)
Blizzards		
Floods		

- 3 Have students read the chapter headings found in the table of contents of this reader. The book will define a flood and a blizzard. Ask students what traits they think floods and blizzards have in common. Have them discuss whether floods and blizzards are more alike or different. Allow time for discussion.
- 4 Ask students what they think would be the best and worst parts of living through a blizzard. Give students a copy of the resource page *A Blizzard to Boast About* (page 13), and discuss the images. Allow time for students to make observations about the images. Briefly discuss how life differed 100 years ago (*no cars or mass transportation, no electrical equipment, no cell phones or telecommunications, no satellites, etc.*). Discuss the challenges people faced back then during a blizzard compared to now. Then, distribute copies of the activity sheet *A Blizzard to Boast About* (pages 5–6). Read the introductory information, and allow time for students to complete the activity.

During Reading

- 5 Decide whether this reader will be read as a group, in pairs, or independently. Have students read through the reader once.
- 6 Have students each make a two-column list on a sheet of notebook paper. Have them label the left side *All About Floods*. Have them label the right side *All About Blizzards*. As students reread pages 6–11 in the reader, have them list facts about floods. As they reread pages 12–17 in the reader, they should list facts about blizzards. Have the students circle in blue the traits each disaster has in common. Compare lists to see which student found the most similarities.
- 7 Reread pages 18–25 in the reader. Discuss the helpful and harmful effects of both floods and blizzards that the author mentions. Revisit the chart from step 2 in the Before Reading activities. As a group, add more sticky notes to fill in areas that may otherwise have held less information.

During Reading *(cont.)*

- 8 Discuss how different soil types react to flood waters. Ask students to revisit their readers to share where they read this information (*pages 6–9*). Distribute copies of the *Hold the Water* activity sheet (page 7). Read the experiment and review the data that Mrs. Tipton’s class collected. Allow time for the students to complete the page.
- 9 Reread pages 26–27 in the reader. Discuss the most important points the author mentions about preparing for a natural disaster. Have the class share natural disasters that people should be ready for, besides floods and blizzards.

After Reading

- 10 Have one or two students summarize the information they learned during their reading. Review the facts they listed in step 6 in the During Reading activities. Have each student independently write a one-paragraph summary to explain why a flood or blizzard is considered a natural disaster. The paragraphs should each include a main idea with related details to support it.
- 11 Reread pages 26–27, in the reader, about being prepared. Distribute copies of the *Ready for Disaster* activity sheet (page 8). Have students complete the activity sheet independently. Then, have group members share their ideas. List the students’ ideas for each category on a chart or whiteboard. Discuss why students chose to include each item. On the back of the activity sheet, have each student secretly list the one item from each category that they could not live without (excluding water). Hold a class vote. Tally the students’ responses to see if any one item is a clear “must-have” as part of an emergency kit.
- 12 Use the *Reader Quiz* (page 9) to further assess student learning.
- 13 Gather the class together to complete the lab activity (pages 11–12).

Extension Idea

Have students read “Scientists Then and Now” on the back page of the reader. Have them think about how natural disasters change the features of Earth and affect agriculture, vegetation, and human activity. Then, students can complete illustrations showing particular areas before a natural disaster, and after a natural disaster. On the back of the sheets, have them explain how the scientists then and now worked to study the processes that change Earth.

Name _____

A Blizzard to Boast About

A blizzard is a winter storm in which winds reach 35 miles per hour or more, causing blowing snow. During a blizzard, visibility is one-quarter of a mile or less for three or more hours. One of the nation's worst blizzards occurred along the northeastern states in the U.S. in March, 1888. It was known as the "Great White Hurricane." It dropped 40 to 50 inches of snow, depending on the location. Drifts reached 40 to 50 feet high. Winds blew 48 miles per hour.

Directions: Look at the pictures on the *A Blizzard to Boast About* resource page, showing the Blizzard of 1888. Use details from the pictures and information from the *Floods and Blizzards* reader to answer the questions.

1. What do you know about the Blizzard of 1888? _____

2. How far could a person see, in feet, during this blizzard? (1 mile = 5,280 feet)

3. A hurricane has sustained winds of 75 miles per hour or more. Was the Blizzard of 1888 really a hurricane? Explain. _____

4. What do you think the person in the picture is doing next to the snow hut? _____

5. How did all that snow get into one pile? _____

6. What would a child like and dislike about a blizzard of this size?

7. What would adults like and dislike about a blizzard of this size?

A Blizzard to Boast About *(cont.)*

Directions: Look at the pictures on the *A Blizzard to Boast About* resource page, showing the Blizzard of 1888. Use details from the pictures and information from the *Floods and Blizzards* reader to answer the questions.

8. Transportation and technology were very different in 1888 compared to today. Compare how people may have dealt with this much snow then and one hundred years later.

How to Deal with Snow in 1888	How to Deal with Snow in 1988

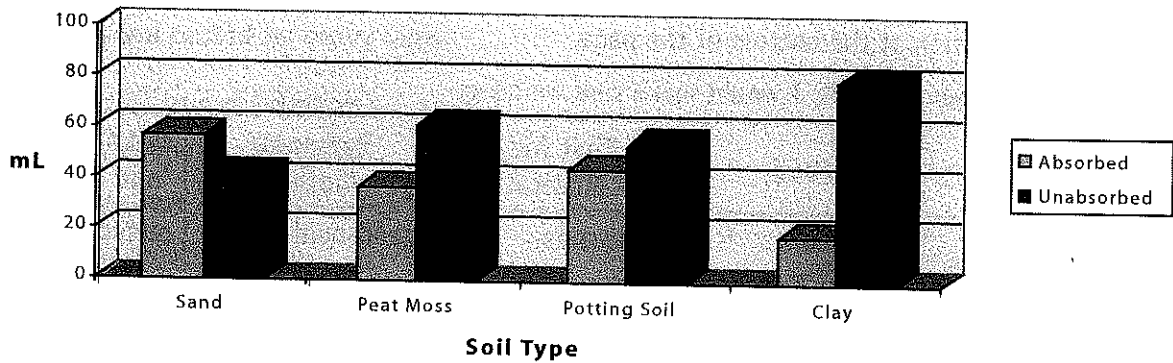
9. One outcome of the Blizzard of 1888 was the creation of New York's subway system—a system of trains beneath the city. Why do you think the subway system was built following this storm? _____

10. Do you think the New York subway system would have been built if this blizzard hadn't happened? Explain. _____

Name _____

Hold the Water

Mrs. Tipton's science class tested four different soils to see how well they retained, or soaked up, water. Students used equal amounts of each soil (100 mL), and equal amounts of water (100 mL). They strained the water through the soil in a filter, and collected the drips in a graduated cylinder. Then, they poured any water left on top of the soil into another graduated cylinder, and added these totals to find out how much water was left unabsorbed. Their findings are shown below.



Directions: Use the information above and from Floods and Blizzards to answer the questions.

- Why did the class empty leftover, unabsorbed water into another container?

- List the soils from least to most absorbent. _____

- Why do some soils absorb more water than others? _____

- How would additional sediments along a riverbank affect flood levels? _____

- Using these results, is there a better filler than sand for the bags that people stack to stop flood water? Explain. _____

- Soil that has little rainfall can become hard and cracked, like clay. How does this affect water when it floods? _____

- Why is it important for scientists to study snowfall amounts in mountainous areas or along rivers? _____

Name _____

Ready for Disaster

Every emergency has its own preparedness course of action. In the event of a blizzard, people may be snowed in for days and left with no electricity. If a flood threatens your house, you and your family may be forced to evacuate. Regardless of the disaster, being prepared will help ease some of the anxiety that a disaster causes.

Directions: List important readiness supplies for each category in the event of a blizzard or flood. Examples are listed for you. You can choose to keep them, or cross them out. List at least eight items in each category. Use the formula to figure out how much water to pack. Then, answer the question at the bottom of the page.

In our family emergency kit, I would make sure we have:

Water	Food	First Aid/ Medical	Personal/ Clothes	Getting By Tools and Equipment
	candy bars crackers juice	band-aids antibiotic ointment pain reliever	hand-held games cell phone toothpaste	matches blankets flashlights

Water Formula: 2 quarts per person each day for drinking + 2 quarts per person each day for cooking = 1 gallon per person per day

Multiply to figure out how much water to store for your family:

(1 gallon) x (the number of people in your house) x (3 estimated days)

Do you believe having a ready-made emergency kit is a good idea where you live? Explain.

Name _____

Reader Quiz

Directions: Circle the best answer.

1. What is NOT true of floods?
 - a. They can happen in an instant.
 - b. They only happen near rivers.
 - c. They can change the land where they occur.
 - d. They are caused by heavy rains.

2. What is NOT true of blizzards?
 - a. They cannot be predicted.
 - b. They cause blinding conditions.
 - c. Snow blows around.
 - d. They do not happen near the equator.

3. Look at this illustration showing prevailing winds. In which direction do prevailing winds blow when blizzards occur?

a. north	b. south
c. east	d. west

4. What are other dangers that may occur as a result of floods or blizzards?

a. mudslides	b. hypothermia
c. frostbite	d. all of these

5. How are floods and blizzards helpful to nature?
 - a. They bring water to places that do not have water.
 - b. All crops depend on flood water or melted snow.
 - c. They nourish the land.
 - d. They force people to move from areas that should remain natural.



Directions: On a separate sheet of paper, write two to three sentences to answer the question. Use information and examples from the reader to explain your answer.

6. The author of *Floods and Blizzards* describes water as a good servant, but a cruel master. What does he mean by this? Do you agree?

Floods and Blizzards Answer Key

A Blizzard to Boast About

1. The Blizzard of 1888 was known as the Great White Hurricane. Snowfall amounts totaled 40–50 inches, with drifts up to 50 feet high. Winds blew 48 miles per hour.
2. less than 1,320 feet
3. No. The Blizzard's winds only reached 48 miles per hour, not 75.
4. Answers will vary.
5. Answers will vary. Students should not have included any large motorized equipment.
6. Answers will vary.
7. Answers will vary.
8. Possible answers: 1888—shovels, newspaper news, wood burning stoves; 1988—snow plows, salt, battery-operated radio news, gas heaters, television news
9. Accept reasonable answers. Example: The subway was built so people could get around the city even when the roads were blocked.
10. Answers will vary. Students should have justified their answers.

Hold the Water

1. The class emptied water into other containers to see how much run-off water accumulated on top of the soil.
2. clay, peat moss, potting soil, sand
3. Soils are made up of different matter, and each type has a different absorbency.
4. If the soil is absorbent, it can hold more water. But if the soil is already saturated, the river will flood faster since there is more land built up along the banks.
5. Not according to the data. Sand is the most absorbent kind of soil.
6. Hard-packed soil cannot absorb water. The water will run off the land and flood the area quickly, possibly resulting in a flash flood.
7. They can predict potential flood risks by checking the rate of melting snow.

Ready for Disaster

Check students' charts and water calculations. They should have included canned, nonperishable foods and perhaps vitamins; realistic medical supplies including prescription medications; hygiene and clothing items to suit the weather; and important supplies such as toilet paper, scissors, or a knife.

Reader Quiz

1. b
2. a
3. c
4. d
5. c
6. Answers will vary. Example: I agree when the author says that. Water serves people well. We need it to survive. But, water in nature can be devastating. It can cause floods and blizzards that cause hardships for people. People may have to seek shelter away from a flood or blizzard, and sometimes die because of such disasters.

Lab Lesson Plan: Eroding Earth

Before the Lab

- 1 Define erosion. Discuss how erosion is one effect of the natural disaster(s) the students read about.
- 2 Allow students to share examples of erosion they may have seen.

Introduce the Lab

- 3 Read the introductory paragraph with students.
- 4 Read the list of materials. Provide each student or lab group with the necessary materials, or have the materials ready to use as part of a demonstration lesson in front of the class.
- 5 Read through all the procedures with the students at least once before they engage in the lab. Check their understanding of the required steps.

Conduct the Lab

- 6 Allow time for students or lab groups to conduct the lab, or follow the steps as a class if you are conducting a demonstration lab.
- 7 Have the lab groups record their observations after each step, and answer questions in steps 5, 7, and 8 from the lab activity (page 12).

After the Lab

- 8 Discuss how the cheesecloth simulated the ground cover on a hill and the effects of its removal. Have students hypothesize as to what happens to the eroding earth following a flood or fire. (Many times, hillsides are subject to mudslides.)
- 9 Have students investigate additional causes of erosion. How are these causes similar to and different from how floods and fires cause erosion?

Lab: Eroding Earth

Erosion can result after fires or floods have swept through an area. This lab activity will help you to see what happens.

Materials

- dry, loose soil
- cheesecloth
- spray bottle and water, or hose with sprayer and a water source
- digital camera (optional)

Student readers have identical instructions on pages 28 and 29.

Procedure

- 1 Using dry loose soil, build a small steep hill about .6 meters (2 feet) across.
- 2 If a digital camera is available, take a photo of the hill to help with your observation.
- 3 Completely cover the hill with cheesecloth.
- 4 Take another photo of the hill, if a camera is available.
- 5 Using a sprinkler or a misting sprayer attached to a hose, apply water to the cloth-covered hill for a short time and watch what happens. Take photos during the spraying and after. Does the hill lose its shape? What happens to the soil? Does everything just stay in place but only get wet?
- 6 Remove the cheesecloth. (This is similar to what happens when vegetation is removed from a hill or mountainside.) Take another photo.
- 7 Using the sprinkler or misting sprayer attached to a hose, apply water to the hill again for a short time and watch what happens. Take photos during and after. What happens to the soil? What happens to the hill? Does everything stay in place?
- 8 What can you conclude, based on your experiment?

A Blizzard to Boast About



SOURCE: THE LIBRARY OF CONGRESS

This image shows a man standing by a snow hut, after the blizzard of 1888. Can you see the U.S. Capitol in the background?

This cover of *Frank Leslie's Illustrated Newspaper* shows the force of the 1888 blizzard in New York City.



SOURCE: THE LIBRARY OF CONGRESS