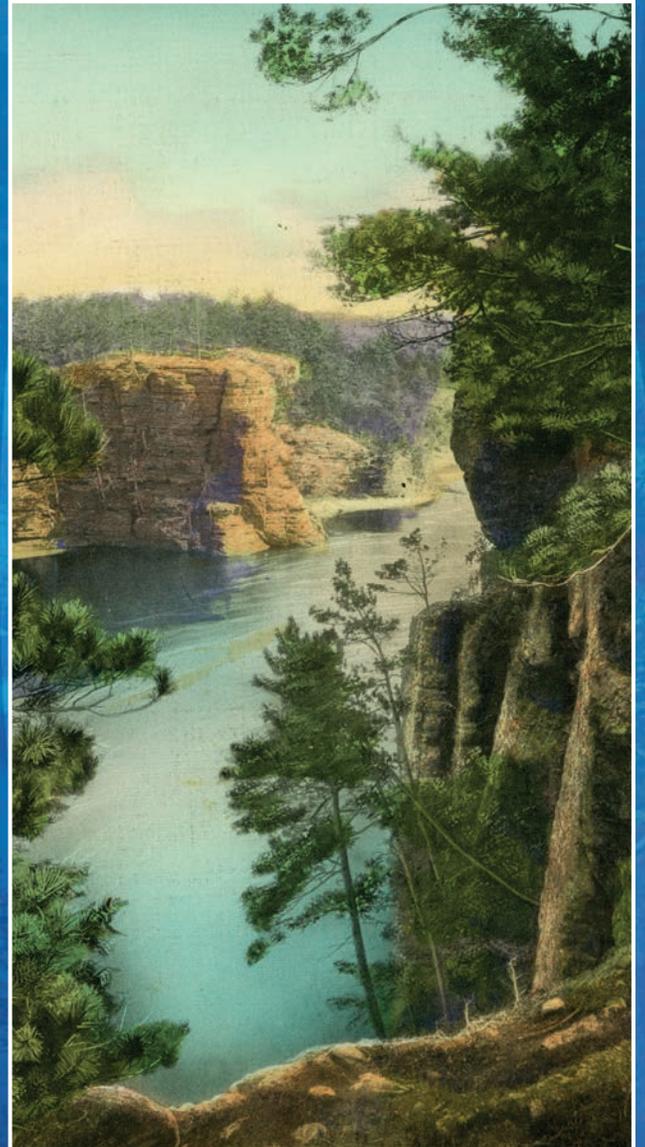


Great Lakes SMALL STREAMS

HOW WATER SHAPES WISCONSIN

STUDENT ACTIVITIES



WISCONSIN
HISTORICAL
SOCIETY

Preface

The activities in this document reinforce and supplement the content that students encounter while visiting *Great Lakes Small Streams: How Water Shapes Wisconsin*, a traveling exhibit from the Wisconsin Historical Society. The exhibit and these activities explore our state's long relationship with water and the impact we have had on our vast waterways.

The twenty interactive activities teach and enhance skills in Art, Biology, Earth Science, Engineering, English/Language Arts, Geometry, and History and allow students to participate as active learners. In many activities, students will be working cooperatively in groups as they use a variety of problem-solving and inquiry-based techniques. Please feel free to adapt any of the suggested procedures to suit the needs and interests of your students.

The activities were created by staff of the Wisconsin Historical Society: Kristen Leffelman and Mari Oates. The Water Council, Herzfeld Foundation, Wisconsin Humanities Council, and Ralph Evinrude Foundation provided funding and resources to create *Great Lakes Small Streams: How Water Shapes Wisconsin* and its accompanying activities. We are also grateful for criticism, suggestions, and materials provided by Diane Drexler, Kurt Griesemer, Bobbie Malone, and Elizabeth Wyckoff.

Great Lakes Small Streams: How Water Shapes Wisconsin is offered for free to primary and secondary schools, public libraries, local historical societies, and nature centers. For more information, visit wisconsinhistory.org/waterexhibit. To request the exhibit for your organization, please contact Kristen Leffelman at kristen.leffelman@wisconsinhistory.org or 414-988-8655.

Please send questions and comments to Kristen Leffelman, Field Services Representative at the Wisconsin Historical Society, at kristen.leffelman@wisconsinhistory.org. Best wishes for continuing success in the important work that you do.

Kristen Leffelman
Field Services Representative
Wisconsin Historical Society

Activity 1

How Is Water Used?

Overview

Water is part of everything we do. In order for students to more fully appreciate the importance and omnipresence of water, this two-day activity will explore many uses of water and its impact on our daily lives.

Materials

Amounts of Water Used in Common Daily Activities (*one for each student*)

Water Use Diary (*one for each student*)

Water Use Bar Graph (*one for each student*)

Crayons, markers, or colored pencils

Teacher Prep

The day before working through the activity with students, maintain your own Water Use Diary so that you can use it as a model.

Procedures

1. Discuss the many uses of water. Have students brainstorm other examples.
2. Hand out an Amounts of Water Used in Common Daily Activities sheet and a Water Use Diary activity sheet to each student. Explain that students will keep track of their water use for one twenty-four hour day. Tell them to use the activity sheet to help them record all their water use, using the Amounts of Water sheet as a guide. Remind them to write down every time they use water. Model this exercise for students, with examples from your own diary.
3. After students have spent one day recording their water use, discuss the uses of water with the class. Record each type of water use on the board or overhead projector. Include each use only once. Next to each example, tally the number of people who recorded that particular water use. Keep this data for student bar graphs.
4. Model the construction of a bar graph to plot water uses versus number of people. Number of People will be on the Y axis, and Types of Uses will be on the X axis. Hand out Water Use Bar Graph copies to help students get started. Explain that assessment will be based on (a) neat and accurate recording of data and (b) the thoughtfulness of the discussion questions that students pose.
5. Have each student complete and color his or her own bar graph. If students are new to bar graphs, they may work in pairs.

Subject Content: Earth Science

Grades: 4 through 6

Activity Time: 2 class periods

Goal

To build appreciation for the extent and consequences of personal water use

Skills and Strategies

Recording, graphing, analyzing, evaluating

Objectives

The student will:

- ◆ Record daily water use in their Water Use Diary
- ◆ Express their data in bar graph form
- ◆ Compare and contrast water use data from class results
- ◆ Draw conclusions regarding necessary and unnecessary water use

Closure

Discuss completed bar graphs, having students respond to the following questions:

- ♦ Which water uses were the most popular? Why?
- ♦ How could we conserve (save) water?
- ♦ Which water uses do you think seem necessary? Which could we do without?

Finish this activity by guiding students in generating questions of their own. Have students turn in bar graphs for assessment.

Extension

Compute how much water each person consumed, based on the amounts given. Figure out how much water the class used as a whole. Based on this information, how much water would the class use in a week? In a month?

Amounts Of Water Used In Common Daily Activities

Activity	Gallons of water used
Brushing teeth (water running)	2
Drinking water	1/4 (1 quart for each 50 pounds of body weight)
Flushing toilet	5–7
Dishwasher	10
Leaky faucet (per day)	25–30
Washing dishes by hand (water running)	30
Bath	35
10-minute shower (without water-saving head)	25–50
Washing machine (large load)	60
Watering lawn (10 minutes)	75
Washing car (hose running)	180

From *Project WET Curriculum & Activity Guide*. The Watercourse and the Council for the Environment Montana, 1995.

Name _____ Date _____

How Is Water Used? Water Use Diary

For one full day record all your water use. Every time you use water (for brushing your teeth, taking a bath, flushing the toilet, drinking, cooking, or other uses) write down the time of day and the use.

Time of Day	Water Use	Estimated Time Used
7:00 a.m.	brushing teeth	2 minutes

Statistics from *Project WET Curriculum & Activity Guide*. The Watercourse and the Council for Environmental Education, 1995, p. 385.

Something to Think About

Q: How much water does the average person use at home per day?

A: Estimates vary, but each person uses about eighty to one hundred gallons of water per day. Are you surprised that the largest use of household water is to flush the toilet, and after that, to take showers and baths? To help us conserve water, many local governments now have laws to make certain that water faucets, toilets, and showers only allow a certain amount of water to flow per minute.

Activity 2

River Systems of Wisconsin

Overview

Wisconsin has many smaller rivers that drain into Lake Superior, Lake Michigan, and the Mississippi River, but there are six major river systems in Wisconsin. Students will learn that river systems are rivers and streams that connect or flow into each other and ultimately into a larger body of water. Therefore a river system may include many rivers. A river system stays within the boundaries of its specific watershed. In this activity, groups of students will become “experts” on one of the major river systems by discovering its location, flow pattern, and the larger body of water into which it flows. Student groups will take turns identifying watersheds on the class map and then filling in their own study maps with the same information.

Materials

Major Waterways of Wisconsin (*digital overhead*)

Six major watershed pages for each group
(*one per student per group*)

Rock River Watershed (*also use as digital overhead*)

Wisconsin River Watershed

Chippewa-Flambeau River Watershed

St. Croix River Watershed

Black River Watershed

Fox-Wolf River Watershed

Transparency markers in five to six colors

Where Do Wisconsin Rivers Flow? (*digital overhead and student page*)

Subject Content: Earth Science, Geography

Grades: 4 through 6

Activity Time: 1 class period

Goal

To demonstrate understanding of six major river systems and watersheds in Wisconsin

Skills and Strategies

Labeling, identifying, interpreting, predicting, teaching, correlating

Objectives

The student will:

- ◆ Locate and identify six major rivers, their tributaries, and their watersheds in Wisconsin
- ◆ Indicate the flow of river systems and chart their directional movement

Procedures

1. Systematically review students' knowledge of the basic elements of maps, including colors, orientation, compass, etc.
2. Show students an overhead of the Major Waterways map for Wisconsin. Explain that its purpose is to show river systems.
3. To be sure the students understand the concept, have them look up and read the definitions of watershed and tributary in a student dictionary. Also, share with the students the definition of river systems.
4. Explain to students that they will use the watershed maps provided to do the following: locate and trace the entire river system in a specified color; identify the large body of water into which their river system flows; and predict in which direction the river flows.
5. Model the process of discovery first using the Rock River watershed in Wisconsin.
6. Using the map digital overhead, locate and color the river system. Indicate some of the tributaries as you trace the river system to the Mississippi River. Explain to the students that their river systems will not extend beyond Wisconsin boundaries.
7. Using a specific color, trace the Rock River watershed on the Major Waterways digital overhead.
8. Have students predict the direction of the water flow. Using the digital overhead "Where Do Our Rivers Flow?" check off Mississippi River for the Rock River system.
9. Group students into three to five groups, depending on how many river systems you'd like to cover, and deliver watershed maps to each student. Assign each group a different watershed to investigate.
10. Allow time as needed and circulate to assist students. Remind students to prepare for their group presentations by first sharing in their small groups what they have discovered. One student from each group will trace the watershed on the class map.

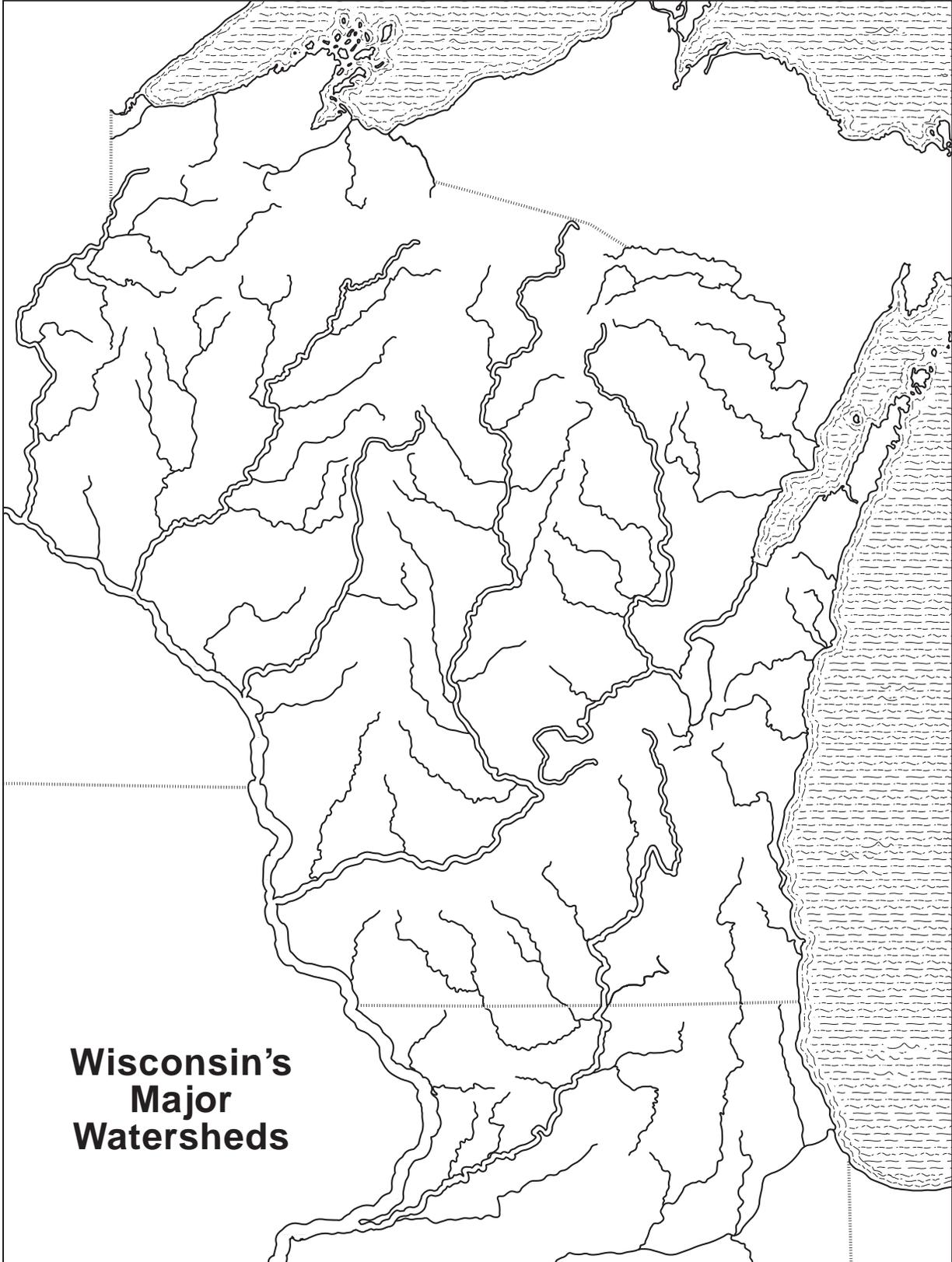
Closure

While using individual maps, have the students demonstrate the flow pattern of each river system.

Extension

Using a classroom atlas or an online map, have students determine the major cities on their waterway and write to each city's chamber of commerce. When the packets from each city arrive, the students should extract any river use information and compile it to share with their classmates. Label all of the rivers in their designated watershed.

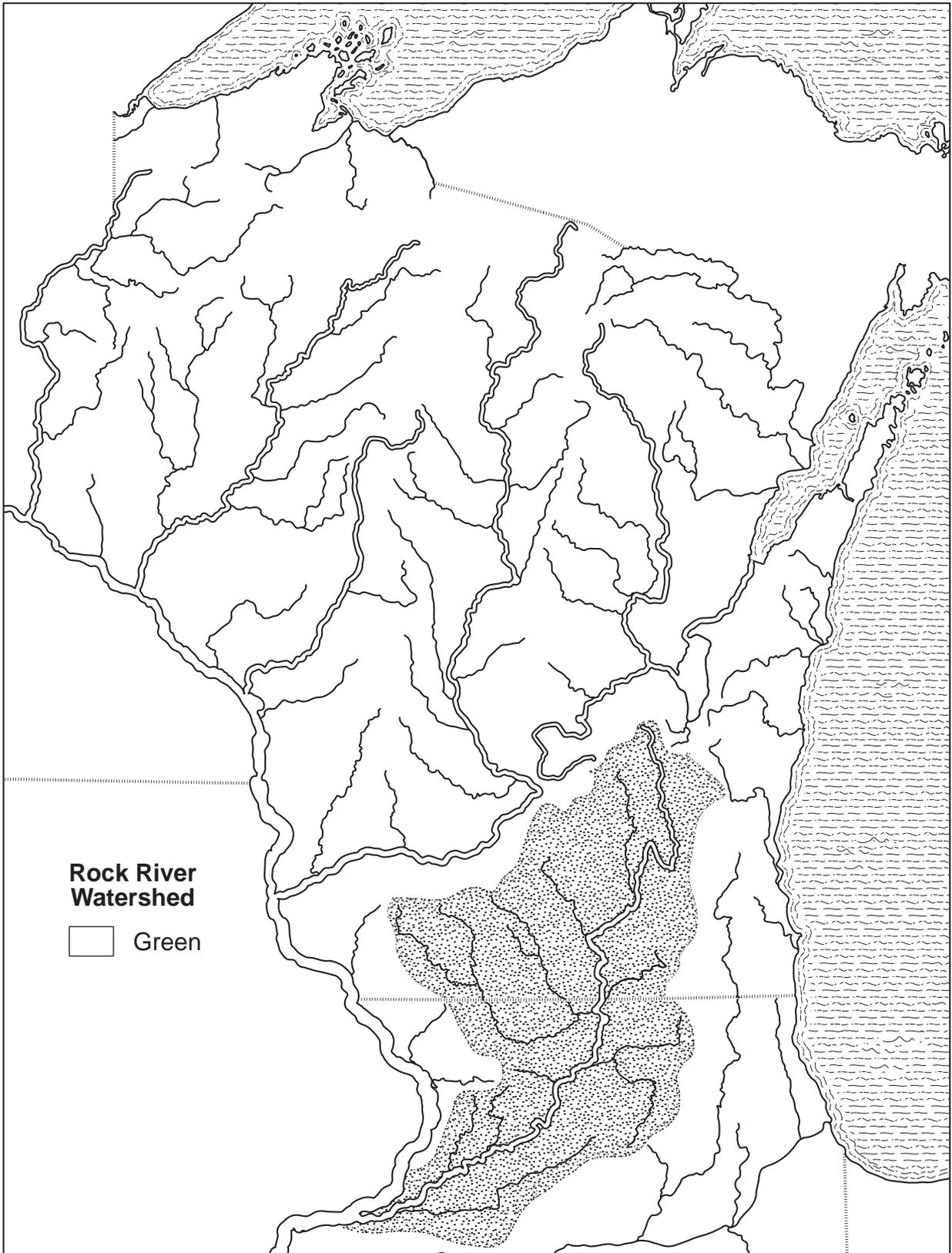
Wisconsin's Major Watersheds



Name _____

Date _____

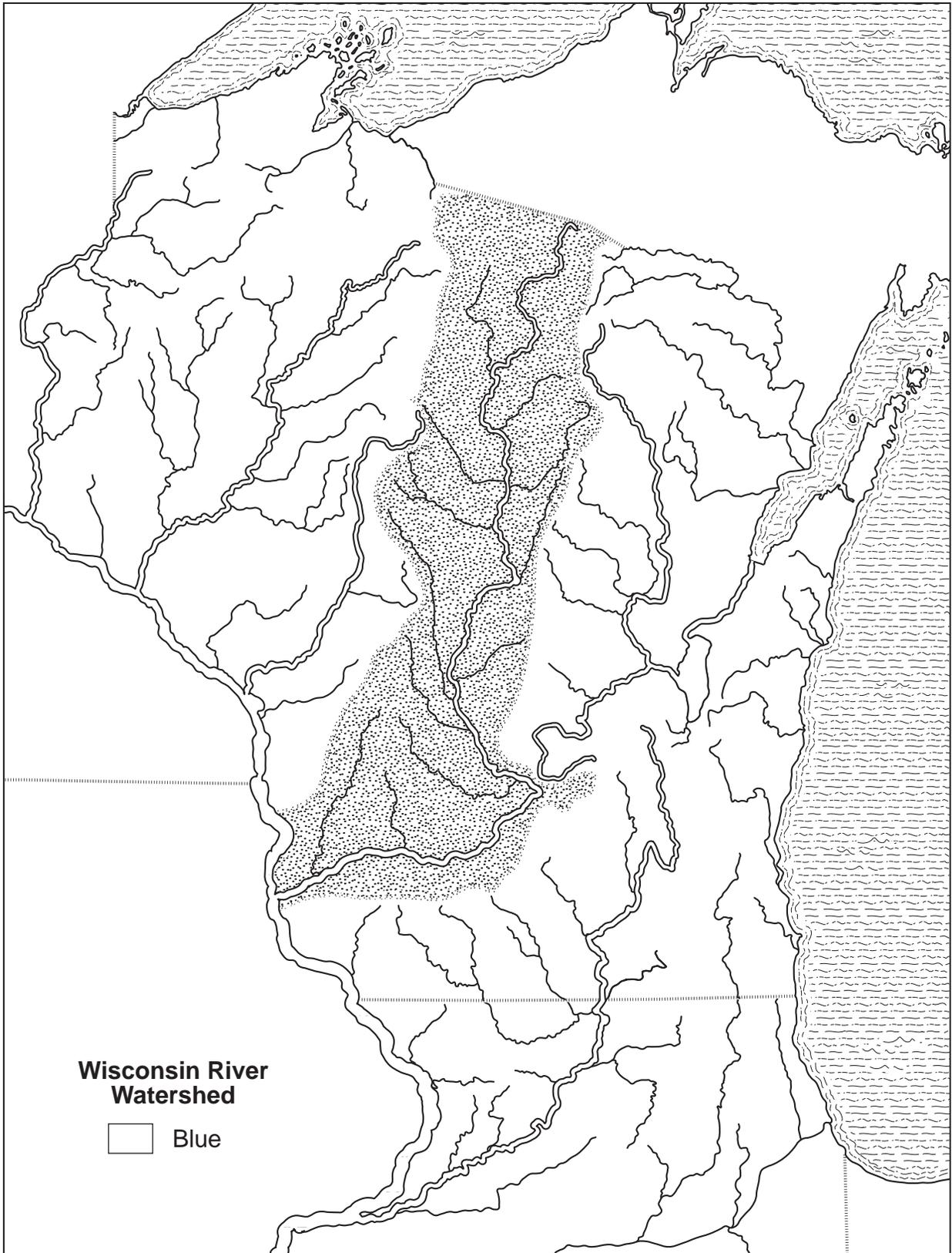
Rock River Watershed



Name _____

Date _____

Wisconsin River Watershed



Name _____

Date _____

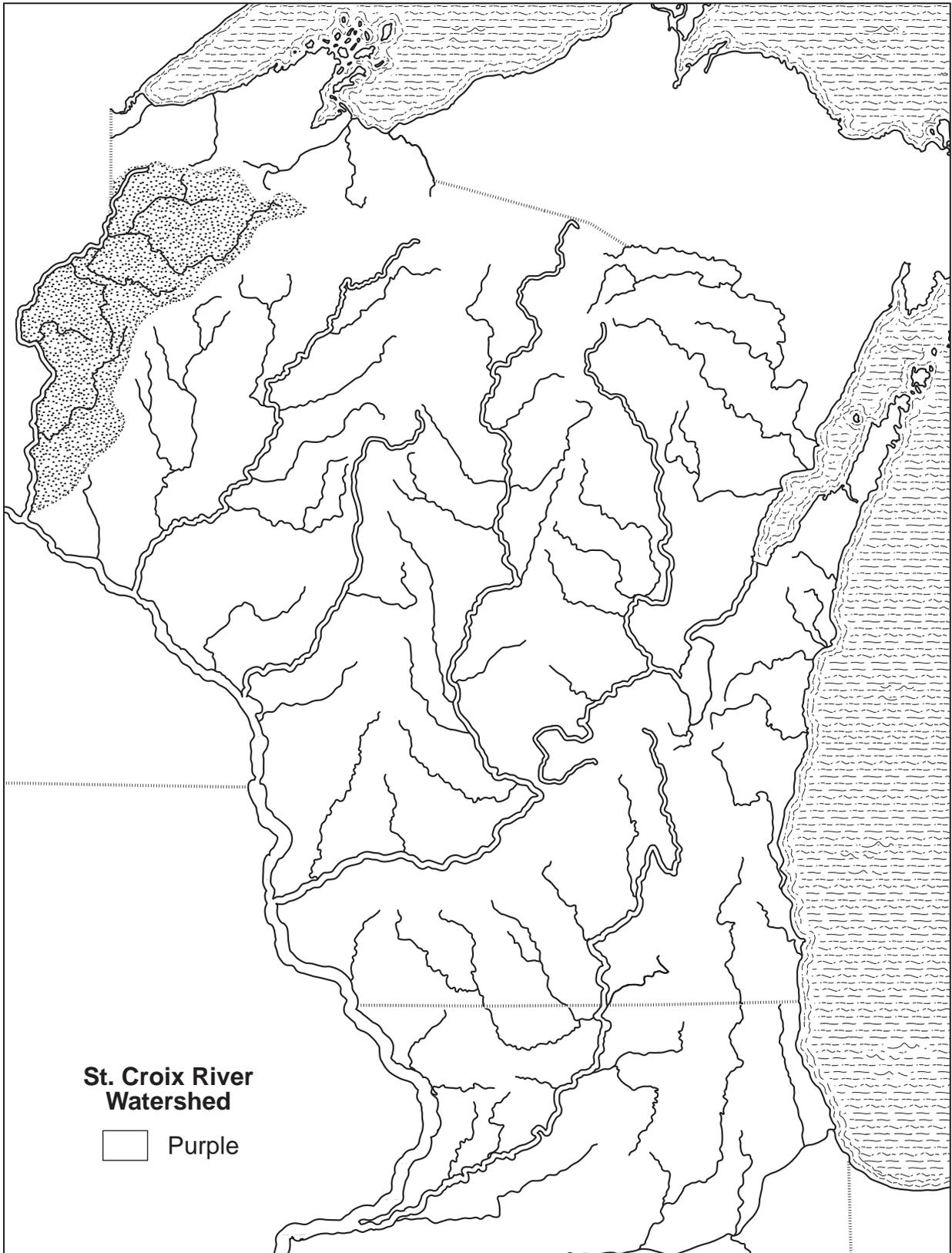
Chippewa River Watershed



Name _____

Date _____

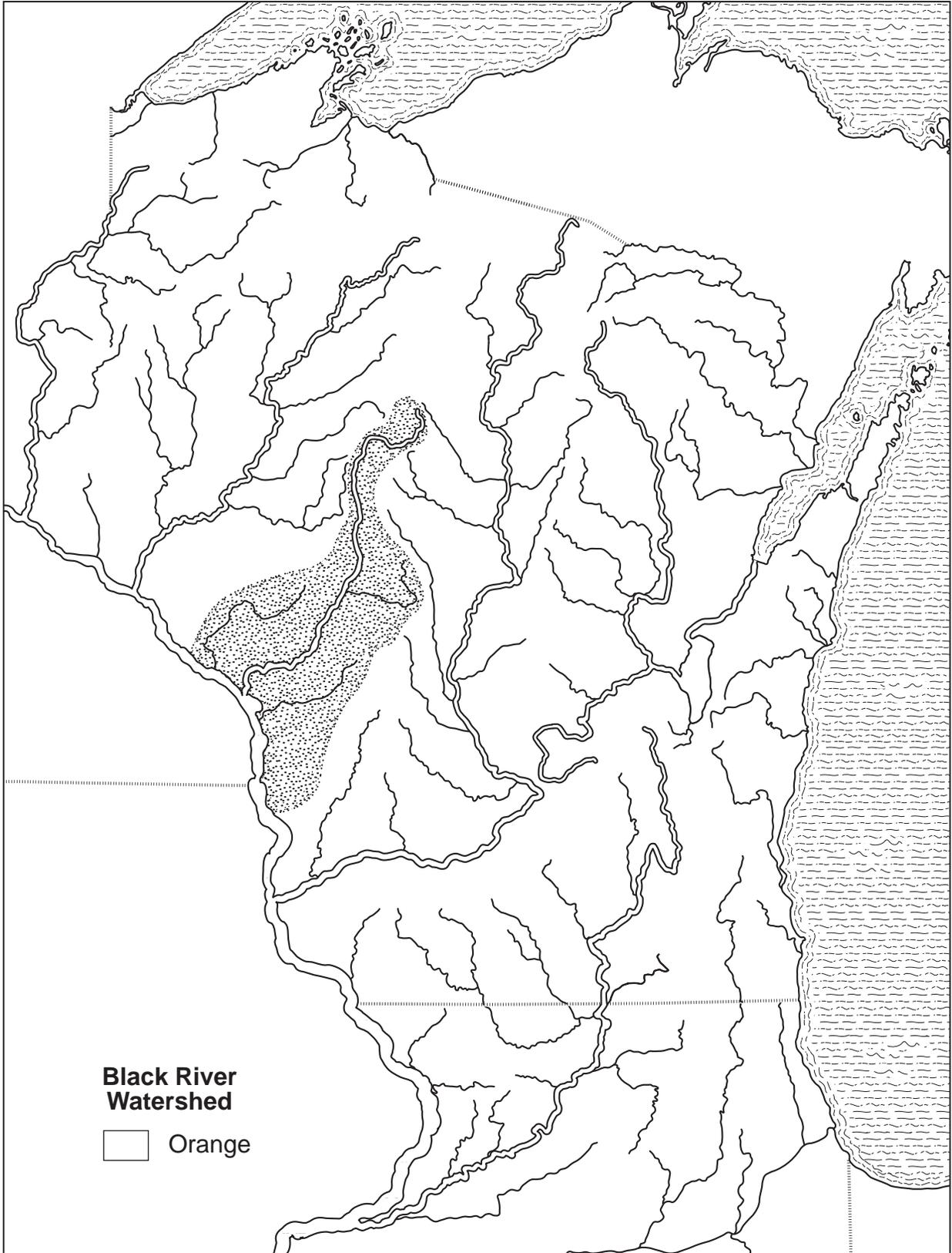
St. Croix River Watershed



Name _____

Date _____

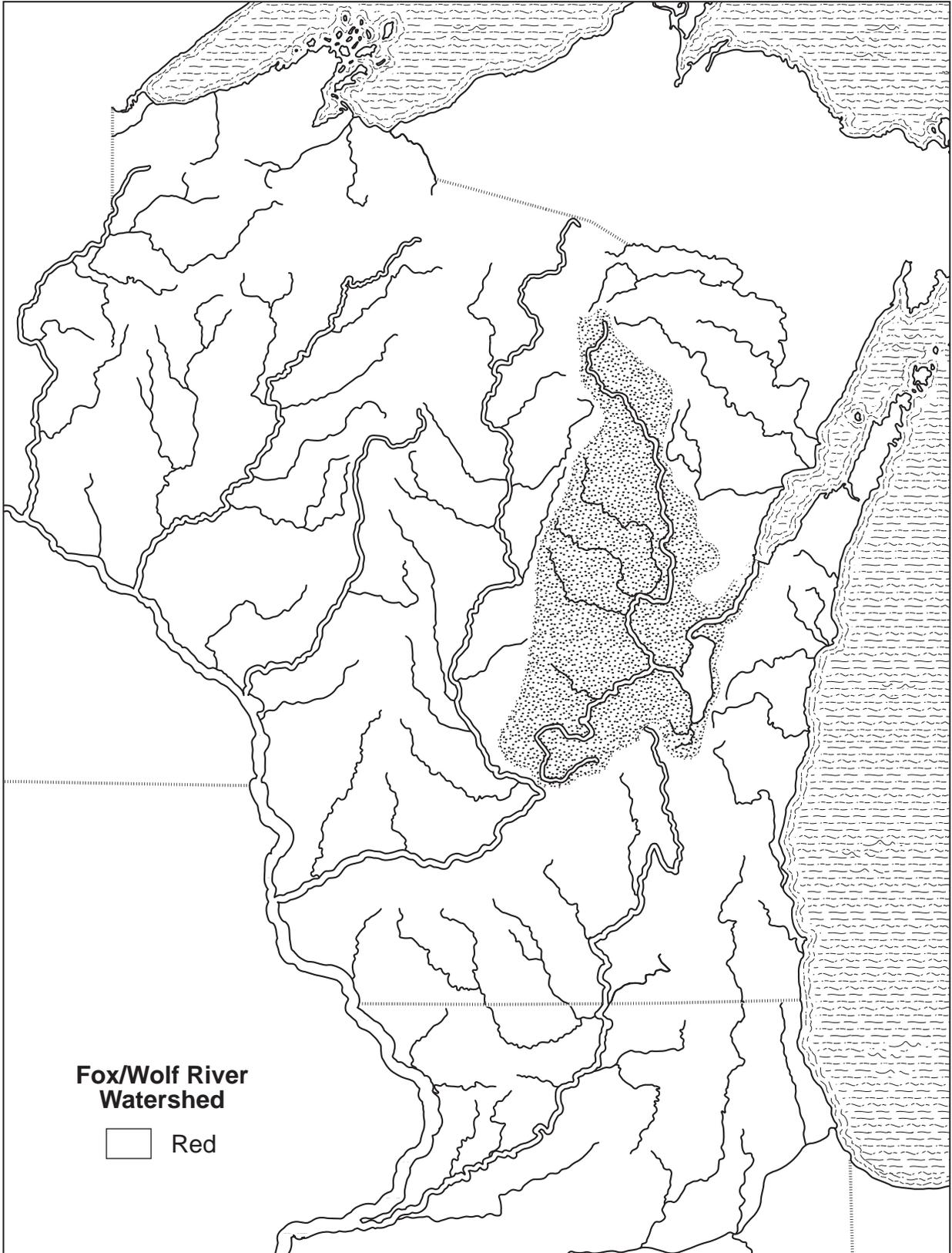
Black River Watershed



Name _____

Date _____

Fox-Wolf River Watershed



Name _____ Date _____

Where Do Wisconsin Rivers Flow?

River System	Mississippi River	Lake Michigan
Wisconsin River		
St. Croix River		
Black River		
Rock River		
Fox-Wolf Rivers		
Chippewa- Flambeau Rivers		

Where Do Wisconsin Rivers Flow? Answer Key

River System	Mississippi River	Lake Michigan
Wisconsin River	X	
St. Croix River	X	
Black River	X	
Rock River	X	
Fox-Wolf Rivers		X
Chippewa-Flambeau Rivers	X	

Activity 3

Miniature Glaciers

Overview

Melting glaciers created areas of glacial outwash (debris carried by water). This sorting affected the region's natural topography, with boulders and larger rocks remaining on higher ground while the sand washed to the central plains. In this activity, students will create a miniature glacier and observe the "sorting" of drift material from the melting glacier.

Materials

One set for each "miniature glacier":

- Bread pan or metal ice tray
- 1 tablespoon sand
- 1 tablespoon small pebbles (*pea size or smaller*)
- 1 tablespoon gravel
- 1 cup water
- Cookie sheet with sides or 9" x 13" x 3" pan

Measuring tools (*tablespoons and measuring cup*)

Freezer

Miniature Glacier Observation sheet

Pencils, markers, colored pencils, or crayons

Procedures

1. Depending on class size and resources, make one "miniature glacier" for the entire class, or divide the class into small groups and have each group make a glacier.
2. Discuss appropriate behavior around water and dirt. Review measurement skills.
3. Have one student pour one cup water into the bread pan. Then have additional students pour in the sand, small pebbles, and gravel.
4. Hand out the Miniature Glacier Observation sheet; have students make an initial written observation with an accompanying sketch.

Subject Content: Earth Science

Grades: 4 through 6

Activity Time: 2 class periods

Goal

To understand how glaciers shaped the landscape of the Great Lakes region

Skills and Strategies

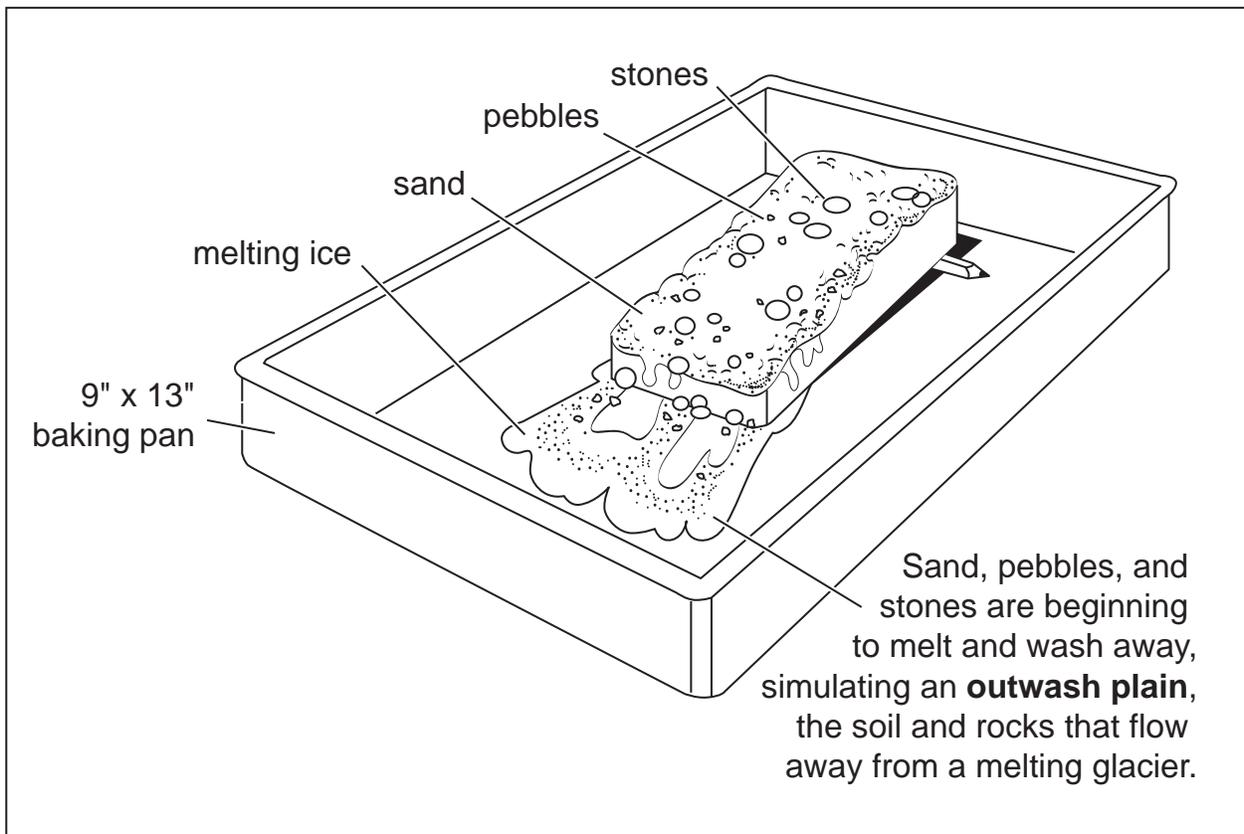
Observing, recording, analyzing, collaborating, constructing

Objectives

The student will:

- ◆ Construct a model of a glacier
- ◆ Observe and record the sorting of drift material through modeling
- ◆ Compare and contrast the size and placement of the drift materials in the glacial melt outwash plain

5. Freeze the bread pan overnight.
6. When ready to begin student observations, remove the bread pan from the freezer. (Note: The most remarkable observations will occur after the bread pan has been at room temperature for one to three hours.)
7. Remove the miniature glacier (*that is, the entire block of ice*) from the bread pan and place, smooth side down, on the cookie sheet.
8. Have students fill out the observation sheet at regular intervals, recording the time, noting any changes, and sketching what they see. As the glacier melts, use a book to elevate one end of the cookie sheet slightly. The larger stones should remain in place, while the smaller pebbles and sand should run outward. This movement represents the “sorting” of drift materials from melting glaciers. Make sure students recognize that the larger materials remain at the higher elevations, while the smaller materials move farther away.



Closure

After the glacier melts and the drift is obvious, discuss the final observations with the class:

- ♦ What happened to the glacier?
- ♦ What did you see and record?
- ♦ What happened to the sand? The pebbles?
- ♦ What do you think occurred?

Allow students time to write a brief paragraph on the observation sheet about the conclusion of the experiment. Use completed activity sheets for assessment.

Name _____ Date _____

Miniature Glacier Observation Sheet

Time	Observations	Draw what you see

Conclusion _____

Activity 4

Where's the Water?

Overview

Earth's water is constantly being used and reused through the water cycle, a process through which water circulates through bodies of water, the atmosphere, and land. Solar energy and gravity are two major drivers of this process, which can involve water in its solid, liquid, or gaseous states. In this activity, students will reconstruct the water cycle for a particular location on Earth.

Materials

Research materials, ex. library books or Internet

Construction paper, crayons, markers, colored pencils, or other materials to create a visual representation of the water cycle

Teacher Prep

Students should have familiarity with the water cycle, including terms like evaporation, condensation, precipitation, transpiration, and surface runoff. Watersheds should be discussed as a means of addressing the interconnectedness of water systems.

Procedures

1. Have each student choose a location in any part of the world, either local or distant. Students can choose a location as small as a city park or as large as a state or country. You might encourage some students to choose especially wet or dry environments, including geographical features like the Amazon Rainforest or the Gobi Desert.
2. Instruct students to briefly research the climate and environment of that location.
3. Using that information, instruct students to draw a visual representation of a water cycle to show the typical movement of water in that location. Water cycles should show water changing states and the forces that cause these changes. More advanced water cycles might include groundwater aquifers and wells.

Subject Content: Earth Science

Grades: 4 through 6

Activity Time: 1 class period

Goal

To demonstrate understanding of the water cycle

Skills and Strategies

Research, analysis, critical thinking

Objectives

The student will:

- ◆ Describe the movement of water through the water cycle
- ◆ Explore the different states of matter in the water cycle
- ◆ Identify where and how pollution transfers in the water cycle

Closure

Discuss how the location chosen affected the water cycle within that environment, considering the following questions:

- ♦ What parts did solar energy and gravity play within the water cycles?
- ♦ Did water appear in solid, liquid, and gaseous forms in all of the water cycles?
- ♦ What do water cycles in desert environments have in common with water cycles in wet environments?
- ♦ How does pollution spread beyond a single location as part of the water cycle? What kinds of pollution can spread through the water cycle?

You may wish to connect the students' water cycles into a single, worldwide water cycle to show the interconnectedness of the world's water systems.

Online Resources

The journey of water through the water cycle:

<http://www.projectwet.org/resources/materials/discover-incredible-journey-water-through-water-cycle>

Follow the drop through watersheds:

https://arboretum.wisc.edu/content/uploads/2015/04/RGS-2-2_Follow-the-Drop.pdf

Activity 5

Food Chains

Overview

All living things get energy from food, and all living things need water to survive. Food chains track the ways that energy is transferred in sequence, from the sunlight that provides the energy plants use to produce food to the animals that consume those plants. A food chain can become quite long as more organisms are included. Water is also integral to the survival of each organism. In this activity, students will deconstruct a favorite recipe or meal into each ingredient's food chain, noting each food chain item that requires water to live.

Materials

Cookbooks

Writing paper

Teacher Prep

Students should be familiar with the difference between food chains and food webs—food webs consist of many food chains that are interconnected. Display a few examples of food chains on a whiteboard or screen for students to follow.

Procedure

1. Instruct students to bring in or pick out a favorite recipe and write out the ingredients. Encourage students to choose recipes that include a variety of foods, including meats, dairy items, and grains.
2. Ask students to trace each ingredient in the recipe down the food chain based on what it needs to grow or be made. Have students trace each ingredient until they reach the initial source of energy: sunlight.

Subject Content: Biology, Earth Science

Grades: 4 through 6

Activity Time: 30 minutes

Goal

To recognize the importance of water in sustaining life through the creation of food chains

Skills and Strategies

Analysis, critical thinking

Objectives

The student will:

- ◆ Explore the transfer of energy that occurs within food chains
- ◆ Compare and contrast a variety of food chains
- ◆ Discover why water is integral to almost every step of the food chain

3. Once the students have constructed the food chains that make up their favorite meals, instruct them to identify all the food chain items that require water to survive. They should highlight or mark these items for discussion.

Example: Hamburger: Beef = Cows ♦ → Hay ♦ → Sunlight
Ketchup = Tomatoes ♦ → Sunlight
Lettuce ♦ = Sunlight
Onion ♦ = Sunlight
Buns = Grains ♦ → Grasses ♦ → Sunlight

Closure

Have students discuss their findings and compare food chains, perhaps combining chains into an interconnected food web. Students should consider the following questions:

- ♦ Which ingredients required the most steps to trace back to sunlight?
- ♦ Which ingredients required the most water throughout their food chains? How do those ingredients compare with the ingredients that required the most steps to trace back to sunlight?
- ♦ What would happen to the food chains (or food web) if water suddenly became unavailable?

Encourage students to consider the interconnectedness of living things and the number of resources, including water, that go into creating even simple food items.

Name _____ Date _____

Recipe Chains

Step One: Find a recipe for a favorite dish and write the ingredients below. You do not need to list ingredient quantities.

Step Two: Trace each ingredient in your recipe down its food chain until you reach the primary source of energy: sunlight.

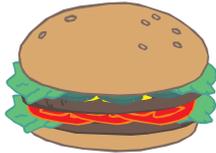
Example: Hamburger: Beef = Cows → Hay → Sunlight

Ketchup = Tomatoes → Sunlight

Lettuce = Sunlight

Onion = Sunlight

Buns = Grains → Grasses → Sunlight



Activity 6

Wisconsin's Endangered Species

Overview

Wisconsin developed its first endangered and threatened species list in 1972 after the enactment of the Wisconsin Endangered Species Law. In 2014, the Wisconsin Department of Natural Resources identified 233 species of endangered or threatened plants and animals in Wisconsin. These species face a number of threats, including loss of habitat, pollution, and the influx of non-native, invasive species. This activity allows students to explore an endangered or threatened species and present resolutions for reducing threats to those species to classmates.

Materials

Research materials, ex. library books or Internet

Online Resources

List of Wisconsin's endangered and threatened species:

<http://dnr.wi.gov/topic/endangeredresources/etlist.html>

Wisconsin's rare species and natural communities:

<http://dnr.wi.gov/topic/EndangeredResources/Biodiversity.html>

Environmental education for kids:

<http://dnr.wi.gov/org/caer/cc/eeek/earth/endangered.htm>

Subject Content: Biology, Earth Science

Grades: 6 through 8

Activity Time: 1 class period for research, 1 class period for presentation and discussion

Goal

To familiarize students with endangered species in Wisconsin and explore solutions for reducing threats to species

Skills and Strategies

Research, analysis, critical thinking, public speaking and presentation

Objectives

The student will:

- ◆ Recognize the difference between endangered and threatened species
- ◆ Identify endangered and threatened species in the state of Wisconsin
- ◆ Describe the types of issues that threaten various species
- ◆ Learn about conservation efforts

Teacher Prep

To streamline the research process, it may be helpful to identify a number of endangered or threatened species from which students can choose, keeping in mind that there are more resources on some species than others. Teachers should also explain the difference between endangered and threatened species. In Wisconsin, an endangered species is any species whose continued existence as a viable component of the state's wild animals or wild plants is determined to be in jeopardy on the basis of scientific evidence. A threatened species is any species which appears likely to become endangered within the foreseeable future, based on scientific evidence.

Procedures

1. Divide students into pairs or small groups and ask them to choose an endangered or threatened species in the state of Wisconsin, encouraging a mix of plants and animals.
2. Instruct students to research their chosen species. Students should research the primary threats to the species and any existing plans or legislations meant to conserve the species.
3. Instruct students to make their own recommendations for the conservation of the species and to troubleshoot their recommendations by listing potential issues or challenges they might face when implementing them.
4. At the end of the class period or in a subsequent class, students should give brief presentations about their research. Instruct students to include their preference for a resolution and a discussion of the challenges to this resolution in their presentations.

Example

Whooping cranes disappeared from Wisconsin many years ago due to loss of wetland habitats and overhunting. Currently, there are programs in place that raise whooping cranes in captivity and then use ultralight planes to teach the birds how to migrate south in the winter. These programs are helping whooping cranes, but the cranes continue to suffer from low numbers and the program cost is very high. I would suggest continuing this program but complementing it with legislation to protect the whooping cranes' habitat along their migration route. This is costly, but it is ultimately needed for the survival of the species.

Closure

As a class, discuss the challenges facing endangered and threatened species and the types of resolutions that are currently being explored. Consider the following questions:

- ♦ What threats to endangered and threatened species were common across species? Why do you think these threats were so common?
- ♦ Which resolutions to threats were successful? Which were unsuccessful? What common themes linked the successful or unsuccessful resolutions?
- ♦ What challenges to resolutions were identified most frequently and how could they be overcome?
- ♦ Many proposed resolutions can be quite costly. Why is or isn't it worthwhile to invest in the reintroduction or restoration of species?

Name _____ Date _____

Wisconsin's Endangered Species

Step One: Choose an endangered or threatened species in the state of Wisconsin, considering both plants and animals. Research the species and the primary threats to its survival.

Step Two: Research any existing plans or legislation meant to conserve the species. What threats do these plans address and how strictly are the plans enforced?

Step Three: Make recommendations for the conservation of this species. You may agree with an existing approach or promote an original approach to the issue. Troubleshoot your recommendation by listing the potential issues or challenges you would face when implementing it. These issues may range from limited funding to social attitudes or concerns for other species.

Activity 7

Microscopic Aquatic Life

Overview

Waterways provide habitats for countless organisms, including many that cannot be seen by the naked eye. In this activity, students will explore their local lakes, rivers, and streams to collect water samples and identify examples of microscopic life. Students will consider the ways that changes in water quality can affect living organisms and will try to identify these trends in local habitats.

Materials

Jars or other containers for collecting water samples
Eyedroppers
Microscope slides
Microscopes
Microorganism identification keys (*see Online Resources, below*)

Online Resources

The following websites provide useful descriptions and images of aquatic life students may encounter:

Water Critter Key – Life in a Pond:
<http://dnr.wi.gov/org/caer/ce/eek/critter/watercritter/critterindex.htm>

Pond identification sheet:
<http://www.biologycorner.com/worksheets/identifypond.html>

Citizen stream monitoring worksheets:
http://watermonitoring.uwex.edu/pdf/level1/datasheets/WAV_Data_Recording_Form_FINAL_10_06_15.pdf

Subject Content: Biology, Earth Science

Grades: 4 through 8

Activity Time: 1 class period for sample collection, 1 class period for slide preparation and viewing

Goal

To understand how water quality affects the ability of organisms to inhabit an ecosystem

Skills and Strategies

Following directions, group work, observation, analysis and classification, recording information using visual and written descriptions

Objectives

The student will:

- ◆ Identify microscopic aquatic life in water samples taken from local lakes, rivers, and streams
- ◆ Identify factors that might affect the ability of organisms to thrive in a waterway

Teacher Prep

To save time, teachers may collect water samples ahead of time; however, examples of microscopic life will be most abundant if classrooms collect new water from near algae blooms. If the teacher elects to collect samples ahead of time, it may be helpful to take photographs of the area from which the sample was taken to share with students. Teachers should review the correct methods for preparing a wet mount slide and using a microscope.

Procedures

1. Travel with students to collect water samples from several local streams, rivers, or lakes, or use water samples previously collected by the teacher. Instruct students to note the conditions of the water from which the samples were taken.
2. In the classroom, have students prep slides from each sample to examine under a microscope. Each group should have one slide from each water sample location. Make sure students carefully document which slides belonged to each location.
3. Instruct students to examine the slides and draw any objects or organisms they see in the slide. Students should count the number of objects in the slide and note how many appear to be living organisms.
4. Challenge students to try to match their sketches with examples of aquatic organisms found in the Online Resources listed above.

Closure

As a class, discuss the objects and organisms that were found in the water samples, comparing samples both from the same body of water and from different bodies of water. Students should consider the following questions:

- ♦ What objects or organisms appeared in water samples from more than one location?
- ♦ Did water from one location offer examples of organisms that were more diverse than the samples from different locations? Why could this be?
- ♦ What factors do you think impacted the organisms that were found (*ex. pollution, temperature, sunlight*)? How might you find different organisms within the same body of water?
- ♦ If a sample included no organisms, why might that be?
- ♦ How would a change in water quality adversely or favorably affect the organisms?

Extension

Students can collect and share their results by taking part in volunteer stream monitoring projects through UW Extension. This citizen science opportunity allows groups throughout the state to monitor the health of their hometown streams and rivers. For more information, visit <http://watermonitoring.uwex.edu/wav/monitoring/index.html>.

Activity 8

Wisconsin Travel Then and Now

Overview

Throughout history, people have sought the most efficient and inexpensive means to travel and move goods from one place to another. Although water transportation today remains significant for shipping and recreation, most of our everyday travel is land based. To highlight changes in transportation in Wisconsin, students will compare historic river travel and contemporary highway travel in this activity.

Materials

Wisconsin Rivers map (*one digital overhead; one copy of map per pair of students*)

Wisconsin Travel: Then and Now activity sheet (*one for each pair of students*)

Answer Key: Wisconsin Portages

Wisconsin Highways map with scale (*one digital overhead; one copy of map per pair of students*)

Standard Wisconsin highway map for small groups of students (*optional*)

Computer with Internet access (*optional*)

Procedures

1. Begin the activity by reviewing the basic map skills that will be needed to complete the activity, including the parts of a map (*compass rose, scale, key*) and cardinal directions (*N, S, E, W, SW, NE, etc.*).
2. Have students work in pairs for this activity. Hand out the Wisconsin Rivers map to each pair of students and display it as a digital overhead. Review and discuss the features of the map.
3. Discuss early river travel. Ask why river travel was important to early Wisconsin people and why people didn't travel on highways like we do now. Explain that historically, Wisconsin people used the rivers and waterways to travel and that they traveled from one river to another by short overland trails called portages. Have students identify the portages on the rivers map.
4. Tell students to imagine they are early French fur traders in Wisconsin. They are at the trading post in Green Bay (*have each pair find Green Bay on the map*) and need to travel to the trading post in Prairie du Chien (*have students find this town on the map*) for a rendezvous.

Subject Content: History, Geography

Grades: 4 through 6

Activity Time: 1 class period

Goal

To recognize the importance of river travel in the past

Skills and Strategies

Applying, analyzing, evaluating

Objectives

The student will:

- ◆ Practice mapping skills
- ◆ Compare and contrast river and highway travel in Wisconsin
- ◆ Explain why river travel was preferred in the past

5. Give students time to discuss the travel routes with their partners. Then hand out the Wisconsin Travel: Then and Now activity sheet. Have students work in pairs to complete the river route of the activity sheet. Guide students as they give directions for travel, making sure they include the rivers they take, the direction they are traveling (*north, south, southeast, etc.*), and any portages. Have them mark portages on the Wisconsin Rivers map.
6. Repeat the mapping activity using the Wisconsin Highways map. Hand out the Wisconsin Highways map and display the digital overhead.
7. Have students identify the cities of Green Bay and Prairie du Chien. Instead of traveling via waterways, modern travelers will travel by the roads and highways.
8. Have students trace the new route between the two cities and complete the second portion of the activity sheet. Guide students as they give directions for travel. Be sure they include the highways they will be taking and the direction of travel. **NOTE:** As an optional activity, have students calculate the approximate distance traveled, using string and a map scale.

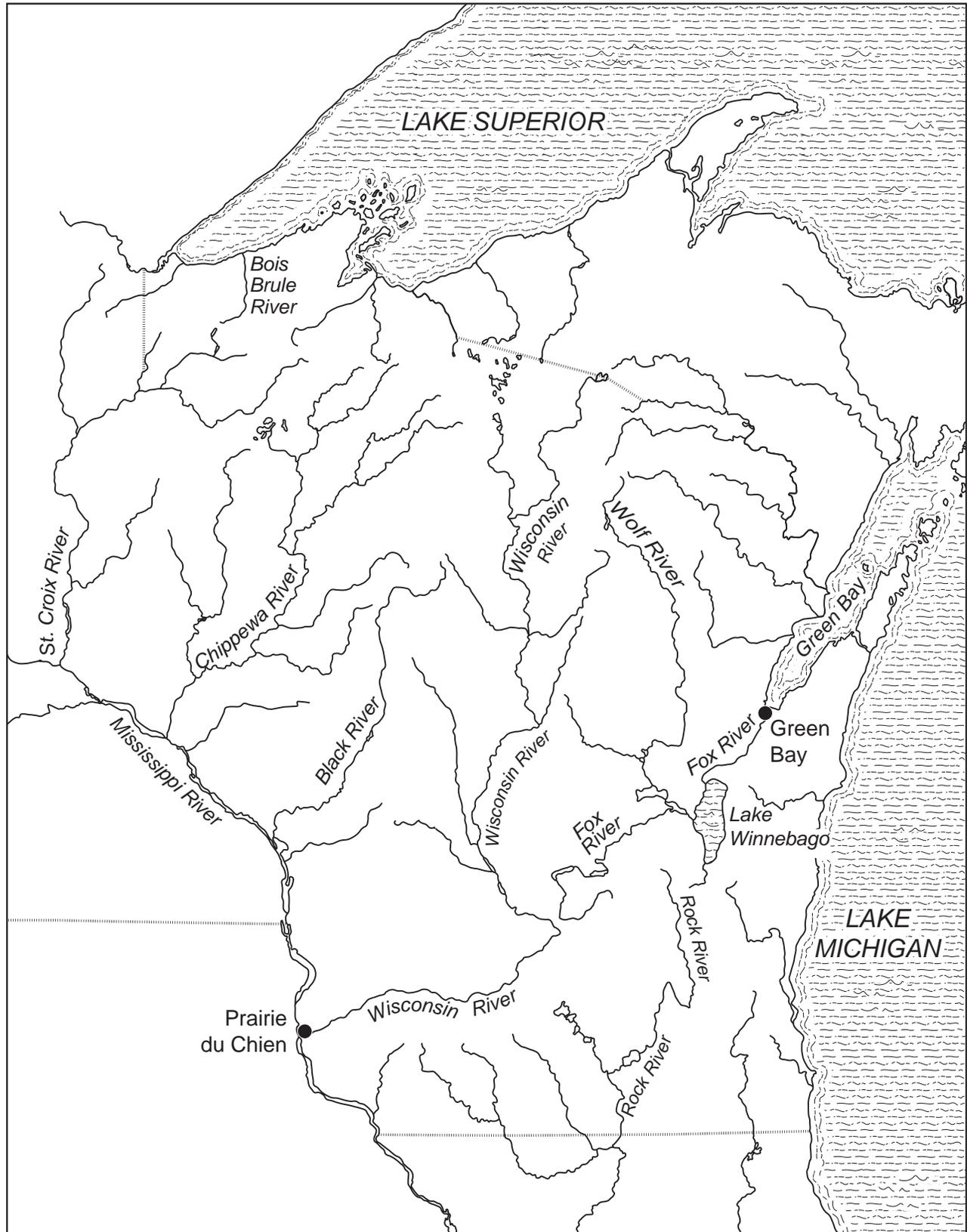
Closure

Compare and contrast the two routes and discuss as a class. Have students complete the third portion of the activity sheet with their partners to hand in for assessment. Stress that although land travel is fast today, it was very difficult and time-consuming in the past. In order to move heavy goods and furs, traders had to use water routes.

Extensions

1. Have students compare the speed of river travel versus road travel, assuming a canoe travels about five miles per hour and a car travels about sixty miles per hour. What does this tell us about travel then and now?
2. Interested students can find out how to get from their hometown to Madison or to Milwaukee. Have them plan their route on a highway map, finding information on the Internet about the cities through which they pass. They can then compile a list of helpful websites and turn it in with their marked maps.

Wisconsin's Rivers Map



Name _____ Date _____

Wisconsin Travel: Then and Now

Then: Wisconsin Rivers

What river route will you take from Green Bay to Prairie du Chien? Give directions for travel and trace the route on your map. Name the waterways that will help you reach Prairie du Chien, and circle the places that you have to portage your canoe.

Now: Wisconsin Highways

What route will you take from Green Bay to Prairie du Chien? Give directions for travel and trace the route on your map. Name the highways over which you need to travel, and name some of the main cities that you will drive through to reach Prairie du Chien.

Then and Now

In what ways are the river route and highway route the same?

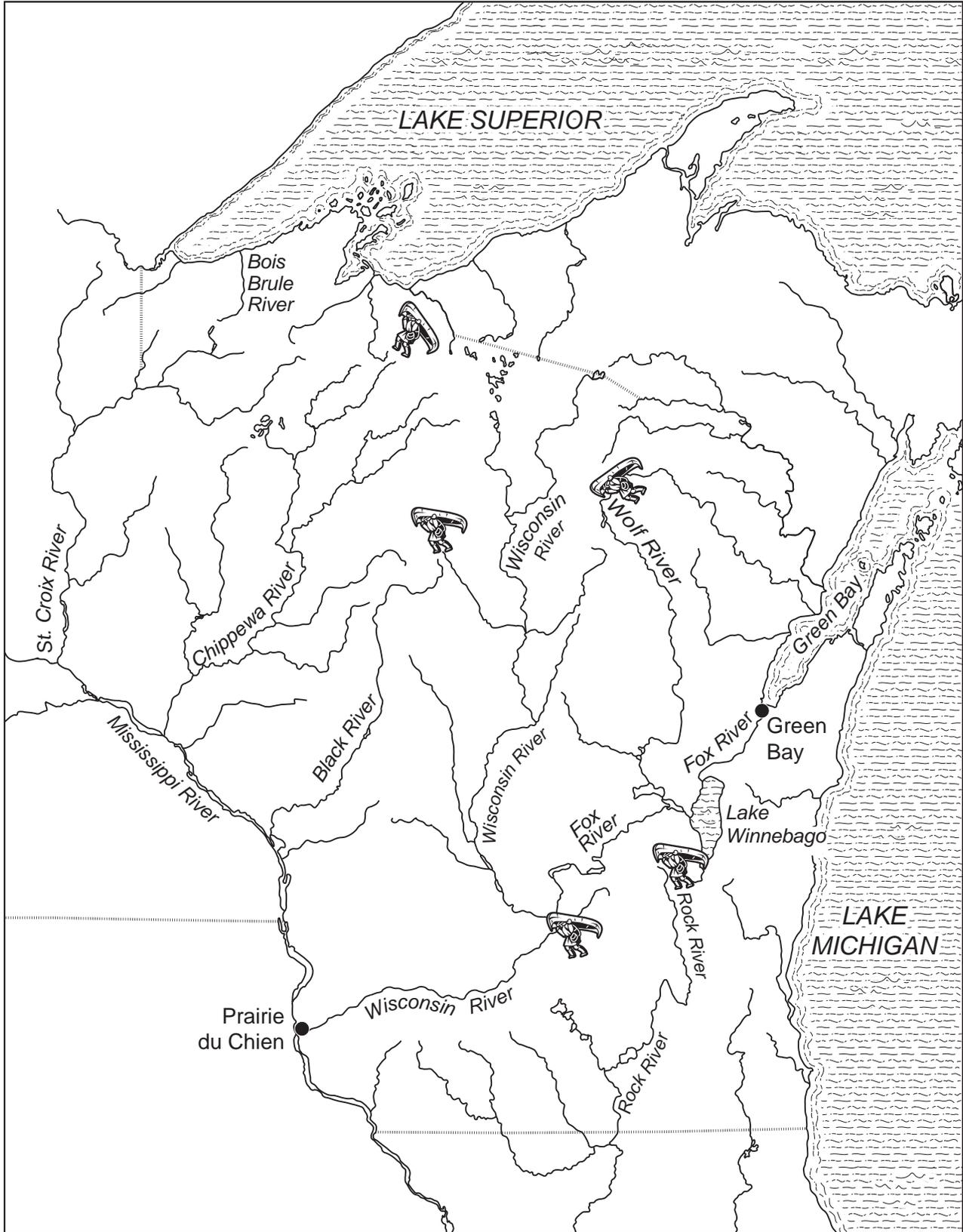
In what ways are the river route and highway route different?

Compare and contrast how we use the rivers today with how our ancestors used the rivers hundreds of years ago.

Challenge Question:

How many miles is the highway route from Green Bay to Prairie du Chien? _____

Wisconsin Portages: Answer Key



Activity 9

Boat Float

Overview

Shipwrights consider the purpose of ships they design and build. In this activity, students will think and act like shipwrights as they attempt to construct a simple boat that can both float and carry cargo.

Materials

Aluminum foil (*one square foot*) or modeling clay (*fist-sized lump*)

Boat Float Challenge activity sheet (*one per student*)

Pennies or small weights (*about ten per group*)

Tub of water for each group

Paper towels for clean-up

A selection of picture books of boats for students to browse

Computer with Internet access (*optional*)

Procedures

1. Engage students in a discussion of buoyancy, reviewing the basic principles: what floats and what does not, and why. Remind students that many boats and ships have steel or even cement hulls, so the material is not the only issue; the shape is also important. Discuss briefly some common boats (*canoe, rowboat, sailboat, steamer*), their shapes, and the materials used in their construction. Explain to the students that they will be acting as shipwrights (*designers who construct vessels*), and that they will be free to create boats of any shape from the material (*foil or clay*) you have selected.
2. Pass out boat material (*foil or clay*) to each student. Pass out the Boat Float Challenge activity sheet to each student. Explain that students will be experimenting with boat designs. Demonstrate the concept of buoyancy by crumpling a sheet of foil into a tight ball (*or make a tight ball of clay*) and place it in a tub of water. The ball will sink. Have students draw their initial design of their boat in the box at the top of the Boat Float Challenge sheet. At this point they should not be using outside images for help.
3. Have students use their ideas in their drawings to construct their models. They should not have any material left over.

Subject Content: Engineering, Art

Grades: 4 through 8

Activity Time: 1 class period

Goal

To understand the effects of boat design on buoyancy

Skills and Strategies

Observing, recording, analyzing, evaluating, synthesizing

Objectives

The student will:

- ◆ Experiment with a variety of boat designs
- ◆ Compare and contrast various designs
- ◆ Hypothesize and modify an investigation based on data
- ◆ Demonstrate an understanding of buoyancy through analysis of data

4. When they are finished building their boats, have each student guess what will happen when their boat is placed in the water. Will it float? Will it sink? Will it tip over? Allow students a few minutes to write their hypotheses.
5. Collect activity sheets to prevent them from getting wet.
6. Divide students into groups of four or five. Each group should have ten pennies or weights, a tub of water, and paper towel to clean up spills.
7. Have students test their designs by floating the boats in the tub of water. If the boats do not float, have students modify their boat design, either by increasing its surface area or making a more stable hull shape.
8. Allow students time to modify and test their boats. At this point they may browse through books, find Internet resources containing vessel images, or look at their classmates' work.
9. After they get them to float, challenge students to fill their boats with weights. Add pennies or weights one at a time. If the boat sinks, have them continue to modify their boat design. Also, experiment with weight placement and observe how the boat reacts to different distributions of weight.
10. After students clean up and dry their areas, pass back their Boat Float Challenge activity sheets. Have students draw a picture of their final boat design in the box at the bottom of the sheet and then have them fill in the remainder of the worksheet with how many weights the final design held, what worked and didn't work, and their final conclusions.
11. Have students share their final boat designs; then discuss and determine which designs worked best. Which of the hypotheses proved true, and which turned out to be false? On a chalkboard or screen, list attributes of the boats that floated best. On a second list, have students determine attributes of the boats that held the greatest amount of weight. Consider those boat designs that were successful in both categories.

Closure

Complete the discussion by focusing on the following:

- ♦ Why is it critical to design a boat that floats?
- ♦ What factors caused some boats to sink? What factors helped others to float?
- ♦ Would the same factors be true for huge ships? Why?
- ♦ Would some boat designs work well in some instances and not in others? For example, a flat raft works well in a slow moving stream or river but not in open water. Conversely, an ocean-going vessel that sits relatively deep in the water would not work in shallow areas.

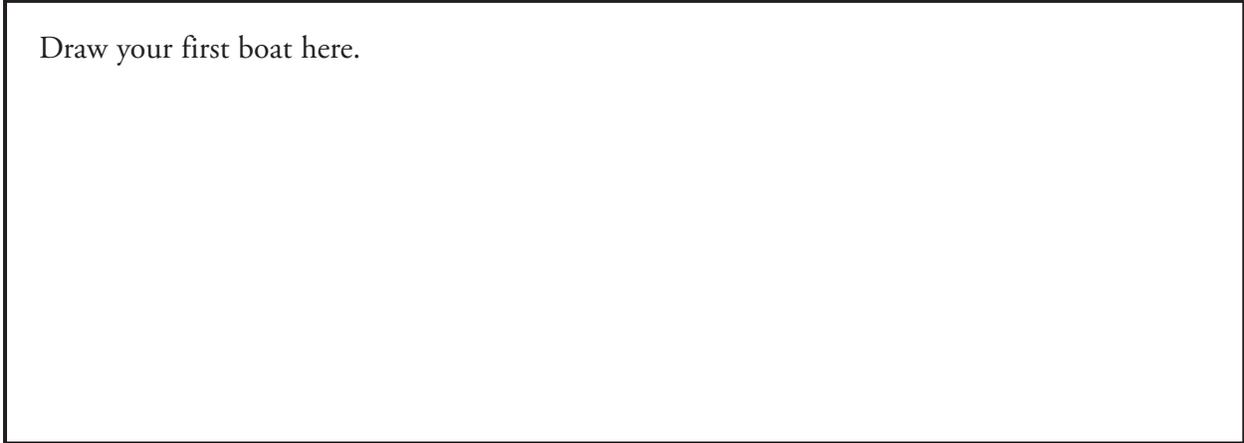
Extension

Have students explore the Internet for kid-friendly sites on buoyancy.

Name _____ Date _____

Boat Float Challenge

Draw your first boat here.



Hypothesis: What will happen when you put your boat in the water? _____

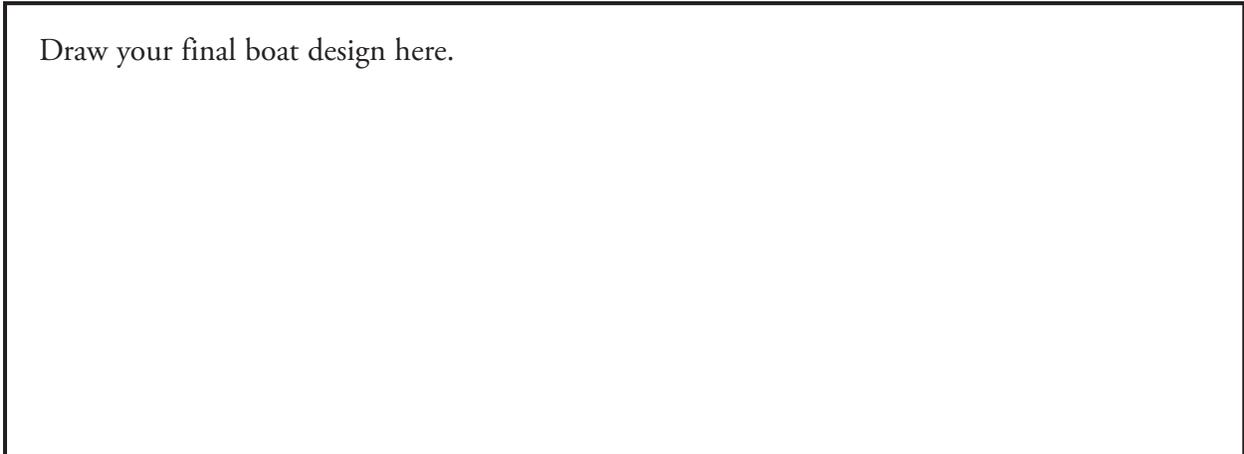
Number of weights in your final boat design: _____

What worked? _____

What didn't work? _____

Conclusion _____

Draw your final boat design here.



Activity 10

Building Bridges

Overview

Bridges play an important role in our daily lives, connecting populations of people to each other and to geographic areas that might otherwise be unreachable. Some bridges are simple and straightforward, while others are very complex. Bridge construction has also changed dramatically over time. This activity allows students to use creative problem solving to explore different elements of bridge design and compare their constructions with other students' creations.

Materials

Bridge images (*see Online Resources, below*)

Newspaper

Masking tape

Textbooks or other classroom objects to test bridges

Online Resources

WHI Image ID 28537 – John Street Bridge

WHI Image ID 30392 – Bridge at Foot of Mirror Lake

WHI Image ID 30535 – Aerial Bridge, Duluth-Superior

WHI Image ID 30634 – Barstow Bridge

WHI Image ID 78600 – Bridge, Jefferson County

Teacher Prep

Students should have a familiarity with bridge types, such as suspension, beam, and arch bridges, before starting the activity. Teachers can use images from the Wisconsin Historical Society Archives to show historical images of bridges throughout Wisconsin. Teachers may also want to prepare an example of an already-constructed bridge to kick-start student brainstorming.

Procedures

1. Divide students into groups of 3 or 4 students. Have each group look at images of bridges, identifying key aspects of the structures, such as loadbearing and stabilizing features. Discuss the importance of bridges in connecting people: what would happen if a city had to close a bridge for a period of time?

Subject Content: Engineering, History, Geometry

Grades: 6 through 8

Activity Time: 1 class period

Goal

To understand how a bridge works

Skills and Strategies

Group work, creative problem solving, observation, analysis, recording information using visual and written descriptions

Objectives

The student will:

- ◆ Identify key features of bridge structures
- ◆ Explore a variety of ideas to solve a problem
- ◆ Use teamwork to accomplish a goal

2. Instruct each group to design their own bridge, using only newspaper and masking tape to span 12 inches between two tables or chairs (older students can be challenged to create longer bridges). Challenge the students to use features they identified in the photos and to try original designs. Encourage students to experiment with the newspaper, folding it or rolling it to make it stronger.
3. At the end of the period, students should test the weight limit of their bridges by gradually increasing the load of textbooks or other classroom objects on the bridge span until it collapses. Each group should go one at a time. The teacher should keep a tally of each bridge's capacity.

Closure

Discuss which designs worked better or worse than others and which bridge features seemed to hold the most weight. Have students discuss the following questions:

- ♦ What kind of problems did you run into while building your bridge? How did you solve them?
- ♦ Why do you think one bridge is stronger than another?
- ♦ What could you do to make your bridge stronger?

Teachers may supplement this activity by having students take the knowledge they gained through the activity to design a “Super Bridge” with maximum capacity in a subsequent class period.

Name _____ Date _____

Building Bridges

Step One: As a group, look at historic images of bridges and highlight the main features of these structures. What parts of the bridge do you think are the most important and why?

Step Two: Sketch designs for a bridge. Keep in mind the features from the last step, but also try new ideas. Sketch at least three designs.

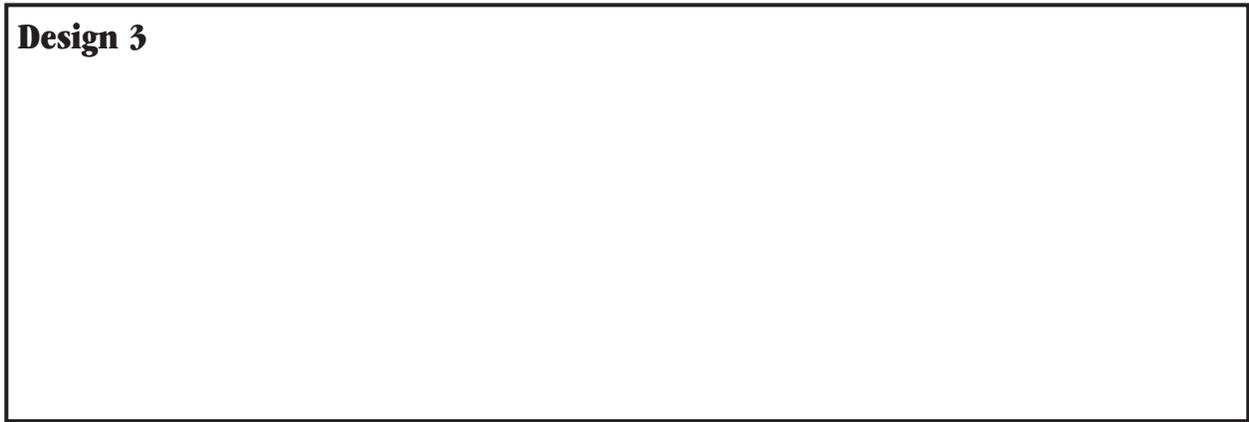
Design 1



Design 2



Design 3



Step Three: As a group, choose one of the three sketches and build your design.

Step Four: Once you have finished building, test your design by placing textbooks onto the bridge one at a time.

Discuss

How many books did your bridge hold?_____

What part of the bridge failed after the last book?_____

What changes would you make to your design after this test?_____

Activity 11

How a Lock Works

Overview

Locks are designed to allow vessels to pass from one water level to another in a canal or river. Locks are a critical part of some of Wisconsin's waterways, such as the Mississippi and Fox River and the Great Lakes. In this activity, students will gain a better understanding of the workings of a lock.

Materials

Parts of a Lock diagram (*one digital overhead; one handout per student*)

Lock Puzzle activity sheet (*one per student*)

Answer Key: Lock Puzzle

Scissors

Glue

Large pieces of construction paper

Procedures

1. Discuss some of the advantages of locks and canals, using the Erie Canal as an example.
2. Hand out or show the digital overhead of the Parts of a Lock diagram. Discuss the vocabulary—*lock, sluice, valve, gates*—and the parts of a lock.
3. Hand out the Lock Puzzle activity sheet to each student.
4. Have students volunteer to read aloud the label text or caption that corresponds to each picture. Give students time to match the caption to the right text. Be sure students understand each diagram.
5. Read the directions on the lock puzzle aloud to the class.
6. Hand out scissors, glue, and paper. Allow students time to complete the activity and give help as needed.

Closure

Go over the lock diagram and lock puzzle. Have students share their completed puzzles with the class. Have students hand in completed activities for assessment.

Subject Content: Engineering, History

Grades: 4 through 6

Activity Time: 30 minutes

Goal

To understand how a lock works

Skills and Strategies

Identifying, assembling, sequencing

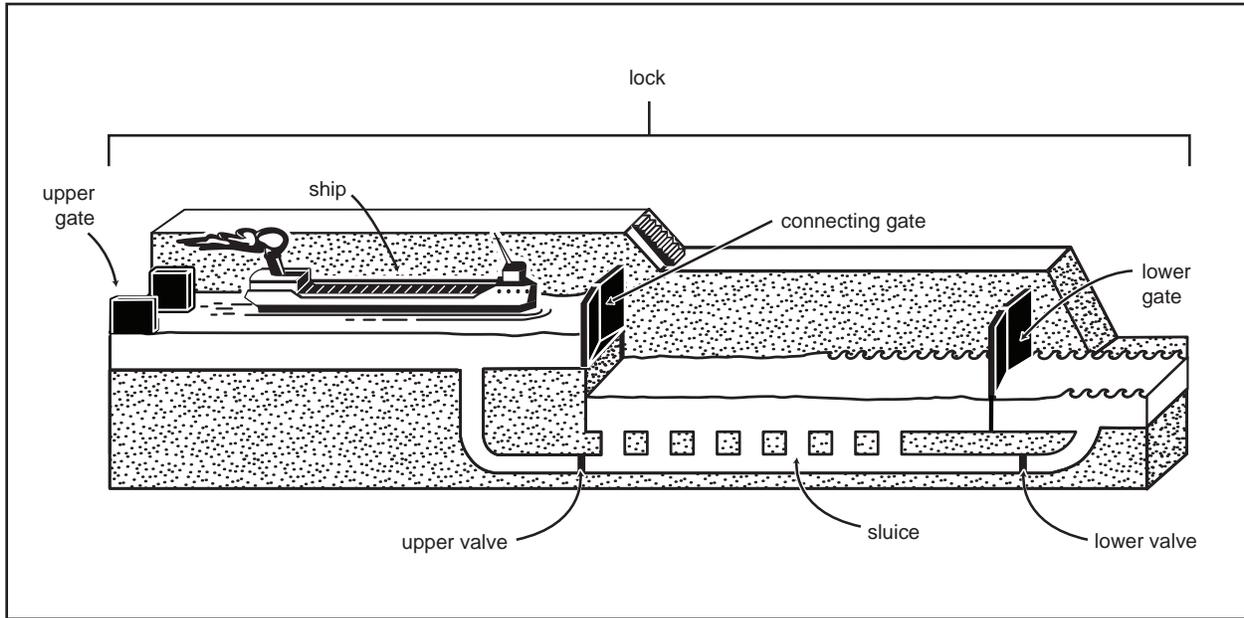
Objectives

The student will:

- ◆ Define the various parts of a lock
- ◆ Match captions with appropriate illustrations
- ◆ Assemble the Lock Puzzle activity

Name _____ Date _____

Parts of a Lock



Amelia James/Mike Gallagher, Midwest Educational Graphics

Vocabulary

Lock: A walled section of a canal or river that can be opened or closed by gates at each end. The water level in the lock can be raised or lowered to allow vessels to pass from one water level to another.

Sluice: A tunnel under a lock through which water moves in or out of the closed lock.

Gate: A door at either end of a lock that allows a vessel to enter or exit the lock.

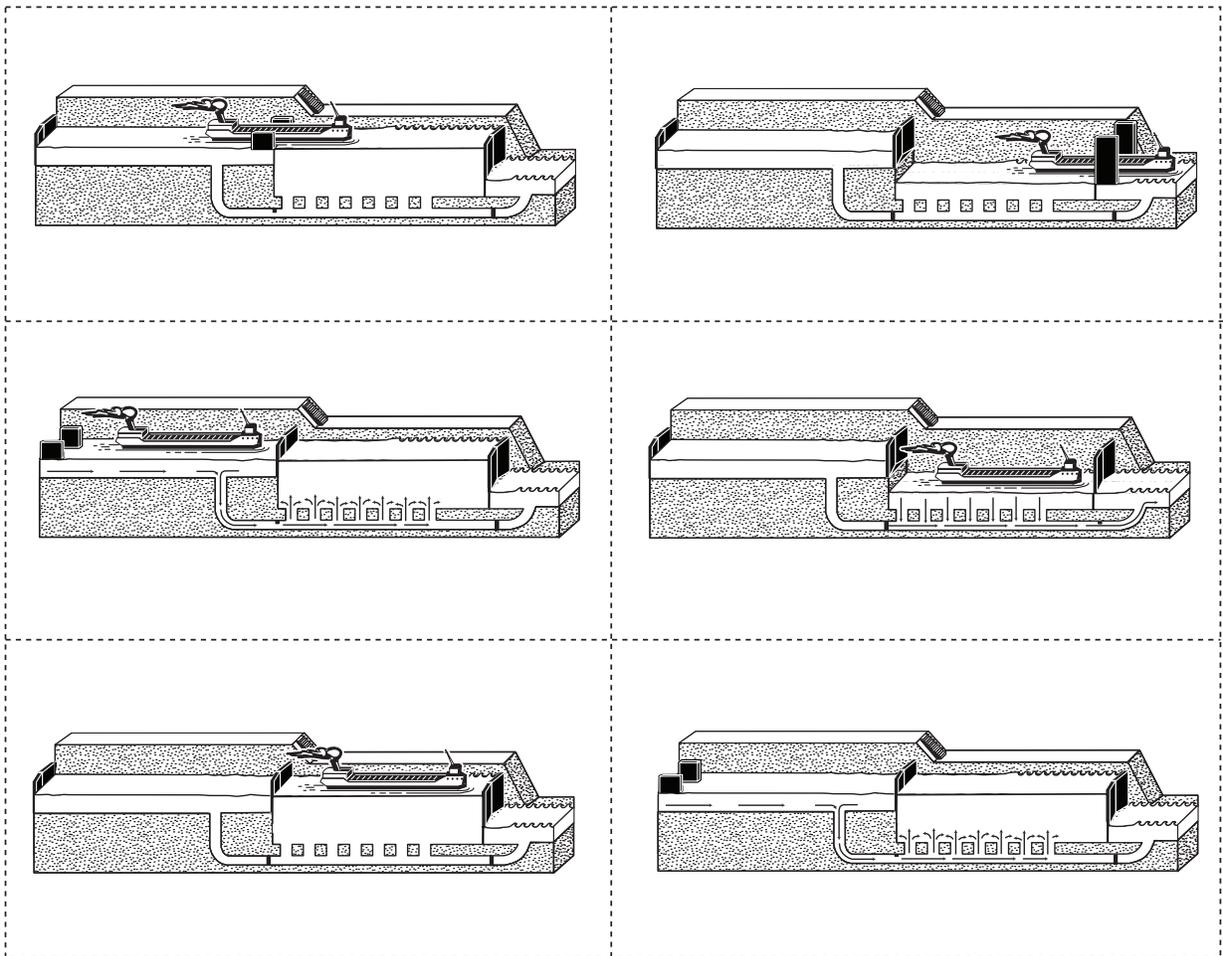
Valve: A control device that can be opened or closed to allow water to flow into or out of an area. For example, a sluice valve allows water in or out of the sluice.

Name _____ Date _____

Lock Puzzle Activity Sheet

Directions: These pictures are out of order. It's your job to arrange them in the correct order for a vessel to pass through the lock. To do so, follow these steps:

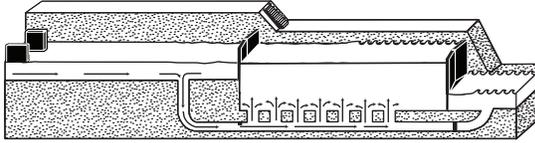
1. Cut out each picture and each caption.
2. Match each caption to the correct picture.
3. Arrange the pictures and captions in the correct order to allow a vessel to pass through the locks.
4. Glue the pictures and captions, in order, to a piece of construction paper, and label them in order from 1 to 6.



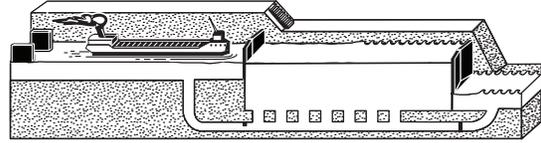
Captions for Lock Puzzle Activity Sheet

<p>The upper gates and lower gates are closed. Both valves are closed. The ship is in the second lock.</p>	<p>To get ready for a ship to sail from a higher to a lower water level, the upper gate and the upper valve open. The second lock is closed. The sluices allow the water to fill the second lock.</p>
<p>The upper and lower gates are closed, and the connecting gate is open. The boat passes into the second lock.</p>	<p>The upper gates and upper sluice valve are closed. The lower sluice valve and lower gates are open. The water level drops.</p>
<p>The ship enters the first lock.</p>	<p>The boat passes through the open lower gates and out of the lock.</p>

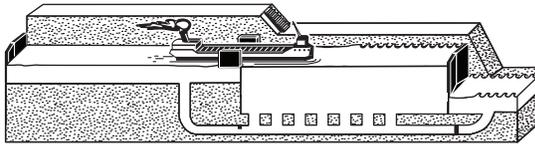
Lock Puzzle Activity Sheet: Answer Key



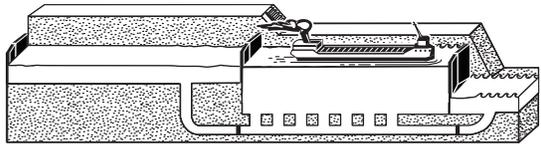
1. To get ready for a ship to sail from a higher to a lower water level, the upper gate and the upper valve open. The second lock is closed. The sluices allow the water to fill the second lock.



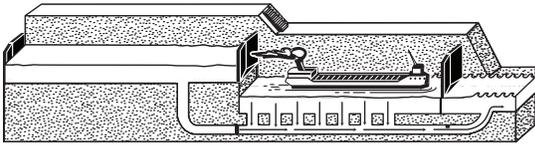
2. The ship enters the first lock.



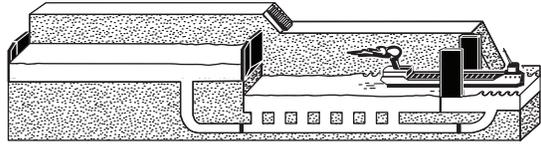
3. The upper and lower gates are closed, and the connecting gate is open. The boat passes into the second lock.



4. The upper gates and lower gates are closed. Both valves are closed. The ship is in the second lock.



5. The upper gates and upper sluice valve are closed. The lower sluice valve and lower gates are open. The water level drops.



6. The boat passes through the open lower gates and out of the lock.

Activity 12

Historic Postcards

Overview

This activity focuses on students using postcards as historical documents. Very little has been written about the pearling, clamming, and button industries in Wisconsin, so the historic postcards used to advertise and promote the pearling and button business in the early years of the twentieth century are especially valuable resources. They give us a view of our everyday past that was not carefully preserved elsewhere. In this activity, students will study copies of historic postcards, select appropriate captions, and then classify them according to the images depicted.

Materials

From Mussels to Buttons student information sheet (*one per student*)
Pearl and Button Business Historic Postcard Collection (*one set per group; consists of four pages with three postcards on each*)
Category Headings sheet (*one set of four per group*)
Pearl and Button Business Captions (*one set per group*)
Answer Key: Pearl and Button Business
Poster board or tag board (*one sheet per group*)
Scissors
Glue

Procedures

1. Hand out copies of the From Mussels to Buttons information sheet. Have students read the sheet, or read it aloud for the class with students following along. Based on this reading discuss with students what they have learned about Wisconsin's history of pearling. Where did people look to find pearls? What did they do if they did not find pearls? How were Wisconsin waterways important to the pearling and button business?

Subject Content: History, English/Language Arts

Grades: 4 through 6

Activity Time: 1 class period

Goal

To recognize the importance of historical documents to teach us about the past

Skills and Strategies

Observation, cooperative learning, analysis, classification, critical thinking, synthesis, creative writing

Objectives

The student will:

- ◆ Learn about the pearling and button business through historic postcards
- ◆ Work cooperatively in a group

2. Divide the class into groups of four or five. Review appropriate behavior for working in groups. Each group will categorize its own set of postcards.
3. Hand out the postcards, the category headings, the corresponding captions, poster board or tag board, scissors, and glue to each group.
4. Have students cut out the postcards. Tell students to carefully examine the postcards in the collection. Ask them to describe their observations orally in as much detail as possible.
5. Read aloud the captions for the postcards and discuss them with the class. Have students cut out the captions and have groups match each caption to the corresponding postcard. Students should double-check their choices before gluing them below to the appropriate postcard.
6. Review the four main categories: Gathering the Mussels, Pearlring Camps, Button-Making Business, and Promoting the Button Factories. Have each group glue down the category headings on the poster board, using the board horizontally.
7. Ask students to match the postcards to their appropriate category heading and have them glue down the postcards under that category. The finished product should be a chart with four categories—three postcards and captions for each category, making twelve entries in all.

Closure

Discuss at greater length the images on the postcards. Explain the importance of historic items such as the postcards. What do the postcards teach us about the past? What did you learn from the postcards that you didn't learn from reading about pearling and button-making?

- ♦ Based on the postcard images, review the pearling and button-making process.
- ♦ Use the finished posters for assessment.

Note: These postcards are from the collection of Kathleen Orea Sweeney. As an avid collector of examples of women's needle arts, she found that historic postcards documented many kinds of needlework, from lace-making to other kinds of traditional handwork. She began collecting historic postcards. Sweeney's interest in needlework extended to buttons and button-making in the states bordering the Upper Mississippi. Her collection introduces students to historic postcards as documents that convey all aspects of clamming and button-making.

From Mussels to Buttons

In order to find pearls or make buttons, first the mussels had to be caught, and this activity attracted many people. Clamming became a popular summertime activity (*from about 1890 to the 1930s*), and whole families set up their tents at clam camps on the banks of a river for the season. The clammers used small, flat-bottomed “johnboats,” with pipes on either side that held a bar of hooks. As the boat slowly drifted with the current, the clammer lowered the bars, dragging the hooks along the river bottom. When the hook hit an open mussel, the animal snapped its shell shut over the hook. Then the clammer raised the bars and removed the mussel.



WHI(X3)15043, WHS Archives

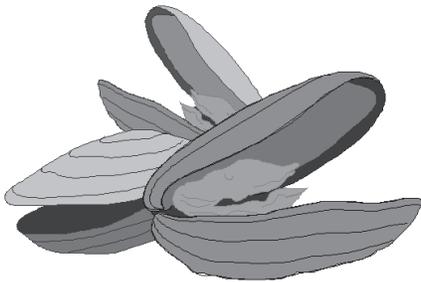
Clammers and buyers on the Upper Mississippi

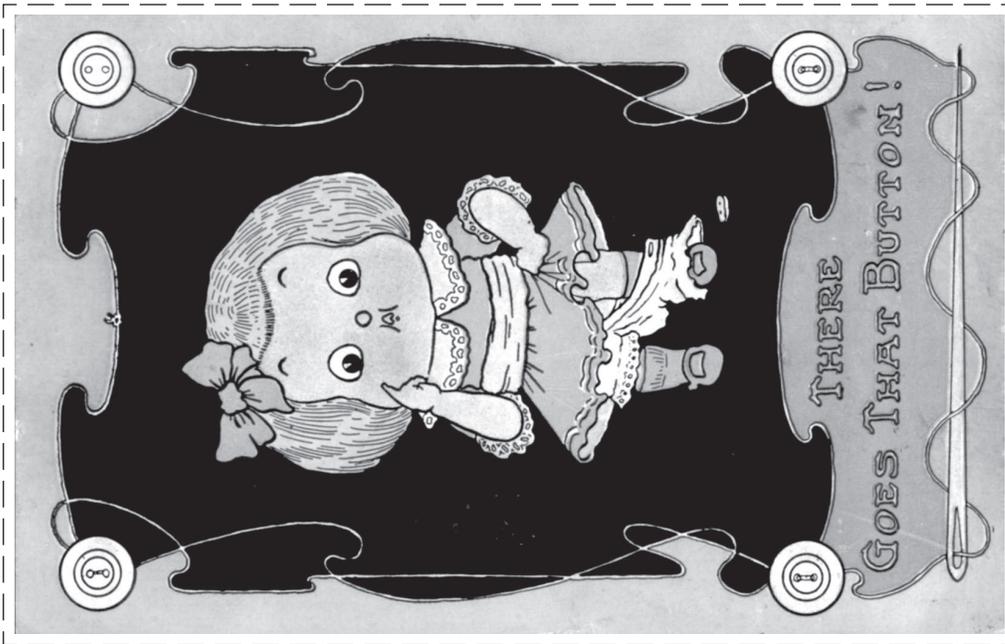
Back at the clamming camp in the evening, the clammers boiled the mussels to separate the meat from the shells. Then people sorted the shells by size and color and hauled them (*in a cart or on a boat*) to be sold to a button factory. In smaller factories, workers just stamped out circular button “blanks” (*without holes*) from the shiny surface on the inside of the shells. The remaining shell looked much like a batch of dough from which cookies have been cut. In larger factories, machinery ground the blanks down to make them all the same thickness, polished them, and drilled holes into them. Still other factories attached the buttons to cards to be sold to the public.



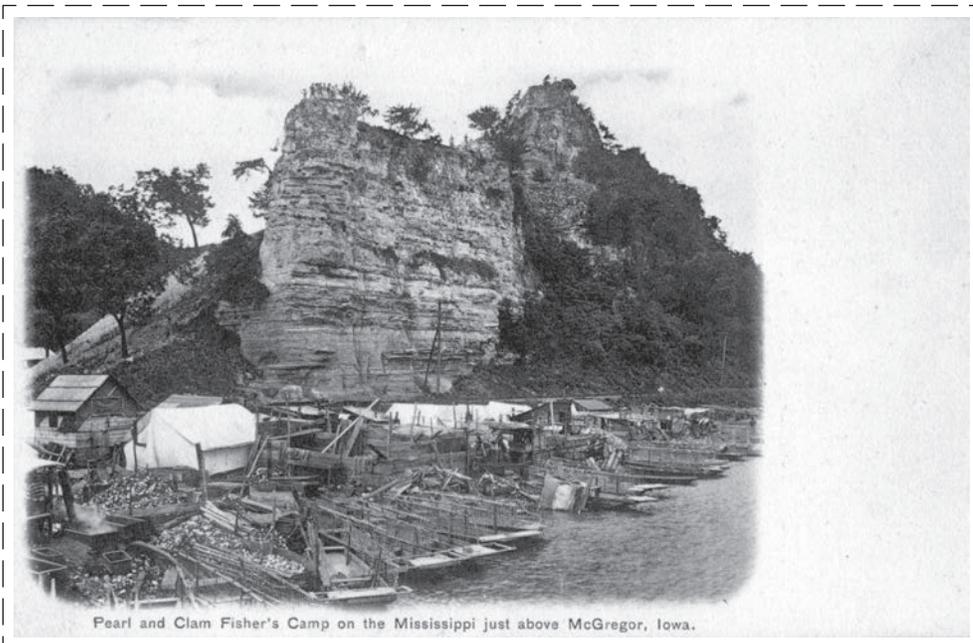
WHI(X3)34940, WHS Archives

Workers sitting on top of a pile of shells from which button blanks have been cut

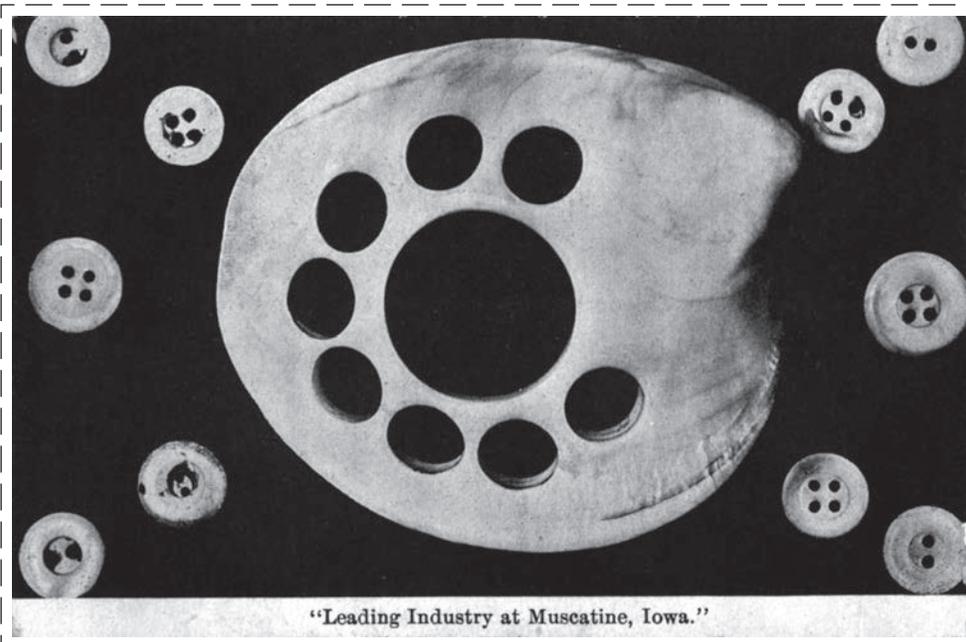
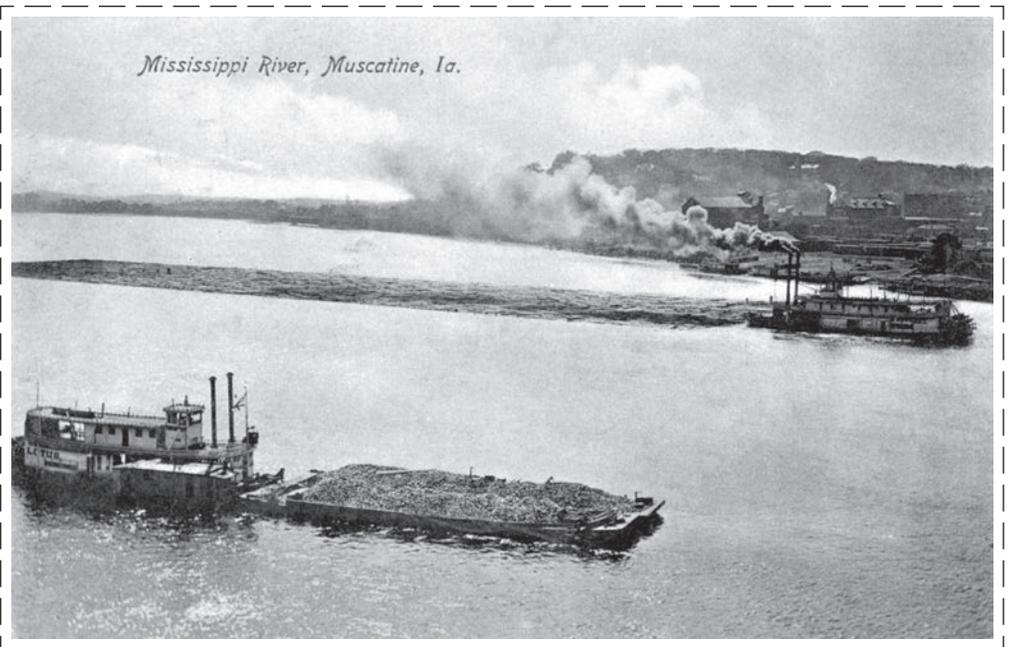




Pearl and Button Historic Postcard Collection



**Pearl and Button
Historic Postcard
Collection**

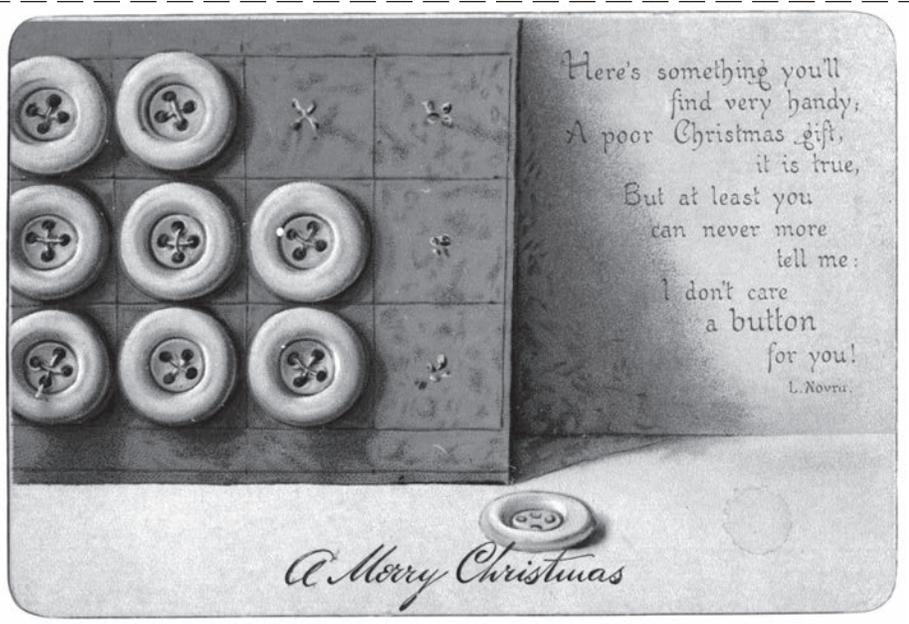


“Leading Industry at Muscatine, Iowa.”

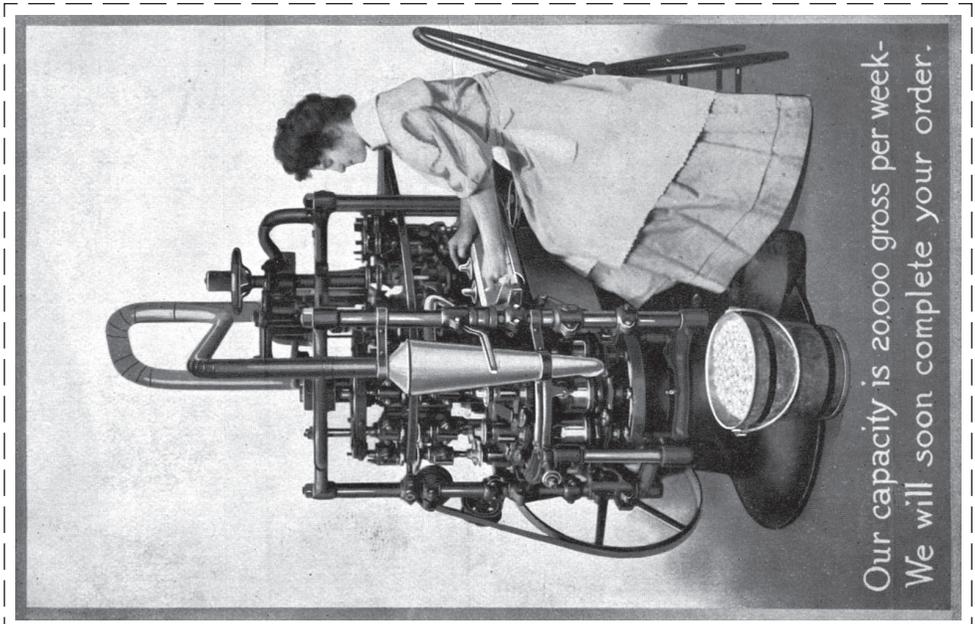




Pearl and Button Historic Postcard Collection



Pearl and Button Historic Postcard Collection



Category Headings



**Gathering the
Mussels**

Pearling Camps

**Button-Making
Business**

**Promoting the
Button Factories**

Pearl and Button Business Captions



Camps like this one across from Prairie du Chien were once located along the Upper Mississippi River.

An artist probably had fun drawing this card!

This factory worker made button blanks at the Wisconsin Pearl Button Factory.

Buttons could even be the subject of a Christmas card.

Workers loaded shells onto a barge.

Men removed a day's catch of shells from a johnboat.

Muscatine, Iowa, was the pearl button capital of the world in the early years of the twentieth century.

A barge on the Mississippi River carried mussel shells to the button factory.

There were several kinds of factories in the button business. This one made the cards to which workers attached buttons.

When clammers did not find pearls in the clam shells, they sold the shells to button factories.

This spent shell shows where machines have removed the button blanks.

Clammers, the people who gathered and shelled the clams, wore aprons, while the pearl dealers wore suits.

Pearl and Button Business: Answer Key

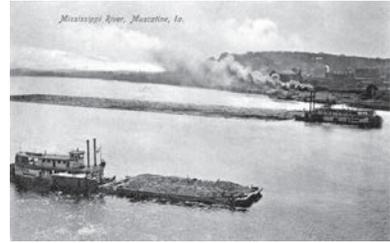
Gathering the Mussels



Men removed a day's catch of shells from a johnboat.



Workers loaded shells onto a barge.



A barge on the Mississippi River carried mussel shells to the button factory.

Pearling Camps



Camps like this one across from Prairie du Chien were once located along the Upper Mississippi River.



When clammers did not find pearls in the clam shells, they sold the shells to button factories.



Clammers, the people who gathered and shelled the clams, wore aprons, while the pearl dealers wore suits.

Pearl and Button Business: Answer Key (continued)

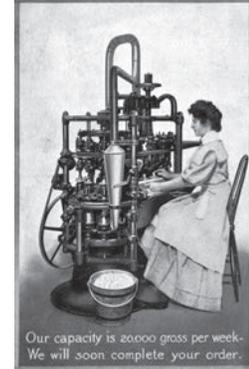
Button-Making Business



Muscatine, Iowa, was the pearl button capital of the world in the early years of the twentieth century.

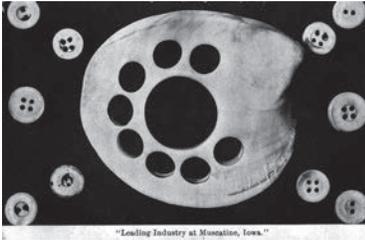


There were several kinds of factories in the button business. This one made the cards to which workers attached buttons.



This factory worker made button blanks at the Wisconsin Pearl Button Factory.

Promoting the Button Factories



This spent shell shows where machines have removed the button blanks.



An artist probably had fun drawing this card!



Buttons could even be the subject of a Christmas card.

Activity 13

Ice Harvesting

Overview

The Miller & Rasmussen Ice Company was a family-owned business that harvested, bought, and later, manufactured and sold ice both wholesale and retail in the Green Bay area from 1903 to 1973. Austin Miller grew up working in all aspects of his family's business. In 1999, Mark Waggoner's fourth grade class at Elmore Elementary School in Green Bay interviewed Miller, who was 91 at the time. In this two-day activity, students will use transcribed and edited portions of this interview as a primary source from which they will learn more about the ice harvesting industry and the reasons for its success. In the accompanying experiment, students will observe how sawdust insulates ice, something that Miller conveys vividly in the section of the interview students read as part of this activity.

Materials

Excerpt of Interview with Austin Miller (*one for each student*)

Three small blocks of ice (*or ice cubes*)

Sawdust (*available for free from places that sell lumber*)

Other insulating materials (*Styrofoam peanuts, peat, or even a modern cooler*)

Three tubs or buckets of equal size for the ice

Procedures

1. Hand out the Ice Harvesting Interview activity sheet to each student. Explain the background of the Miller & Rasmussen Ice Company. Have students take turns reading the excerpt aloud while other students follow along. Discuss the following questions:

Where did the ice come from?

How did people get ice?

Why did people need ice?

How did people keep their food cold before refrigerators?

Why do you think ice harvesting was a major industry?

Subject Content: History, English/ Language Arts, Earth Science

Grades: 4 through 6

Activity Time: 2 class periods

Goal

To use a primary source document to learn more about the ice harvesting industry and the reasons for its success

Skills and Strategies

Observation, using an oral interview as a primary source, prediction, critical thinking, analysis

Objectives

The student will:

- ◆ Make predictions and observations
- ◆ Recognize the importance of a primary source as an investigative tool
- ◆ Learn about insulating ice

2. Have students assist as you set up three experiments. First, have a volunteer measure the size of each block or cube of ice. Record these measurements on the board and save. Next, have a student put a block or cube of ice in each tub. [**Note:** Ice cubes will melt faster than a block of ice because of their increased surface area. If using ice cubes, do the experiment in the morning and check the ice again in the afternoon.]
3. Have students fill one tub with sawdust, one with the alternative insulating material (*unless using a cooler*), and leave one tub with only ice.
4. As a group, make predictions about how much ice will be left after twenty-four hours. Record the predictions on the board and keep until the following day.
5. The next day, have students observe the ice in each of the three containers. Compare their observations with their predictions and discuss.

Closure

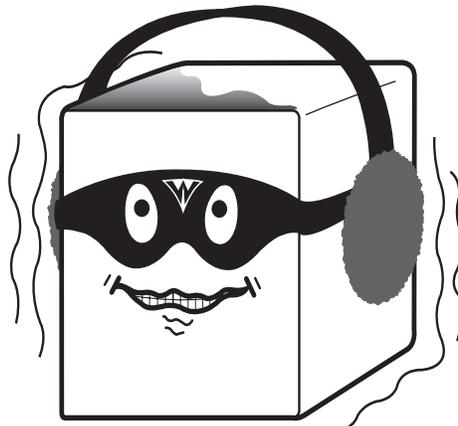
Discuss:

- ♦ What do you think happened to the ice company after electricity was invented?
- ♦ How can an interview help you learn about the past?

Extensions

In the early icehouses, more than four feet of sawdust was packed around the ice to keep it frozen during the summer. Pack a block of ice in as much sawdust as you can and see how long the ice lasts. Have students make predictions and observations each day until the ice has melted.

Suggest that the class interview someone for an oral history of their own on another aspect of Wisconsin industry (*such as fishing, lumber, or shipbuilding*).



Excerpt of Interview with Austin Miller

Ice Harvester and Owner of Miller & Rasmussen Ice Company

Conducted by Mark Waggoner's fourth grade class,
Elmore Elementary, Green Bay, in 1999



Photo by: Bobbie Malone

Austin Miller

Note to students: In the printed version of this interview, you will see both the questions that Mr. Waggoner's students asked and the answers Mr. Miller gave. Some of the answers were too long to print here. When something has been edited and text is missing, you will see . . . or (three or four dots). If you see words in brackets [], it means that those words are not Mr. Miller's. The editors inserted them to help make the meaning of what he said clearer to readers.

How did you keep things cold before electricity?

In those days we had what was called an ice box. That's where you kept all your perishables and everything. And the top part of that box is where you put the ice. And in those days, if you had an ice box, people had these signs to put out. [You would] put [the signs] in the windows so that when the ice was delivered [the ice man] would know . . . whether you wanted a 25-, or a 50- pound, or a 75-pound, or 100-pound [block of ice]. They always put these signs in the window, so when they came to be delivered [the ice man would] know just what they wanted. . . . In those days the ice box was all you had to keep all your perishables in. And the man would deliver the ice and put it in the top of the box. And sometimes that lasted one day, and sometimes it lasted two days. And if it was melting and going away and you wanted more, you put the sign in the window. But that's how we kept everything—in the ice box. That's all we had.

And I might add this: in those days, practically every home had an ice box. . . . So the ice box became a very important thing. In the company that I work[ed] for—Miller & Rasmussen—we used to get in carloads of ice boxes. . . . At that time people bought them left and right. Everybody had to have an ice box. You had to have some place to keep your food cold. So the ice box was very profitable item for everybody. You could buy them for \$50, you could buy them for \$25, you could buy them for \$30, all different size ice boxes. But everybody had an ice box.



Ice sign

How did you keep the ice cold during the summer?

. . . We used to go out there [to Green Bay] every winter, and the first thing we did (we had equipment), we'd see that all the snow . . . was scraped off . . . so the ice was clean, and the cold weather would affect it, so that when the freezing started, that ice would start to get thick. Freeze, freeze, so that when we got ready to cut it sometimes it was 24, maybe 30, sometimes 35 inches thick. And then we'd start our cutting operation. We had machines that went out there [on the ice] wherever we had it cleared. Those saws, with blades on them, would cut bales of ice. . . . If you left the snow on top, it [the ice] just wouldn't freeze thick.

We had sleighs, after they [the ice] were cut in bales, each sleigh had sixteen bales on it. We had farmers, all the farmers with their horses, would come and work these sleighs. . . . Those sleighs, with the horses, constantly hauled all this cut ice into the storage room. You asked how we'd keep it? Well, first of all, to get it in the storage room . . . we'd fill the first floor with all these bales. We never piled the ice against the wall. If you had a building, you always filled it with ice [and] left about four feet space all around the room. You'd put the first tier, then you put the second tier, and you'd go way up high. . . . And you had what we called a whole block of ice.

Those bales, incidentally, [were] cut four foot long and two foot wide. And that's the way each bale came up on that pile. And we'd piled that up . . . and when it was all filled . . . then they came with sawdust. . . . In those days we had quite a few lumber mills around here that were always cutting logs and everything and they always saved the sawdust. And when we got this block of ice filled that high in the building, we'd haul buckets and buckets of sawdust and just pour it 'til that whole room was filled with sawdust on the side. And then we'd pour about four feet on the top. And that's the way that all that ice stayed all summer long. It [the sawdust] kept it [the ice] with all that sawdust packed all around it and then it was ready for use. That's how we actually kept it that long.

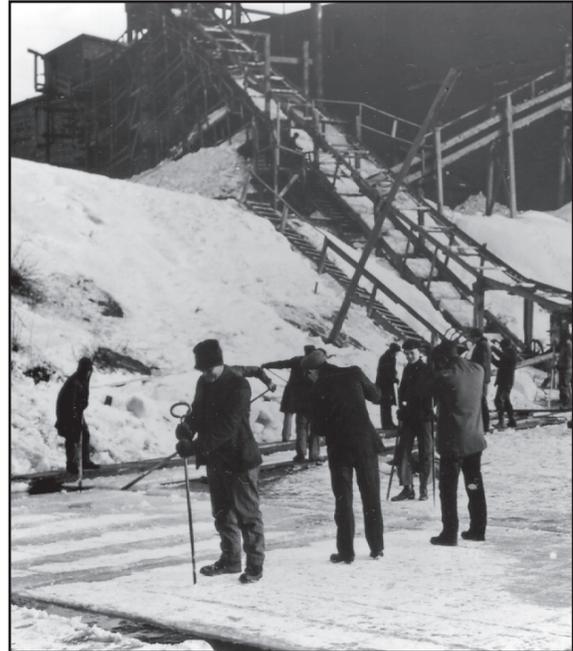


Photo courtesy of Milwaukee Public Museum.
Photographer: Sumner W. Matreson WH(X3)18801

Breaking the ice blocks apart, icehouse in background. Milwaukee, circa 1909.

Activity 14

Making Paper

Overview

Water is a very important part of the paper industry. The paper industry in Wisconsin dates back more than 150 years. In this fun (but messy) activity, students will make their own recycled paper. Recycling paper is great way for students to see both the ecological value of recycling and the prominence of water in the paper-making process.

Materials

Locks on the Lower Fox River

(one digital overhead; one copy for each student)

Making Paper: Directions *(one digital overhead; one copy for each student)*

The Commercial Paper-Making Process *(one digital overhead; one copy for each student)*

Paper *(use scrap paper, uncoated wrapping paper, or newspaper)*

Large tub or pan *(use several of these to make a lot of paper)*

Blender or food processor *(wash thoroughly to use again for food)*

Deckle *(an old picture frame with mesh screening stapled to it, an old window screen, stiff wire mesh, or a wire coat hanger with an old nylon stretched over it)*

Water *(Use about 80 percent water to 20 percent paper)*

Blotting paper *(use newspaper or waxed paper)*

Size, a mixture of cornstarch and water, liquid glue, or liquid starch, roughly the consistency of liquid glue *(optional)*

Iron or rolling pin *(optional)*

Note: Be sure to read all the directions ahead of time. This process can take several hours and can be very messy. Allow time for preparation and cleanup. If actually doing this activity in class seems to be more than you think you and your students could tolerate, simply skip the classroom experience of making handmade paper (*step 2 of Making Paper: Directions*), prepare the paper/water mixture yourself, and proceed to step 3 with the class.

Subject Content: Art, History

Grades: 4 through 6

Activity Time: 3 hours {See note below to shorten experience}

Goal

To recognize the importance of water in the paper-making process

Skills and Strategies

Cooperative learning, following directions, creativity, problem-solving, comprehension

Objectives

The student will:

- ◆ Demonstrate understanding of the basics of paper making and the role fresh water plays in the process
- ◆ Experience making handmade paper
- ◆ Work cooperatively in a group

Procedures

1. Ask students to look at the map and diagram of the Locks on the Lower Fox River on the student page. Ask students to tell you what they observe about the diagram. Elicit the following kinds of information from their responses: that the water is much higher at Lake Winnebago—over seven hundred feet; that it is lowest at Green Bay; that wherever it falls, there are locks; that Lake Winnebago is about forty miles from Green Bay.
2. Have students look at the map at the top of the handout. Ask them to name the communities located near the locks. Ask students to think about how locks and dams relate to paper-making, and make them aware that this part of Wisconsin has more paper mills than any other area, and that it's the locks and dams on the Fox River that provided the power that gave the valley around the Lower Fox the nickname "Paper Valley."
3. Tell students that your classroom will become a temporary Paper Valley.
4. Explain to the class that different students will be helping with different parts of the papermaking process. Hand out Making Paper: Directions to the class and go over the instructions with the students.
5. Begin the paper-making process.
6. Pass out copies of The Commercial Paper-Making Process and give students the opportunity to view the website.
7. Ask students to work in groups of two or three and list the similarities and differences between the two processes.

Closure

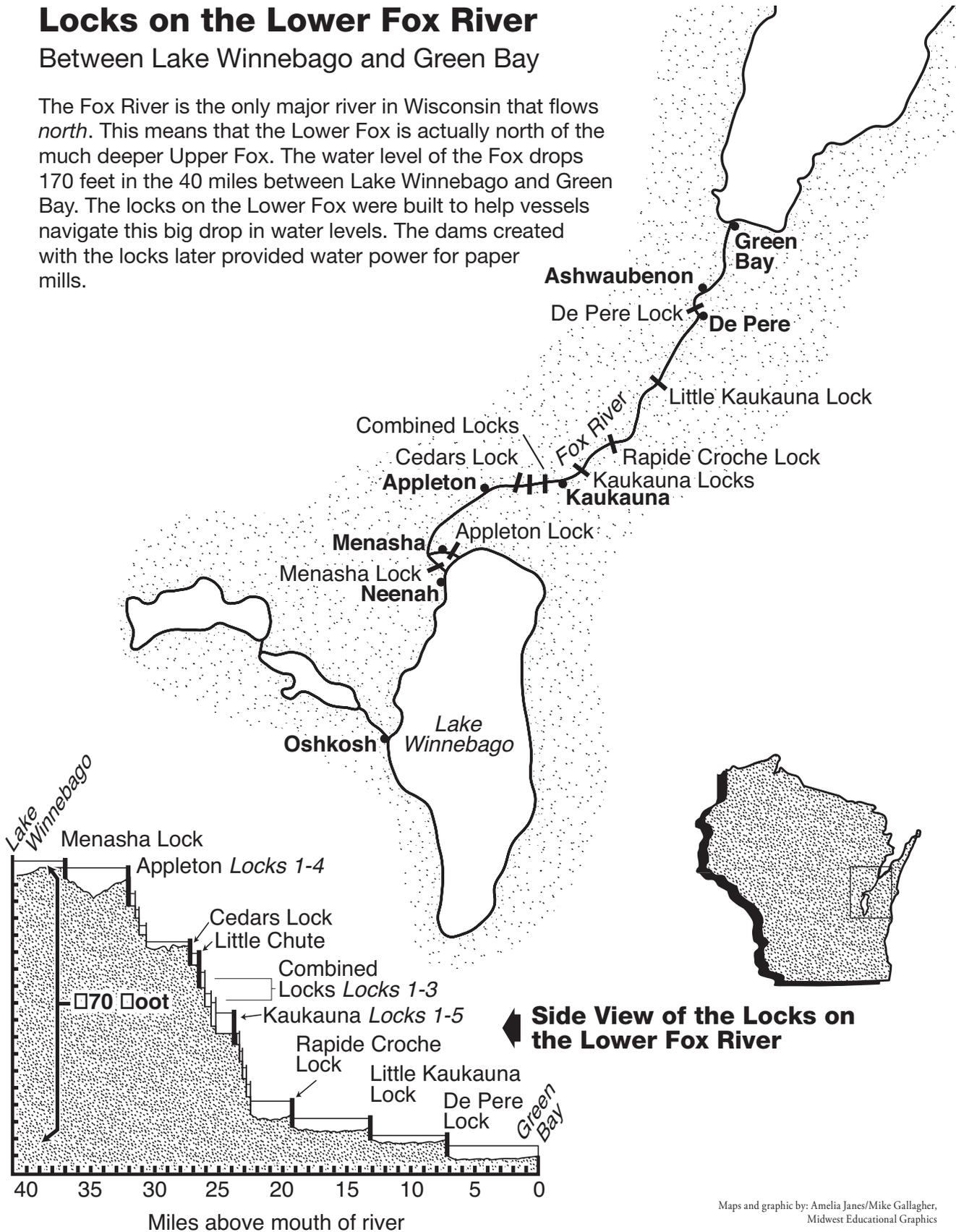
Review the industrial paper-making process at www.wipapercouncil.org. Discuss the similarities and differences that students reported. Discuss the importance of water in the paper-making process.

Have students hand in their observations for assessment.

Locks on the Lower Fox River

Between Lake Winnebago and Green Bay

The Fox River is the only major river in Wisconsin that flows *north*. This means that the Lower Fox is actually north of the much deeper Upper Fox. The water level of the Fox drops 170 feet in the 40 miles between Lake Winnebago and Green Bay. The locks on the Lower Fox were built to help vessels navigate this big drop in water levels. The dams created with the locks later provided water power for paper mills.



Making Paper: Directions

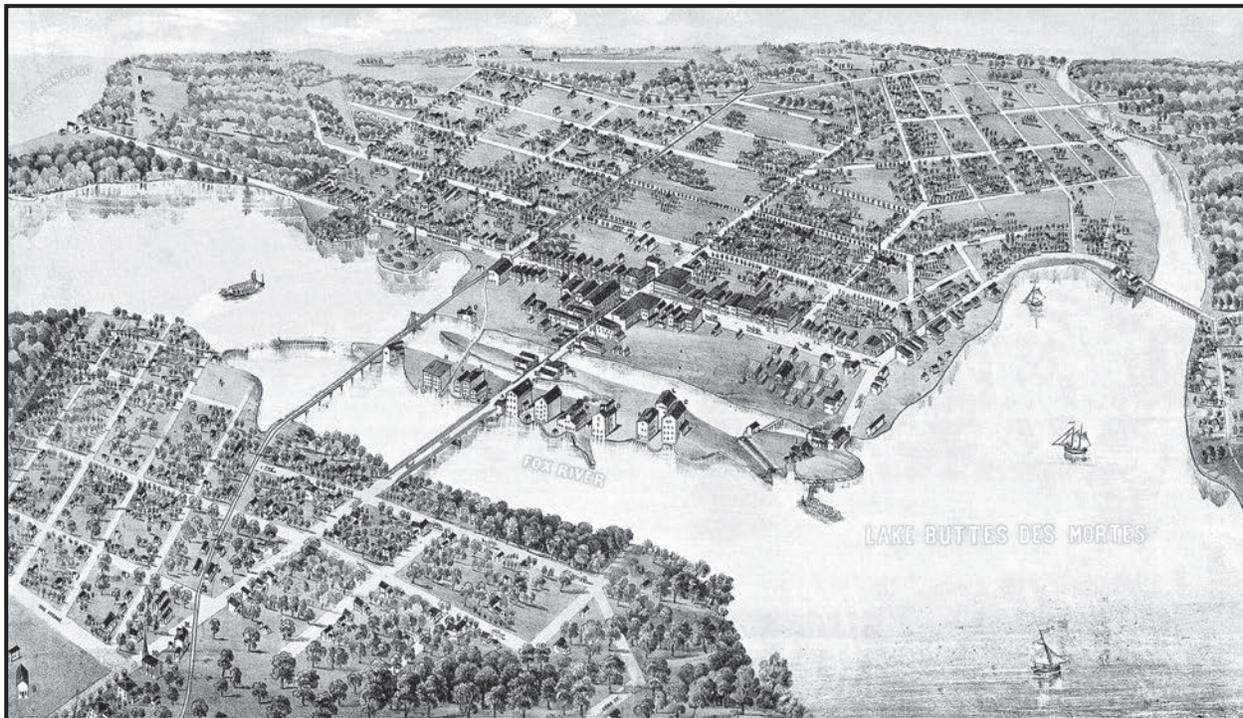
1. Tear the paper into small pieces (about one-inch squares).
2. Soak the paper in a pan or tub of water for about 30 minutes.
3. Place the paper and water mixture in the blender or food processor.
4. Add the size, if desired, to thicken the mixture.
5. Mix on high. Add more water if necessary.
6. Pour the mixture back into the pan, making sure there is plenty of water.
7. Carefully dip the deckle into the mixture; then, holding the deckle flat, lift it out of the pan with the mixture on top. Spread it around evenly with your hands.
8. Let the water drain back into the pan or use the rolling pin to squeeze out the excess water into the pan.
9. Carefully place the blotting paper on top and flip the deckle over. You can also place the iron on low setting and iron the mixture between two pieces of blotting paper to dry it.
10. Let the paper dry at least twenty-four hours.

IMPORTANT: Do not dump the remaining mixture down the drain until you get out as much paper pulp as you can. It will clog drains.

The Commercial Paper-Making Process

The paper-making process starts with pulp or paper fibers from trees or recycled paper. This paper pulp is used to make paper. The paper fiber is cleaned and then mixed with water in a large mixing tub. It is turned into slush with a large beater. Chemicals or dyes might be added to the paper to make it different colors. Size, a thickener, is also added. The mixture is then sprayed onto a wire screen. The screen allows the water to drain away. The waste water must be cleaned well before it can be reused or dumped. Huge hot rollers press the paper to dry and flatten it. Then the paper is put into huge rolls and can be cut into sheets.

For more details, see the Wisconsin Paper Council Web site: www.wipapercouncil.org.



Bird's-Eye View of Neenah and Menasha

Activity 15

Oil Spill Simulation

Overview

Each year, millions of gallons of oil enter North American oceans as a result of human activities, including shipping and urban runoff. Although large-scale oil spills are relatively rare, their effects on waterways can be catastrophic. Scientists and volunteers try to remove spilled oil from environments to lessen its impacts on marine ecosystems. In this activity, students will research oil spills to learn about the effects of spills on ecosystems and about past cleanup efforts. Students will then simulate an oil spill and test different cleanup methods in a classroom setting.

Materials

Food coloring (*to be shared among groups*)

Vegetable oil (*1 cup per group*)

Water (*4 cups per group*)

Soda bottle lid (*1 per group*)

Cotton balls (*several per group*)

Cotton rag (*several per group*)

Paper towels (*several per group*)

Cardboard pieces (*several per group*)

Dish soap (*to be shared among groups*)

Large container (*1 per group*)

Whisk (*1 per group*)

Online Resources

Oil spills and their impacts:

<http://education.nationalgeographic.org/oil-spills/>

Oil spill computer animation:

https://www.classzone.com/books/earth_science/terc/content/investigations/es0703/es0703page09.cfm

Oil Tanker Spill Statistics 2015 (including list of top 20 major spills):

<http://www.itopf.com/knowledge-resources/data-statistics/statistics/>

Subject Content: Earth Science, History

Grades: 6 through 8

Activity Time: 1 class period

Goal

To recognize the difficulties cleanup crews face after oil spills and the effects of spills on the environment

Skills and Strategies

Research, group work, following directions, creative problem solving, observation, analysis, critical thinking

Objectives

The student will:

- ◆ Identify the causes and effects of oil spills
- ◆ Simulate the effects of an oil spill
- ◆ Analyze the effectiveness of different cleanup methods
- ◆ Discover why oil spill cleanup can be such a difficult task
- ◆ Rate and discuss best practices

Teacher Prep

Teachers may want to pre-select a number of oil spill events for students to choose from during the research phase of the activity. Teachers should pre-measure the ingredients to be used in the simulation and set out all the required materials at each station. Before starting the lab procedure, it may be helpful to discuss the concept of dispersants, chemical agents that are sprayed on a surface oil slick to break down the oil into smaller droplets that more readily mix with the water.

Procedures

1. Instruct students to research an oil spill event, learning details like the cause, location, and size of the spill. What clean-up efforts were made? What ecosystems were threatened? Discuss the students' findings as a class.
2. Divide students into groups of 4 to 5 students. Each group should receive the following materials: 5 drops of food coloring, 1 cup of vegetable oil, 4 cups of water, cotton balls, paper towels, cotton rags, cardboard, dish soap, a large container, and a soda bottle lid.
3. Hand out the Oil Spill Simulation student page to each group and instruct students to work through the lab procedure. Allow time as needed to circulate and assist students. Remind students to follow the directions and to proceed one step at a time.

Closure

As a class, discuss the effectiveness of different oil spill cleaning tools. Consider the following questions:

- ♦ Which materials were best at cleaning up the oil spill? Which materials were worst at cleaning up the spill?
- ♦ What properties were shared by the materials that were best at cleaning up the oil spill? How about the worst?
- ♦ How did the oil spill react to the introduction of the dish soap? Did the effectiveness of the other cleanup materials change?
- ♦ Were the oil and the food coloring cleaned up to the same extent? What does this mean for real-life oil spill cleanup efforts?
- ♦ What do you think is the best method for cleaning up oil spills, keeping in mind the oil itself and the chemicals in the oil? Did your observations change the way you view the potential effects of cleanup strategies on the environment?

Activity 16

DDT Debate

Overview

Dichloro-diphenyl-trichloroethane, or DDT, is a synthetic insecticide that was originally developed for the US military during World War II. Extremely effective against a wide variety of insects, long lasting, and with few evident effects on humans, DDT was acclaimed for saving thousands of lives from insect-borne diseases during the war. After the war, American chemical manufacturers seized upon the wondrous new chemical to produce a vast array of bug control products. By the early 1950s the industry was manufacturing 100 million pounds of DDT annually.

Unfortunately, as early as 1949, studies began to show that bugs not killed by the first applications of DDT and other chemicals quickly developed immunities to them. There were also growing concerns about the long-term health and environmental effects of indiscriminately used pesticides. The Wisconsin legislature banned the use of DDT in 1970. DDT was banned nationwide in 1972. In this activity, students will craft arguments to try to sway their peers on the merits and drawbacks of DDT use in a classroom debate. Students will then draw their own conclusions based on the arguments of their peers.

Materials

Research materials, ex. library books or Internet

Subject Content: History, English/Language Arts

Grades: 9 through 12

Activity Time: 1 class period for research, 1 class period for argument development, 1 class period for presentation and discussion

Goal

To understand the benefits and drawbacks of insecticide use

Skills and Strategies

Research, analysis, critical thinking, public speaking and presentation

Objectives

The student will:

- ◆ Learn about insecticides and the debate that eventually led to DDT being banned in the United States
- ◆ Craft an argument either for or against an issue as assigned by a teacher
- ◆ Compare and contrast both sides of an argument to come to a decision about an important issue
- ◆ Connect the historic use of DDT with the use of contemporary insecticides

Online Resources

Historical essay, “Blitz Fog’ Pesticide Cocktail,” including DDT background:

<http://wihist.org/1Tr139l>

WHI Image ID 44976 – Pesticide Display

WHI Image ID 60301 – DDT Application

WHI Image ID 72978 – Helicopter Spraying DDT

WHI Image ID 73092 – Committee of a Thousand Letter

WHI Image ID 73095 – Citizens Natural Resources Association of Wisconsin Letter

WHI Image ID 73758 – Standard Insect Spray with DDT

Teacher Prep

Teachers should discuss insecticide use with students and provide an overview of the debate over DDT that was argued largely in Wisconsin (*see online resource above*). Teachers may wish to use examples of historic advertisements, photographs, and documents that feature DDT; samples from the Wisconsin Historical Society Archives can be found below. This activity can be broadened by having students debate the use of insecticides more generally rather than the specific use of DDT.

Procedures

1. Assign each student to be either for or against the use of DDT. Instruct each student to research his or her side of the argument. Consider using historical documents such as advertisements, conservation group publications, DNR records, or DDT hearing transcripts.
2. In a subsequent class period, stage a debate at which students argue for and against DDT use. On a whiteboard or screen, keep track of the pros and cons of using these chemicals outlined by students.
3. At the end of the debate, have students vote on whether they are for or against DDT use. How would they suggest the issue be resolved?

Sample Pro and Con List

For DDT	Against DDT
Plants are saved from crop diseases and pests	Insects develop resistance to pesticides
Human lives are saved through the prevention of pest-borne diseases like malaria	Pesticides are nonspecific, so they affect a large number of species, pest and non-pest
Crop yields increase, so more people have access to food	Pesticides travel farther than intended through waterways and harm other wildlife, like birds
Pesticide production creates jobs and business	There is some evidence that DDT can harm humans

Closure

As a class, discuss the historic decisions that resulted in DDT being banned and how the ban impacted humans and the environment going forward. Consider the following questions:

- ♦ What issues do you think led to DDT ultimately being banned? Do you agree with the decision?
- ♦ Are there any contemporary concerns similar to the DDT issues? Have contemporary insecticides solved the problems that DDT faced?
- ♦ What other solutions might exist for protecting crops from pests?
- ♦ Did the debate change the way you think about DDT or insecticide use? What issues in particular swayed your opinion?

Additional Resources

Berry, Bill. *Banning DDT: How Citizen Activists in Wisconsin Led the Way*. Wisconsin Historical Society Press, 2014.

Activity 17

Cleaning Water

Overview

In many places around the world, water is taken straight from rivers or lakes for cooking, cleaning, and drinking. This water can be contaminated with bacteria, waste, and chemicals. Unclean water is a major cause of illnesses such as typhoid fever and cholera.

In the developed world, water is heavily filtered and chemically treated before it reaches homes, schools, and businesses. Aside from large-scale filtration plants in cities, people also create much smaller-scale solutions for filtering water. In this activity, students will build their own water filtration systems, collect data, and compare results to find the best solutions for small-scale water filtration.

Materials

Clear 2-liter bottles (*1 per group*)

Water

Contaminants

Vegetable oil

Food coloring

Potting soil

Paper

Styrofoam

Filtration materials

Coffee filters

Cotton balls

Ground charcoal

Sand

Gravel

Subject Content: Engineering, Earth Science

Grades: 4 through 8

Activity Time: 1 class period

Goal

To understand how water filtration works and to recognize the importance of filtration in creating clean, usable water

Skills and Strategies

Research, group work, following directions, creative problem solving, observation, analysis, critical thinking

Objectives

The student will:

- ◆ Learn about the importance of clean water
- ◆ Simulate water filtration techniques
- ◆ Analyze the effectiveness of different cleanup methods
- ◆ Discuss and rank best practices for water cleanup

Online Resources

Wastewater Treatment, Milwaukee Metropolitan Sewerage District:

<http://www.mmsd.com/wastewatertreatment/treatment-process>

Drinking Water & Ground Water Kids' Stuff:

<http://www3.epa.gov/safewater/kids/>

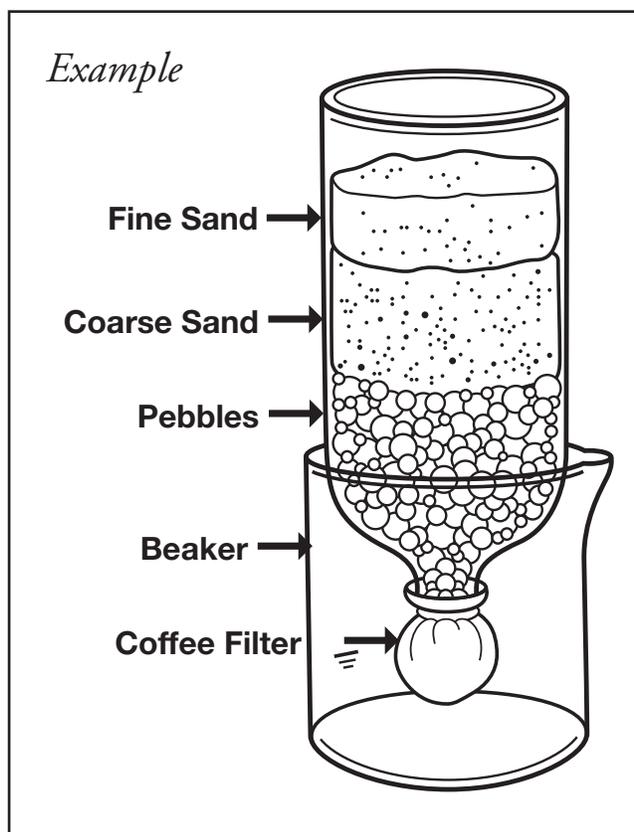
Teacher Prep

Teachers should discuss global water quality issues with students, noting that in many parts of the world, people use unclean water for cooking, cleaning, and drinking. Students should also have some familiarity with current water treatment processes, such as those currently in use by the Milwaukee Metropolitan Sewerage District (see online resources above).

Prior to class, teachers should prepare the 2-liter bottles by removing any labels and cutting the bottles in half. The top half of the bottle should fit upside-down inside the bottom half like a funnel. Students will build their filter in the top half of the bottle; filtered water will drain into the bottom half. Teachers should also prepare “soiled water” by mixing water, vegetable oil, food coloring, and potting soil. For larger “contaminants,” teachers can use pieces of paper or tiny pieces of Styrofoam.

Procedures

1. Have students break up into groups of 2 or 3. Each group should receive a prepared 2-liter bottle and various filtration materials, such as coffee filters, cotton balls, ground charcoal, sand, or gravel.
2. Introduce students to the soiled water: a mixture of water, vegetable oil, food coloring, potting soil, and other contaminants. Instruct students to discuss the challenges of soiled water and to describe the water they are seeing. What do they think will be the easiest and hardest contaminants to remove?
3. Challenge students to layer materials in their 2-liter bottles to remove as many of the contaminants as possible. Advise students to think about which contaminants each filtration material might remove and in what order they should layer the materials. Remind students that they do not have to use all the materials provided, but they should carefully note which materials they used and in what order they used them.
4. Once each group's filter is completed, students should slowly pour the soiled water through their filters and into the bottom of the 2-liter bottle. Instruct students to describe the filtered water.



Closure

Compare filtration methods, outcomes, and solutions with students. Consider the following questions:

- ♦ Which filtration materials were best at removing particular contaminants? Why do you think they worked so well?
- ♦ What filtration materials worked as you expected, and which ones did not?
- ♦ Why do you think the order of the layers is so important?
- ♦ If you were to design a new filter, how would you change the design? Why?
- ♦ Compare the filtered water with the clean water. Did the contaminated water become truly clean? What other steps do you think would be necessary to make the contaminated water safe to drink?

Based on the students' discussion, teachers can challenge students to build a new, better filter. For an added challenge, ask students to use only three filtration materials or only natural filtration materials, such as sand, leaves, gravel, or soil.

Step Three: With your partners, decide how to layer your materials in the top of the 2-liter bottle. You do not have to use all of the provided materials. List your layers from top to bottom.

Top _____

Bottom _____

Step Four: With your instructor's supervision, slowly pour the soiled water through your filter and into the bottom of the 2-liter bottle. Describe the filtered water.

Step Five: Compare your results with other groups. How did their filters work compared to yours? What materials worked as you expected and which ones did not? If you were to try again, how would you change your design?

Activity 18

Lapham Drawings

Overview

Increase Lapham was one of Wisconsin's first scientists. He made the first accurate maps of Wisconsin and investigated its native trees and grasses, climatic patterns, and geology. In 1836, he published Wisconsin's first scientific imprint, *A Catalogue of Plants and Shells Found in the vicinity of Milwaukee*, in which he used scientific drawings to record wildlife he encountered in southeastern Wisconsin.

Today, scientific drawings are used for a variety of topics and in many fields, including botany, zoology, anatomy, and geology. Unlike an artistic drawing, a scientific drawing should be an accurate representation of what was actually observed without embellishment or interpretation. Scientific drawings are usually supplemented with short, written descriptions of specific characteristics. In this activity, students will create a scientific drawing of a subject of their choice and discuss the benefits of using scientific drawings to record organisms.

Materials

Research materials, ex. library books or Internet

Drawing pencils

Erasers

Rulers

Paper

Graph paper (*optional*)

Subject Content: Biology, Art, History

Grades: 8 through 12

Activity Time: 1 class period

Goal

To build appreciation for the ability of scientific drawings to create detailed representations of an object or organism

Skills and Strategies

Observation, recording information using visual and written descriptions, paying attention to details, creativity

Objectives

The student will:

- ◆ Observe details including scale, proportion, and texture from different angles
- ◆ Use scientific names and terminology
- ◆ Explore the interplay between visual and written description
- ◆ Discover the benefits of scientific drawings
- ◆ Discuss modern alternatives to scientific drawings

Online Resources

Increase Lapham, Wisconsin's First Scientist:

<http://wihist.org/1R8ruxi>

WHI Image ID 83782 – Drawings of Jimson Weed Flower

WHI Image ID 99701 – Lapham Shell Drawings

WHI Image ID 99705 – Lapham Plant Drawings

WHI Image ID 100491 – Millet

Teacher Prep

Students should have familiarity with scientific drawings and their use of scale and proportion to create an accurate record of an organism. Instructors should share examples of scientific drawings with students, highlighting the various forms of documentation in each drawing (*ex. color scales, size scales, written descriptions*). Instructors may use Increase Lapham's scientific drawings from the Wisconsin Historical Society, below, as examples.

Procedures

1. Invite students to create scientific drawings for a subject of their choice. Students should use research materials to find visual representations and written descriptions of their subject.
2. Encourage students to observe details from different angles and consider issues like scale, proportion, and texture when sketching. Remind students that the quality of their observations is more important than their artistic technique.
3. Instruct students to include written descriptions with their drawings to supplement the visual representation of their subject.
4. Challenge students to use scientific terminology and scientific names where possible.

Closure

Invite students to share their scientific drawings with the class. As a group, discuss the following questions:

- ♦ What methods, both visual and written, were used by students to create an accurate representation of their organism? Did students find visual or written descriptions more useful?
- ♦ What are the benefits of creating scientific drawings of organisms? How might the drawings be useful to future people?
- ♦ Do you think scientists still create scientific drawings today? What alternatives exist using today's technology? What are the benefits and drawbacks of those alternatives?

Activity 19

Primary and Secondary Sources

Overview

Primary sources are original, firsthand accounts of an event or time period, usually written or made at the same time as the event. They can include diaries, letters, speeches, interviews, photographs, and more. Secondary sources are secondhand accounts of historical events or periods, often analyzing or interpreting a primary source. Secondary sources are usually published works, like journal articles, books, or documentaries.

The Wisconsin Historical Society's library and archives holds one of the largest collections of primary and secondary sources related to the history of North America in the United States. In this activity, students will discover the difference between primary and secondary sources and first and third person voices by finding a historic primary source, summarizing its main points, and reinterpreting it using contemporary media, including tweets and status updates. Then, students will discuss the benefits and drawbacks of each source type while performing research.

Online Resources

Wisconsin Historical Society website:
www.wisconsinhistory.org

Teacher Prep

Students should be familiar with the differences between primary and secondary sources and between first person and third person voices. To decrease the total time spent on the activity, instructors may pre-select a number of historical documents from which students can choose to create their tweets or status updates.

Procedures

1. As a class or in small groups, work with students to create a list of key words they could use in a search for primary source documents. Consider using terms like diary, essay, or journal.

Subject Content: History, English/Language Arts

Grades: 4 through 6

Activity Time: 1 class period

Goal

To understand the difference between primary and secondary sources and their use in the study of the past

Skills and Strategies

Research, analysis, creativity, public speaking and presentation

Objectives

The student will:

- ◆ Explain the differences between primary and secondary sources
- ◆ Demonstrate understanding of the relationship between first and third person voices and primary and secondary sources
- ◆ Summarize an original historical document
- ◆ Reinterpret an original historical document using contemporary media

2. Instruct students to access the Wisconsin Historical Society's website at www.wisconsinhistory.org and use the search bar to search the online collections for a topic that interests them. Each student should choose one primary source for the project.
3. Have each student read and summarize their source. Students should identify important information including the source's author, date, and location and the topics covered in the document.
4. Once each student has summarized their source document, instruct them to rewrite the summary as a tweet or status update, including the important information. Students should start by writing each entry in a first person voice.
5. Next, instruct students to rewrite their posts using the third person voice. Students should analyze whether changing the voice of the post alters its reliability, bias, or credibility.
6. Students may post each tweet or status update on social media or may submit them as written statements. If students post to social media, please use the exhibit hashtag #WaterShapesWI or #WisconsinHistory.

Example

Source document:

"Say Viking's Lost Sword Found in Lake Michigan," *Capital Times*, February 7, 1939

(Secondary source)

<http://wihist.org/2bOr9RS>

Status Update:

(First person)

Anna Lehmann One of our workmen found a sword in the ground while we were constructing an icehouse in Jacksonport today! It looks ancient! Who knew we'd find buried treasure in our back yard?

Tweet:

(Third person)

11th century Norse sword found on Lake Michigan shore suggests Vikings sailed the Great Lakes. #greatlakes #WaterShapesWI #WisconsinHistory

Closure

Ask students to share their tweets or status updates with the class. Then, ask students to consider the following questions:

- ♦ How does information change when it moves from being a primary source to a secondary source?
- ♦ What are the benefits of each source type? Is one source type more reliable? Does one source type offer more perspective?
- ♦ What are the differences between the first and third person voices, and how do they relate to primary and secondary sources?
- ♦ What are the benefits of reinterpreting historical sources for new media?

Name _____ Date _____

Primary and Secondary Sources

Step One: Search the Wisconsin Historical Society’s website, www.wisconsinhistory.org, for historical documents. Consider using key words like diary, journal, or letters. Read these documents and decide if they are primary sources or secondary sources. Choose one primary source for this project.

Step Two: Once you have chosen a historical document, evaluate the document for key information. This could include author, date, location, and subject, for example. Summarize the key information below.

Step Three: Using the key information you identified, attempt to rewrite your historical document as a status update or tweet. Use the first person voice and try to summarize the author’s experience. Remember, social media posts are short and to the point.

Step Four: Try the exercise again, but use a third person voice for the post. How will that change the way you write? Share your posts with others in class or online.

Activity 20

H.H. Bennett Historical Fiction

Overview

During a career that lasted from 1865 to 1908, Henry Hamilton Bennett photographed the rugged landscape of his beloved Wisconsin Dells and became one of the premier landscape photographers of the era. He captured the Wisconsin River, its rock formations, tourist visitors, lumber rafters, Ho-Chunk residents, steamboats, and much more. Bennett loved the natural landscape of the river and spent his life conveying its beauty and many moods to the public. As a photographer he also traveled the state and regions nearby to create stunning images of Milwaukee, Minneapolis, and Chicago.

Henry Hamilton Bennett's photographs and stereoscopic pictures helped attract people to Wisconsin's natural beauty. In this activity, students will choose three H.H. Bennett photographs and create an original piece of historical fiction that connects the photographs while remaining true to the photographs' historical setting.

Online Resources

Wisconsin Historical Society website:
www.wisconsinhistory.org

H.H. Bennett: An Inventive and Imaginative Photographer (includes link to Bennett photographs):
<http://wihist.org/1KI51X2>

Ten most popular historic Bennett photographs:
<http://hhbennettstudio.wisconsinhistory.org/Explore/BennettPhotos.aspx>

Teacher Prep

Students should be familiar with the genre of historical fiction. To decrease the total time spent on the activity, instructors may pre-select a number of H.H. Bennett photographs from which students can choose to create their short stories. Challenging all students to use the same three photographs can highlight the different creative paths students choose to take.

Subject Content: English/
Language Arts, History

Grades: 6 through 8

Activity Time: 1 class period

Goal

To understand how historical fiction informs contemporary audiences about the past

Skills and Strategies

Research, analysis, creativity

Objectives

The student will:

- ◆ Discover how historical fiction integrates historical fact with fictional characters, locations, and events
- ◆ Create an original piece of historical fiction that integrates a creative reinterpretation of photographs with historical fact

Procedures

1. Instruct each student to use the Wisconsin Historical Society website, www.wisconsinhistory.org, to search for photography by H.H. Bennett. Searches could include “H.H. Bennett” or “Wisconsin Dells Bennett,” for example, or could begin from the pages referenced above.
2. Have students choose three photographs, at least one of which includes a body of water.
3. Instruct students to identify the main features of each image, including any people in the photograph, the location where the photograph was taken, or activities or actions occurring in the photograph. Students should briefly research the time period and location of the photographs for historical background.
4. Challenge students to write a short piece of historical fiction that connects their three photographs. The story should include as many of the main features the students identified in Step 3 as possible and should employ elements of historical fact.

Closure

Ask students to share their stories with each other in class and discuss the variations in characters, actions, and conclusions within the stories. Consider the following questions:

- ♦ What challenges did students face while creating their own original stories based on the historical photographs? How did they overcome these challenges?
- ♦ Did students choose any of the same photographs? How were the resulting stories similar or different?
- ♦ What elements of historical fact were found within the stories? What elements were purely fictional?
- ♦ How does historical fiction inform contemporary audiences about the lifestyles and events of past times? How does this information benefit contemporary audiences? Can it misinform contemporary audiences?

Name _____ Date _____

H.H. Bennett Stories

Step One: Using the Wisconsin Historical Society’s website, www.wisconsinhistory.org, find and choose three photographs taken by H.H. Bennett. You may choose any three as long as at least one includes a body of water. List your three photos below using their Wisconsin Historical Society Image ID Numbers.

WHS Image ID _____

WHS Image ID _____

WHS Image ID _____

Step Two: Identify the main features of each image and list them below. These features may include any people in the photo, the location where the photo was taken, or activities or actions occurring in the photo.

Photo 1 _____

Photo 2 _____
