CAVOC GRADE 2

(Suggested schedule for the day for each grade level)

9:00-9:30 Arrival, rules, setup, familiarize students and staff with the facility and grounds, expectations for the day, break into three groups

9:35-10:20 Rock Activity-Group 1, Pond Activity-Group 2, Temperature Activity-Group 3

10:25-10:40 Snack/bathroom break

10:45-11:30 Rock Activity-Group 2, Pond Activity-Group 3, Temperature Activity-Group 1

11:35-12:20 Rock Activity-Group 3, Pond Activity-Group 1, Temperature Activity-Group 2

12:25-12:50 Lunch break

12:50-12:55 Divide into two groups

1:00~1:25 Heat Hunt group 1/Cat in the Hat Comes Back Activity group 2

1:25~1:50 Heat Hunt group 2/Cat in the Hat Comes Back Activity group 2

2:00 Departure

Rock Activity

GRADE LEVEL Second

OBJECTIVE By making careful observations, students will describe various properties of their rocks.

ENVIRONMENTAL EDUCATION STANDARD(S)
A.4.1 A.4.2 A.4.3 A.4.4
BENCHMARKS
LANGUAGE ARTS LA.2.A.1,5 LA.2.B.1,2,3,5,8 LA.2.C.1, LA.2.D.1
MATHEMATICS M.2.A.1 M.2.D.2,3,4 M.2.E.1
SCIENCE S.2.A.1,2,3 S.2.C.1 S.2.C.4,5,6 S.2.D.1,2

MATERIALS: rocks, measuring tape, balance, cm cubes magnifying lenses, container with water, pencil, clipboard, chart paper, AIMS worksheets pages 28 & 30 (One/student), 31 (one/teacher)

TIME~45 MINUTES

LOCATION AT CAVOC Pavilion area

RESOURCE Primarily Earth AIMS Activities Grades K-3

BACKGROUND
Rocks shape much of our Earth. They form the mountains and hills. We do not see many of the rocks because they are covered with soil and vegetation. Pebbles, soil, and sand all have small pieces of eroded rock in them.

Rocks consist of one or more minerals. The minerals give color, hardness, and sparkle to rocks.

PROCEDURE

DIVIDE STUDENTS INTO GROUPS OF 4-5

- **Ask each student to choose a rock from the site, examine it, and become very familiar with it.**

- **Direct the students to use the recording sheet *I Found A Rock* to record some of the observations they made of their rock and describe what makes it special.**

- **Encourage students to use a magnifying lens to examine the texture of their rock. Direct them to look at the size of the mineral grains in their rock and compare the grain size with others in their group. Discuss that large grains or chunks represent a coarse texture while small grains represent a fine texture.**

- **Distribute the containers with water. Have the students submerge their rocks in the water. Ask them to describe their rock when it is wet.**

- **Have students measure the circumference of the rock and find its mass. (Use measuring tapes and cm cubes.)**

- **Ask them to find another rock that is similar to theirs and explain the ways the two rocks are alike. Urge them to try to find at least four ways that the rocks are the same and four ways they are different. Encourage them to record the similarities and differences.**

- Direct students to put their rocks in a large group. Have them trade recording sheets to see if others can identify the rocks.

QUESTIONS

1. How are the rocks alike?
2. What was the heaviest rock? How many cm cubes did it take to balance your rock?
3. Was the heaviest rock also the biggest? How can you prove it?
4. How many different colors were found in all the rocks? (List them on chart paper.)
5. Which rocks were one solid color?
6. Who had the longest rock? Was it also the tallest?
7. What makes your rock different from everybody else's?
8. What are some other things you would like to know about your rock? Think of some ways you could find out.
9. How does water make your rock look different?

EXTENSIONS

1. Discuss with the students all the words that can be used to classify rocks. (big, small, long, heavy, shiny, rough,etc) Use *Show Me a Rock* worksheet to question the students about their rocks.

2. Children sit in a circle. Direct them to begin passing the rocks to each other behind their backs. After ~30 seconds ask them to pass until they recognize their own rock and then to put it down behind them. When everyone has "found" his/her rock, have him or her look at it. Did they really find it?? Before they leave CAVOC, return rocks to site.

Pond Puzzle

GRADE LEVEL Second

OBJECTIVE The students will be introduced to the basic components of an ecosystem, including animals, plants, and non-living factors such as water, soil, and sunlight, and the relationships within the system.

ENVIRONMENTAL EDUCATION STANDARD(S)
A.4.2 B.4.4 D.4.1
BENCHMARKS
LANGUAGE ARTS LA.2.C.1 LA.2.F.1
SCIENCE S.2.A.1 S.2.A.2 S.2.B.1 S.2.F.1 S.2.F.3

MATERIALS Copies of Activity Sheet 1, crayons or markers, chart paper and markers, scissors, "What Needs What" enlarged table

TIME ~ 45 MINUTES

LOCATION AT CAVOC Basement of the lodge and on the bog boardwalk.

RESOURCE Mud, Muck and other Wonderful Things An Environmental Curriculum for Five- to Eight- Year Olds pp.12-14.

BACKGROUND *Being a steward of the environment means keeping all the pieces together.* Children compare their immediate environment with an aquatic ecosystem. An ecosystem is the interacting system of a biological community and its

nonliving surroundings. The ecosystem to be studied in this activity is the wetland area at CAVOC. The students will list animals, plants, and other important things in their own neighborhood or backyard. They will then walk to the wetland and make a similar list of the wetland ecosystem. A discussion of the similarities and differences of the two ecosystems will follow.

PROCEDURE

- **Discuss the "What Needs What" table with the students. It will give you examples of how living things in a wetland need each other.**

- **Write the following headings on large chart paper:**
  animals
  plants
  other important things

- **Ask the children to name different animals, plants, and other important things in their neighborhood or backyard as you record on the chart paper in the appropriate areas. Ask students which heading each word would go under. Use questions to prompt them, such as "Are there any animals in the air?" or "Are there plants growing between the cracks in the sidewalk?"**

- **Next, ask students if they have ever seen a wetland. Using the same categories, have them name plants, animals, and other important things they have seen there. Walk to the bog boardwalk and have the students use their senses of touch, smell, sight and hearing to add to the list.**
- **Return to the lodge and add plants, animals, and other important things that they saw at the wetland. Then compare the two lists. Name several animals from the**

first list and ask students if they would be found in a pond. Let the children discuss why or why not. Repeat this for plants and other important things.

- Ask the children if a pond ecosystem could survive without one of the items from your list. For example, if "fish" is on your list, ask if a pond would stay the same without fish. Does anything on the list eat fish? What might happen to these animals without fish? What things from the list do eat fish? Would there now be more or less of these creatures? Discuss several of the animals, plants, and other items from their list in this way.

- Ask the students to think back to the list of the things in their backyards (or neighborhoods). Which things could they live without? What would happen if one of the "pieces" of their backyard was lost? Would it look the same?

- Pass out copies of Activity Sheet 1. Let the children color and cut out their pond, then put the puzzle back together. What happens if one of the pieces gets lost? Does it look different? Does it make a complete picture anymore?

QUESTIONS

1. Can you name some animals, plants, and other things in or around your neighborhood? Are they important? Why or why not?
2. Could you live outside at a pond or wetland or do you prefer your bedroom? Why?
3. Can you name some other types of plants, animals, and other important things from an area you've visited that are

different than the ones already named (i.e., cactus from a desert, alligator from swamps)?

4. Your neighborhood with its plants, animals, and other important things is called an ecosystem. Can you name another ecosystem here at *CAVOC*?

EXTENSIONS

Being a steward of the environment means keeping all the pieces together. Draw a picture of your street, backyard, or a nearby natural area. Cut the picture so that there are many pieces. Then try to fit the puzzle back together again. What would happen if you lost a piece? Every part of the puzzle has a purpose! Every part of an ecosystem has a purpose, too!

WHAT IS THE TEMPERATURE?

GRADE LEVEL Second

OBJECTIVE The students will learn how to read a thermometer.

ENVIRONMENTAL EDUCATION STANDARD(S)
A.4.1 A.4.2 A.4.3 A.4.4
BENCHMARKS
LANGUAGE ARTS LA.2.A.1,3,5 LA.B.1,2,3,5,7,8 LA.2.C.1 LA.2.D.1
MATHEMATICS M.2.A.2,3 M.2.B.1, 3, M.2.D.1,2,3,4 M.2.E.1
SCIENCE S.2.A.1,3 S.2.B.1 S.2.C.4,6 S.2.D.4

MATERIALS Thermometers, crayons, laminated bulletin board thermometer, several ice cubes from the freezer, straw, glass bottle, clay, food coloring, 2 deep pans, hot water, cold water, pencils, clipboards, worksheets pp. 82 & 87 from Primarily Physics AIMS Activities Grades K-3

TIME~ 45 MINUTES

LOCATION AT CAVOC First floor of the lodge and outside of the lodge in a shaded area.

RESOURCE PRIMARILY PHYSICS INVESTIGATIONS IN SOUND, LIGHT & HEAT ENERGY AIMS Activities Grades K-3 pp. 80-87

BACKGROUND A thermometer is an instrument for measuring temperature. Temperature is a measure of the average, random moving about of the molecules of a substance. (More precisely,

the average, random transitional kinetic energy of the molecules of a substance.)
The boiling point of water is 212 degrees F (100 degrees C) and the freezing temperature is 32 degrees F (0 degrees C).
The most common kind of thermometer is a thin, closed tube of glass. At the bottom of the tube is a small bulb. This contains a supply of mercury or colored alcohol. Heat from the substance being measured makes the liquid inside the tube expand. The expanding liquid rises in the tube. As the air cools, the liquid contracts and falls.

PROCEDURE

- Use the Fahrenheit scale when reading the thermometers. If both are done at the same time, it is confusing to the students.
- Students should know how to hold a thermometer. CAUTION the students that the thermometers are glass and can be broken. Colored alcohol thermometers are not toxic.
- Get a thermometer and have the students make observations. Ask them to hold onto the bulb of the thermometer and watch what happens to the liquid level.
- Have them release the bulb and watch the liquid level.
- Tell the students that the top of the liquid indicates the temperature.
- Have the students read the numbers actually appearing on the scale.
- The teacher should model reading the correct temperature.
- Give the students some ice cubes and have them place the ice cube on the very top of the thermometer. They will notice that in the short period of time the liquid is not affected. Have them place the ice cubes on the bulb of the thermometer and notice how the liquid reacts.

- Have the students take their thermometers to find and record the temperatures in these three areas:
    a. Inside the room away from all sources of heat for five minutes.
    b. Outside the room in the shade for five minutes.
    c. Your body – hold in your fist for five minutes.
- The teacher should record the outside temperature on the large bulletin board thermometer to demonstrate the process for the students.
- Have the students color their worksheets from their findings.

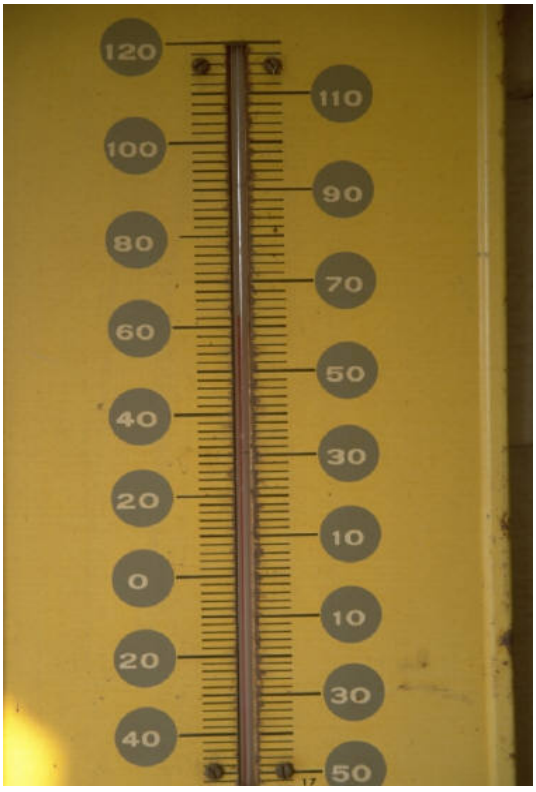
QUESTIONS

1. What does it mean when the liquid in the thermometer rises? How can you make it rise?
2. What does it mean when the liquid in the thermometer falls? How can you make it fall?
3. At what level do you think the liquid in an outdoor thermometer would be during the summer? Why?
4. At what level do you think the liquid in an outdoor thermometer would be during the winter? Why?
5. In the winter do you think the liquid in an outdoor thermometer would read the same as in our indoor thermometers? (No, because we are using the furnace to heat the air inside.)
6. How many degrees does each line on the thermometer show?
7. What is the highest temperature reading on the thermometer?
8. What is the lowest temperature reading on the thermometer?
9. Discuss the uses of the thermometer in the home, in the school, and elsewhere in the community.

10. Discuss why it is necessary to use a thermometer to find the temperature and the ways its use affects our daily lives. (Remember the Weather Bureau, farmer, airlines, etc.)
11. Discuss what the liquid in the thermometer is and that when liquid is heated it expands and goes up the tube.
12. Do the class thermometers all register (read) the same temperature? If not, why is there a difference?

EXTENSIONS

Build a thermometer by following the directions on the <u>Make a Thermometer</u> sheet. The key to success in this activity is to make the clay seal airtight. It works best if you bring clay over the top of the bottle.



HEAT HUNT WALK

GRADE LEVEL Second

OBJECTIVE Students will predict the temperature of specific sites in the lodge and outside the lodge and then read the thermometer at each site and record the actual temperatures.

ENVIRONMENTAL EDUCATION STANDARD(S)
A.4.1,2,3,4 B.4.1
BENCHMARKS
LANGUAGE ARTS LA.2.A.5 LA.2.C.1
MATHEMATICS M.2.A.2 M.2.B.1,2 M.2.D.2,3,4 M.2.E.4
SCIENCE S.2.A.1,2 S.2.C.1,2,4,5,6 S.2.D.8

MATERIALS Clipboards, pencils, thermometers, worksheet with pictures of thermometers, cup for hot tap water

TIME~25 MINUTES

LOCATION AT CAVOC On the first floor of Rominsky Lodge, outside in the sun and shade, at the pond

RESOURCE Boston School Forest, Stevens Point, WI activity for second grade students PRIMARILY PHYSICS INVESTIGATIONS IN SOUND,LIGHT, & HEAT ENERGY AIMS Activities Grades K-3 p. 72

BACKGROUND Heat and temperature are related but are not the same thing. Most people are familiar with the idea of temperature. The temperature of our bodies is important to our health, recipes tell us the temperature of the air in the oven for baking, the weather report gives us the temperature of today's weather. Our experience tells us that the warmer something feels, the higher the temperature is likely to be.

A thermometer is an instrument whose size, shape, or some feature changes when its temperature changes so that it can be used to measure temperature. The most common thermometers are those that have an expanding column of mercury or colored alcohol. A thermostat has a bi-metal strip that curls and uncurls to measure temperature.

Heat energy flows from warmer to cooler. If two objects are put into contact, and we wait until all changes stop, the objects will be at the same temperature. If we put the end of a thermometer in our mouths, heat energy will flow from our mouths to the thermometer and it will come to the same temperature as our bodies. If a thermometer is left in a room, it will come to the same temperature as the air. No matter where we put the thermometer, in ice water or boiling soup, the energy will flow in or out and make the thermometer the same temperature as the substance it touches.

PROCEDURE

- Divide the classes into 2 groups (one group will go on the walk and the other will do The Cat in the Hat Comes Back activity.

- Review what the classes learned about reading a thermometer in the morning. What does it mean when the liquid in the thermometer rises? What does it mean when the liquid in the thermometer falls? What is the freezing point of water? (32 degrees F or 0 degrees C) What is the boiling point of water? (212 degrees F or 100 degrees C) No matter where we put the thermometer, the energy will flow in or out and make the thermometer the same temperature as the substance it touches. Our experience tells us that the warmer something feels, the higher the temperature is likely to be and vice versa.

- Thermometers have been set up in Rominsky Lodge in the classroom upstairs, in the freezer, in the refrigerator, and one will be put in a cup of hot tap water. Also, thermometers are set up outside in the shade, in the sun, and in the water in the pond/bog. Students will split into groups of 4-5 with an adult leader, and, using a printed sheet, predict the temperatures at each station and then read the actual temperatures and record each. This takes about 15-20 minutes, after which, we reassemble in the lodge for comparison and wrap-up.

THE CAT IN THE HAT COMES BACK

GRADE LEVEL Second

OBJECTIVE Students will identify forms of pollution and describe the effects that various pollutants can have on people, wildlife, and plants.
Students will be able to describe relationships between various forms of pollution and human actions.

ENVIRONMENTAL EDUCATION STANDARD(S)
A.4.1,3,4 B.4.4 C.4.1,2,3,4 D.4.5 E.4.1,2
Benchmarks
LANGUAGE ARTS LA.2.A.3,4 LA.2.C.1 LA.2.F.1
SCIENCE S.2.A.1 S.2.B.1 S.2.C.2,3 S.2.F.3 S.2.H.1

MATERIALS: THE CAT IN THE HAT COMES BACK by Dr. Suess (1 copy or 1 copy of the video)

TIME~25 MINUTES

LOCATION AT CAVOC Lower level of CAVOC

RESOURCE Project Learning Tree Environmental Education Activity Guide K-8, 1993, pp.114-117

BACKGROUND

Thick, brown haze wraps around a city. Unwanted tires, appliances, and other refuse float in a stream. Oil washes up on a beach. All of these are examples of *pollution*. Human-generated chemicals, trash, noise, and heat can all be pollutants, but so can ash spewing from an erupting volcano or smoke spreading from a forest fire. Pollution is any contamination of air, water, or land that affects the environment in an unwanted way. Here's an overview of three types of pollution-air, water, and land-and a look at pollution controls.

Air Pollution: Automobiles, incinerators, coal-fired power plants, and factories send carbon dioxides, soot, and other pollutants into the air. Fireplaces and wood-burning stoves add carbon dioxide, ash, and other pollutants to the atmosphere. Other major forms of air pollution include *chlorofluorocarbons (CFCs),* which are used in products such as refrigerators and air conditioners; smog; and toxins (benzene, asbestos, and lead).

Air pollutants can cause health problems for people and other living things. Smog can make people's eyes burn and can cause damage to their lungs. Increased amounts of carbon dioxide and other *greenhouse gases* in the atmosphere may affect world climate.

Water Pollution- Years ago, it was common for sewage treatment plants and industrial plants to discharge polluted wastewater directly into rivers, bays, and oceans. This practice continues in many parts of the world. In the U.S., government regulations, voluntary pollution controls by industry, and citizen awareness have helped improve waste

disposal methods. As a result, in parts of the U.S., many rivers and streams that were once polluted have been revived. Students should be aware that any pollutant released into a *watershed* or into the atmosphere will eventually find its way into the water cycle.

Land Pollution-Everything we throw away needs a place to go. About 80% of our solid waste ends up in sanitary landfills. Some of the solid waste is burned to ash in an incinerator and then landfilled. Many other items (glass, plastic, aluminum, paper, etc.) can be recycled. Items like food scraps and yard waste can be composted, turned into dirt-like organic material that can then be recycled throughout a yard or garden. Hazardous wastes pose special disposal problems. Some need to be incinerated, sealed in long-lasting, leak-proof drums. Radioactive waste must be secured underground in complex, concrete reinforced structures.

Pollution controls- By definition, pollution is bad. However, some pollution is also unavoidable. Natural events that we can't control can generate pollution. And much of our basic lifestyle generates pollution: producing goods, washing clothes, driving to work, watching television, growing food, rinsing things in the sink, fertilizing the lawn, and so on. However, we can reduce the amount of pollution we produce by changing our lifestyles and by adopting new pollution-reducing technologies and other measures. We also control and reduce pollution through laws enacted in the United States.

PROCEDURE

- Tell students that they are going to hear a fable about pollution. A fable is a story that teaches an important lesson.

- Read aloud The Cat in the Hat Comes Back, making sure to show the pictures. (The story may be available on video.)

- Tell them that, besides being funny, the story can teach us something about people's attitude toward pollution.

QUESTIONS

1. Ask students what represented pollution in the story. (the pink stuff)
2. Where did the pollution come from? (the cat)
3. How did the cat deal with the pollution first? (moved it from one place to another)
4. Did this solve the problem? (no)
5. Who did the "big cat" call on to help him solve the problem? (little cats)
6. What did the little cats do? (broke the pink stuff into little pieces and spread it around)
7. Did this help? (no)
8. Who finally cleaned up the mess? (little cat "Z")
9. Could we see him? (no)
10. What did he use to clean it up? (a "voom")
11. Could we see it? (no)
12. Do we know how it works? (no, just that it "cleans up anything")

- After analyzing the story, discuss with students how *The Cat in the Hat Comes Back* demonstrates a common attitude people have toward pollution: We can deal with pollution by moving if from one place to another, for example, burying it or shooting it into space. Many people also feel we can simply break it up and spread it over a large area (pumping it into the air or dumping it into the ocean). In the end, many people simply feel that technology will solve all of our pollution problems. (This is like believing in the invisible "Z" cat with his invisible "voom".)
- Ask students what they can do today to make their world a cleaner, safer, and healthier place instead of waiting for someone else to clean up their messes. Encourage them to learn more about what causes different types of pollution and what they can do to lessen it or clean it up.