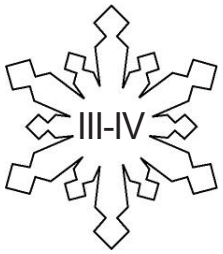
Weather History

Levels



Grades 5-8

Overview:

Scientists use core samples of the ocean floor to discover things about the climate in past times. Native Elders gather weather information in different ways, including stories. In this activity, students will learn how Elders gather weather information and take a core sample of a model.

Objectives:

The student will:

- learn how scientists measure weather;
- learn how Elders measure weather; and
- understand what a core sample is and how it is used.

Materials:

- Modeling clay in three different colors
- index card
- 2 teaspoons of rice
- Straight (non-bending) clear drinking straw
- Magnifier
- STUDENT INSTRUCTION SHEET: " Weather Investigator"
- STUDENT WORKSHEET: " Weather Investigator"

Activity Preparation:

Identify an Elder who can speak on this subject, have the class make an invitation, and deliver it prior to the activity. Prepare a snack for the Elder.

Activity Procedure:

1. Explain to students that in order to discover what the weather or climate was like thousands of years ago, scientists use core samples of the ocean floor to discover things about the climate in past times. These ocean floor core samples contain tiny ocean creatures called foraminifera. These creatures have been preserved in the ocean floor for millions of years. The shells of the foraminifera vary depending on the climate in which they lived. By looking at the shells, scientists can discover things about the climate of places on Earth millions of years ago. Scientists also use this technique to retrieve core samples from ice, soil, and rock. Machines called coring devices are used to capture the samples.
2. Other methods of finding out about the weather include looking at tree rings. Each ring on the inside of a tree represents a year of growth. By examining how much the tree grew, scientists can estimate how much rainfall there was or whether or not there were any hostile conditions, such as a volcanic eruption that might have affected the sunlight reaching the tree.
3. Native Elders have passed down weather history through stories for generations. While their memories and histories may not be able to go as far back as scientists' (which go back before man existed) they can provide clues and information about the climate of the past that scientists don't have tools to measure, such as the fact that a generation ago the ice froze sooner in the year. Explain that just as tree rings show how much time has passed, each layer in the ice represents a season. Snow which falls on the ground is compacted by the snow that falls on top of it. The compacted snow turns into ice by the pressure exerted on it from above.

4. Explain that in this activity students will make a model of ice layers and take a core sample from it.
5. Divide students into groups of three or four for ease of material usage. Give each group a small container of each color of modeling clay, and a magnifier. Provide each student with index card, 2 tsp rice, and a clear straw.
6. Hand out the STUDENT WORKSHEET: "Weather Investigator" and instruct students to complete Section I. Discuss what they found. Make sure students understand that the clay plug represents a scientist's core sample, the clay represents a layer of ice, and the rice represents fossils such as foraminifera.
7. When students are done with this section of the activity, or on another day soon after, invite an Elder to speak to your class about weather in the past. Create an invitation, prepare questions to ask, and then listen carefully and respectfully when the Elder is speaking. After the visit, make a class thank you card or gift.

Extensions:

Complete one or more of the following extension activities, if time and resources allow.

1. Cut more samples from the clay. Are all of the samples the same?
2. Cut the original core sample into several pieces to study the inside of the sample.
3. Go outside to a place where the snow is deep. Dig a hole into the snow big enough to stand in. Square out the sides so that it is flat on the edges. Take a sample from the flat edge of snow and/or the bottom of the snow and examine it. Measure it for temperature at varying depths or see if anything is living in it.

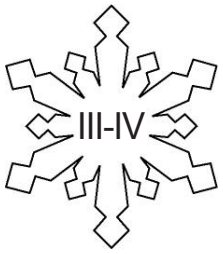
Answers:

1. fossils
2. soil or ice
3. Answers will vary.
4. d. A and B only.
5. Answers will vary.
6. Answers will vary.

Weather Investigator

Student Instruction Sheet

Levels

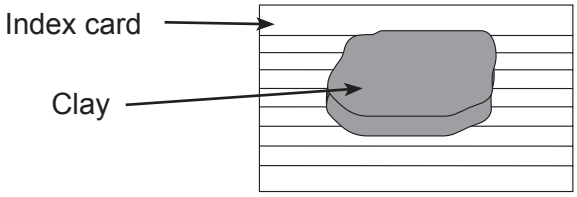


Materials:

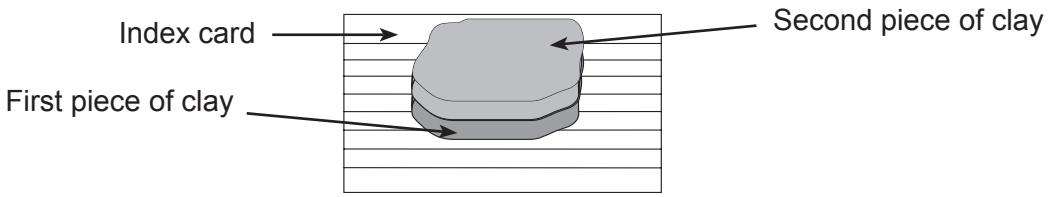
- Modeling clay in three different colors
- index card
- 2 teaspoons rice
- Straight (non-bending) clear drinking straw
- Magnifying lens

Directions:

1. Soften the clay by squeezing it. Break off a walnut-sized piece of each color of clay.
2. Flatten one of the clay pieces and lay it in the center of one index card.
3. Sprinkle rice over the top surface of the flattened clay piece.



4. Flatten another piece of clay and place it on top of the first piece. (The pieces of clay do not need to be the same thickness).



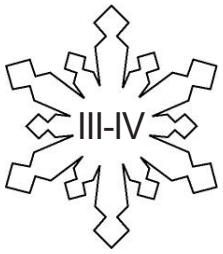
5. Sprinkle a second teaspoon of rice onto the clay.
6. Flatten the remaining piece of clay and stack it on top of the layer of rice. A three-layer block of clay about 1 inch deep will be formed.
7. Push the straw through all three layers of clay.
8. Pull the straw out of the clay.
11. Use the magnifier lens to study the clay plug.

Name:_____

Weather Investigator

Student Worksheet

Levels



Directions: Answer the following questions.

1. In the model that was constructed, what does the rice represent?

   _____

2. What does the clay represent? _____

3. Describe the features of the clay plug. What did it contain?

   _____

   _____

   _____

4. What method do scientists use to find information about the weather of the past?
   a. They take core samples.
   b. They examine tree rings.
   c. They read books and listen to stories.
   d. A and B only.

5. What methods do Elders use to find information about the weather of the past?

   _____

   _____

   _____

   _____

6. Use Microsoft Word to write a response to the following question. Print your response and hand it in with this worksheet. How are scientists' methods for finding out about the history of weather different from the way of Native Elders'?