

Discoveries at Willow Creek

Water Temperature

Activity Introduction and Overview

Students will practice using an alcohol filled thermometer to measure air and water temperature, just like the characters in the story *Discoveries at Willow Creek*. Along the way, they will learn a little about Celsius temperature too.

Phenomena

How do I use a thermometer to measure temperature?

Learning Objectives

- Students will be able to use an alcohol filled thermometer to measure air and water temperatures.
- Students will be able to explain why people should use Celsius.
- Students will be able to explain some Celsius temperatures in qualitative words.

Materials Needed

- Internet access and projector so everyone can see and hear the video.
- Bucket of water from a local lake, river or stream. If you cannot get water from a local water body, then you can use water from a tap.
- Towels to mop up spills.
- Jar or cup for each student for a water sample.
- A copy of [Discoveries at Willow Creek](#) for each student. (Included in Online Water Festival Trunk)
- An [alcohol liquid thermometer](#) for each student. (Included in Online Water Festival Trunk)

Online Water Festival Trunk

South Dakota teachers may request to borrow the Online Water Festival Trunk. The trunk will contain 30 copies of *Discoveries at Willow Creek* and 30 alcohol liquid thermometers.

Activity Instruction

Preparation

1. Watch the video and practice the steps to familiarize yourself with the steps, materials and questions.
2. Collect a bucket of water the day before or morning of the event. Hint: keep the bucket covered in a sheltered place with current air temperature conditions to minimize temperature change.
3. On the day of the event set out the books, thermometers, and cups.
4. Check the thermometers prior to the activity to make sure that no bubbles are breaking the liquid inside the thermometers. If the liquid line is split by a bubble run the thermometer under hot water to force the line back together. Store the thermometers upright.

Activity

1. Tell the students that they are going to learn about an important scientific instrument: the thermometer. Tell students thermometers measure how hot or cold something is, like air or water temperature.
2. Tell students they are going to watch a video and follow along using a thermometer about measuring water temperature on the Missouri/Mni Sose river.
3. Show them on a [map](#) where the video was recorded. Show them where they are in relationship to the Mni Sose/Missouri River.
4. Pass out the books.
5. Start the [video](#).
6. If needed pause the video at 1:15 to allow students to turn to page 15/16.
7. Pause the video at 3:28 to pass out thermometers. Check to make sure that students can see the numbers and line on their thermometers. Resume.
8. Pause the video at 4:02 to have students notice aloud features about their thermometer.
9. Pause the video at 7:57 to allow students to practice taking air temperature.
10. Pause the video at 9:28 to pass out the water.
11. Pause the video at 10:29 to allow students to practice taking water temperature.
12. Clean up: return the water to the bucket or dump out side. Wipe up any spills.

Wrap Up Discussion

Read the entire book *Discoveries at Willow Creek*. Search for clues that explain why the water was colder in the spring. Possible answers might be the intervening winter and that the water is coming from snow melt. Allow this to be an open-ended discussion. Expect students to give evidence or explanations to their ideas.

Assessment/Application

Review the Celsius poem. Bring students outside or to a different part of the building with their thermometers and a journal. Have them take the temperature in places they think will be hot, nice, chilly, or ice (cold). Record their location and their temperature reading in their journals.

Alternatively, set up stations in the shade, in direct sunlight, on dark pavement in a parking lot (safety first) in the sun. Create a chart of locations back in the classroom allowing students to fill in their data. Look for patterns and relationships in the data.

Celsius Poem

30 is hot,

20 is nice,

10 is chilly,

0 is ice.

Older students can learn the second stanza:

100's boiling,

180 you bake,

37 you're well, no sick days you'll take.

100°C is the temperature at which water boils, 180° is the temperature to set the oven for baking, 37° is 98.6 a healthy temperature meaning no fever.

GLOBE

[GLOBE \(www.globe.gov\)](http://www.globe.gov) is an international science and education project that involves students and the public in monitoring of Earth's systems using standardized protocols and an internationally accessible database. GLOBE is sponsored by NASA and NOAA with support from the US Department of State.

This activity is based off the [GLOBE Water Temperature protocol](#). To contribute water temperature data collected by your students to the GLOBE database, teachers must be trained in GLOBE and must follow the protocol exactly per the protocol and [field guide](#).

Teachers can be trained through [protocol e-training](#).