

Tracking the Weather Using Technology

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Summary

Students explore the use of technology to monitor and forecast weather.

Grade level

Fourth

Time required

Four 60- minute class periods

Materials

Colville Reservation maps – see Resources

Videotape of weather forecasts

Science journals

Video camera

Goals

By completing this lesson, students will

- 1) learn about different types of weather monitoring and forecasting tools,
- 2) access web sites and practice interpreting radar images,
- 3) learn about traditional types of weather forecasting conducted by Colville people and
- 4) gain experience in using science inquiry skills.

Science standards addressed

National Science Standards

- 1) Abilities necessary to do scientific inquiry
- 2) Evidence, models and explanation
- 3) Changes in Earth and sky
- 4) Science and technology in local challenges
- 5) Abilities of technological design

American Indian Science Standards

- 1) Changes in Earth's surface, weather fluctuations and movements of celestial objects and how they affected historical American Indian community locations, annual migrations, and agricultural and ceremonial cycles

Teacher tips

Obtain maps of the Colville Reservation on line from the web site noted in the Resources section.

Bookmark web sites prior to the lesson. Depending on the number of computers available with Internet access, the time required to complete the lesson can vary.

Background information

The Colville people in times past used signs in the natural world to forecast the weather. Some of these signs, as shared by Elaine Emerson, Colville elder, are listed below.

- 1) Animals and insects become agitated prior to weather change.
- 2) Animals lay down prior to earthquakes.
- 3) The moss will change colors when the weather changes. It is black when the weather is dry; it turns green during damp weather.
- 4) When bad weather is coming, flies will be thicker, ants will have longer trails.

For a good detailed background guide to the science of the atmosphere, go to USA Today's weather web page, "How Weather Works". For more information on technology used to monitor and predict weather go to USA Today's pages on weather technology. These addresses are listed in the Resources section.

Procedure

Engagement

- 1) Ask students about how meteorologists predict the weather. Watch a video clip of a meteorologist's weather report. Talk about the use of Doppler technology in predicting the weather.
- 2) Ask an elder to talk to students about traditional means of weather forecasting used by Colville people in times past.

Exploration

- 1) Have students visit the *Franklin Institute Detective Radar* web page. Read together the first page of information, then have students click "More" to practice forecasting using the Doppler images there.
- 2) Tell students that they will be comparing the accuracy of Doppler radar to current weather reports. Assist them in making a data table in their journals for recording the two types of data, including a column for comparing them.
- 3) Tell students to visit the MSNBC Weather page, find the two types of weather data for the Colville Reservation, record it in their journals and write an observation about how they compare.

- 4) Have them plot the information onto the reservation map.

Explanation

- 1) Facilitate a discussion with students about their results. Ask them why Doppler radar is helpful to people.
- 2) Talk about life in times past and how weather prediction differed then. Ask students to imagine how people prepared for severe weather back then.

Elaboration

Have student teams prepare a classroom meteorology news report from actual data, to be presented and recorded on videotape. Each team should prepare and present the weather information about one of the four districts of the reservation, using the Colville Reservation map as a visual aid.

Evaluation

- 1) Review student journals for evidence of inquiry skills and understanding of content.
- 2) Assess student videos for understanding of content.

Follow up activities

- 1) Hold a Weather Fair to share weather projects with families.
- 2) Encourage students to explore other types of weather collecting data for around the world at the “Earth Watch Weather on Demand” site.
- 3) Visit “Echo the Bat” at NASA Goddard Flight Center’s web site. This extensive interactive site takes students on an informative journey with a bat to learn about weather technology and forecasting.
- 4) Visit a TV station or national weather station to see the technology and talk with meteorologists.

Resources

Web sites

MSNBC – For obtaining weather forecasts and Doppler images
www.accuweather.com/msnbc/msnbc_qx01/OKC/radar?faa=okc

Franklin Institute Detective Radar – Provides information about and practice interpreting Doppler images
www.fi.edu/weather/radar/detection.html

USAToday How Weather Works – Good source for information on weather
www.usatoday.com/weather/wworks0.htm

Official site of the Colville tribe – Provides a Colville Reservation map
www.colvilletribes.com/locate.htm

Earthwatch Weather on Demand – Satellite and Doppler images for around the world
www.earthwatch.com

NASA Goddard Flight Center Echo the Bat – Interactive site on which kids take a journey with a bat to learn about remote sensing technology
<http://imagers.gsfc.nasa.gov>

Zip code list for the Colville Reservation

Omak District: 98841

Inchelium District: 99138

Keller District: 99140

Nespelem District: 99155