How Does Climate Affect our Shelter Needs?

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Summary

Students investigate how weather influences shelter choices.

Grade level

Fourth

Time required

Three to four 60-minute class periods

Materials

Pictures of traditional Native American shelters (see Background)
Warm water
Paper cups
Pieces of material for insulating the jars – canvas, foil, tulee, leaves, mud, animal skins
Tape, rubber bands
Thermometers
Science journals
Classroom materials and junk items to make shelters
Internet access

Goals

By completing this lesson, students will

1) understand that climate influences people's choices for shelters,
2) be introduced to the concept of insulation,
3) learn about some traditional Native American shelters and
4) gain experience in using the science process skills.

Science standards addressed

National Science Standards

- Abilities necessary to do scientific inquiry
- Organisms and their environments
- Changes in Earth and sky
- Properties of objects and materials
- Science and technology in local challenges

American Indian Science Standards

- 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
- Earth, air, fire and water and how they served as a basis for traditional American Indian production of clothing, housing, tools and food

Teacher tips

Bookmark web sites prior to beginning the lesson for easy access during the lesson.

Background information

In times past, Okanogan People lived in several different dwellings during the year. During the spring, summer and fall, people lived in tipis. In summer they moved to the fishing sites, in the fall they moved to the berry-picking sites and hunting sites. The tipis were either made of tule mats or cured animal skins. In later years, after the arrival of the trappers, they used discarded canvas sails to cover the tipi poles. In the cold months, the people lived in subterranean pit houses near creeks and rivers. The bottom part of the home was dug into the ground to make a circle. The circle was topped by a roof. A tall ladder was used to enter and leave the dwelling.

The following three web sites will provide pictures and information about traditional Native American shelters that will be useful in this lesson.

- *The Library of Congress* web site has 39 pictures of tule mat tipis, as well as a rich assortment of other traditional pictures. Search using the key words "tule mat". http://memory.loc.gov/ammem/award98/wauhtml/aipnhome.html
- *Native American Shelters* - Click on the map to access information and pictures of traditional shelters for native cultural areas in the United States. www.anthro.mankato.msus.edu/prehistory/settlements/index.shtml.
- The *Living Landscapes* web site has picture resources of Native people of the Colville Reservation and the Okanogan Band, both on the Colville Reservation side and the Canadian side of the border. http://royal.okanagan.bc.ca/cgi-bin/keysearch?key=India

Procedure

Engagement

1) Discuss the shelters used by the traditional Okanogan people and how the people moved with the seasons. Show pictures of traditional Okanogan shelters from the web sites. Relate subterranean homes of the Okanogan to contemporary earth banked buildings. Discuss how native people in different areas built different shelters depending on their weather conditions. Go to the *Native American Shelters* web page and ask students to predict the types of shelter and building materials used in different parts of the country.

Exploration

1) Have students work individually to quickly draw a picture of their own house. Make a class list of all the materials students think they would need to build their house.

2) Introduce the word *insulation.* Show students the various types of insulating materials Challenge them to design an experiment to find out which material is the best insulator. Provide relevant equipment for the experiments. Students should draw and write about their experimental design, results and conclusions in their journals.

Explanation

1) Encourage students to share their experimental results with the class. Make a class chart of the results to determine what the best insulating material is. Relate the results to traditional and contemporary building materials.
2) Discuss modern homes and how they are built to make us comfortable in all types of weather with insulation in the walls, heating systems, air conditioners, insulated windows etc. Compare this to times past when the Okanogan changed to subterranean houses during cold seasons.

Elaboration

1) Ask students to make predictions about the climate of outer space.
2) Encourage students to access the "Staying Cool on the Station" web page on the *NASA Kids* web site to read about how astronauts stay comfortable in space. Discuss the types of insulation required in space to those used in modern and traditional homes.

Evaluation

1) Using classroom materials, have students or pairs of students design a shelter from the past, present or future. Each group should select a climate or location where they will use their shelter and explain why their shelter would be an appropriate design for their chosen climate.
2) Review journal entries for evidence of process skill proficiency.

Follow up activities

1) Ask students to predict where most people live on Earth. Have an atlas, globe or map of earth available for all to see. Access a world population density map at http://www.ciesin.org/datasets/gpw/globldem.doc.html. Ask students to hypothesize why people cluster in these regions of the world.
2) Have students select a tribal school in a different part of the country. Ask them to predict the type of weather the students experience at the other school. Write letters or e-mail messages to students at the other school, exchanging information about cultural traditions, weather, shelter, etc.

Resources

Web sites

Library of Congress – Pictures of tule tipis
http://memory.loc.gov/ammem/award98/wauhtml/aipnhome.html

Native American Shelters – Interactive map with information about native shelters

www.anthro.mankato.msus.edu/prehistory/settlements/index.shtml

Living Landscapes –Pictures of Okanogan people
http://royal.okanagan.bc.ca/cgi-bin/keysearch?key=India

Gridded World Population – Map of population density.
www.ciesin.org/datasets/gpw/globldem.doc.html

NASA Kids – Staying Cool on the Station - Describes climate control in space stations.
http://kids.msfc.nasa.gov/