

Weather/Climate

Contact Information:

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Objectives

Students will:

1. Work with Elders, local experts, and their teacher to learn about traditional weather/climate knowledge.
2. Develop weather watching skills such as; observing, describing, noticing sequences of events, patterns, and relationships.
3. Gain appreciation and understanding of indigenous and scientific knowledge about the weather/climate.

Lesson

GRADES K -12

Activities:

1. Work with the Tribal Council to identify and establish a relationship with Elders, local outdoor experts (hunters, trappers, or others who are recognized as having an expertise in weather changes, patterns, and signs).
2. Schedule a time to visit with the Elder/expert.
3. Guide the students in asking questions about their weather knowledge and how it has contributed to the well being and local culture of the Village. Perhaps the Elder has a story to tell on this subject.
4. Schedule several meetings with the Elder/expert out of doors so that specific weather signs, changes, patterns can be observed by the students.
5. Have the students keep a weather journal (written or recorded) of their visits, observations, and learning. Younger students may want to convey their learning by making a poster, song, dance, puppet show, play, or a video. Each student may discover their "own place" - that special place that they will return to over the year to record their observations.

Discussion Ideas:

1. Why is it important that we listen and learn from our Elders or those who are local experts?
2. Historically, how did the weather play a role in the daily lives of our Village? Does weather/climate play a part in our wellness as individuals or as a community?
3. Is knowing the local weather patterns, changes, and signs important to our Village today?
4. What are the most important things that we have learned so far about weather?
5. Do you have any questions, based upon our current level of weather understanding, that you would like to ask the Elders or expert at our next visit?

Activities:

1. Brainstorm with students the purpose of clouds and the types (sizes, shapes, color, etc) of clouds they have witnessed/observed.
2. Check with a local expert/Elder what the different types of clouds may mean for local activities (play, hunting, fishing, travel, animal migrations, and any subsistence activities).
3. Have the students find out the average number of cloudy days in each month for the local area.
4. Have the students record cloud cover over a period of one month or longer in their observation journals.
5. Have students research and set up experiments that reflect cloud formation and condensation.
6. Teacher may wish to read and do follow up writing, art, or drama activities from the following suggestions:

Cloudy with a Chance of Meatballs by Judi Barrett

Nothing Ever Happens on My Block by Ellen Raskin

Bartholomew and the Oobleck by Dr. Seuss

The Lorax by Dr. Seuss

Stopping by the Woods on a Snowy Evening by Robert Frost

Rainbows are Made by Carl Sandburg

Discussion Ideas:

1. Why are clouds important to the Earth and its populations?
2. What have we learned from the Elders about clouds?
3. How would the temperature in our local area be affected if the number of cloudy days increased or decreased?
4. Do the number of cloudy days differ from season to season?
5. Do clouds affect the activities that we engage in?
6. What weather changes can occur when clouds are present?
7. What elements bring clouds into our local area?

Activities:

1. Ask the students to list all forms of liquid precipitation and solid precipitation that they can think of.
2. Working with the local expert/Elders, find out what activities occur with differing types of precipitation.
3. Ask the Elders for any stories that deal with precipitation.

4. Older students may wish to research, build, and teach younger students about the Hydrologic cycle.
5. Have the students find out the average amount of precipitation for the local area.
6. Have the students gather data on the daily precipitation for the local area using a rain gauge. Ask them to record this data in their observation journal.

Discussion Ideas:

1. What do you think would happen if our annual precipitation fell in just one month?
2. Does precipitation have any influence on our cultural activities?
3. What factors do you think influence when and where rain falls?
4. What is your favorite/least favorite type of precipitation? Why?

Activities:

1. Students should go out and observe and record their observations of the wind. They should use all their senses on their observation and recordings.
2. Work with the Elders/local expert to learn the local language concerning wind and its effects on the environment or activities.
3. Brainstorm with students effects of differing velocities of wind.
4. Ask the Elders/local expert if they have stories to share concerning the wind.
5. Have students draw, paint, write, compose (poetry or song) about the wind.
6. Our wind generally comes from a certain direction, work with the Elder/local expert about what weather patterns we see when the winds come from certain directions?
7. Students should record general weather patterns and wind directions over a period of time.

Discussion Ideas:

1. What do we mean by "Wind Chill"? How can it effect us and our activities?
2. How can wind be helpful/harmful?
3. What purpose does wind have?
4. What have we learned from our observations?
5. What have we learned from our Elders/local expert?
6. What direction does our wind generally come from?
7. What weather patterns are generally seen when the wind is from the SE, SW, NE, NW, S, E, W, N?

Activities:

1. Using a Maximum/Minimum Thermometer, have students record the daily temperature. They should pick a reading time which approximates solar noon. This data should be recorded daily in their observation journal.
2. Working with the Elders/local expert, find out how temperature affects subsistence and cultural activities.
3. Work with the Elders/local experts to understand how, in times before thermometers, temperature was ascertained.
4. Have students research and build a working thermometer. Compare temperature readings from

the student built thermometer to a commercial thermometer.

Discussion Ideas:

1. What activities currently can be safely enjoyed at temperatures below zero? Above zero? What activities, historically, were enjoyed at temperatures above zero? Below zero?
2. How did our Elders tell the temperature before thermometers?
3. How did the temperature affect the way our Elders subsisted?
4. How does the temperature influence our lifestyle today?
5. What is the average temperature we experience in our local area in the winter? Fall? Spring? Summer?

State Standards

Science

- A. A student should understand scientific facts, concepts, principles, and theories.
- B. A student should possess and understand the skills of scientific inquiry.
- C. A student should understand the nature and history of science.

English/Language Arts

- A. A student should be a competent and thoughtful reader, listener, and viewer of literature, technical materials, and a variety of other information.
- B. A student should be able to identify and select from multiple strategies in order to complete projects independently and cooperatively.

Cultural Standards

- A. Culturally-knowledgeable students are well grounded in the cultural heritage and traditions of their community.
- B. Culturally-knowledgeable students are able to build on the knowledge and skills of the local cultural community as a foundation from which to achieve personal and academic success throughout life.
- C. Culturally-knowledgeable students are able to engage effectively in learning activities that are based on traditional ways of knowing and learning.

Teacher Note:

Alaska is unique and each region has its own pattern of weather/climate. The Elders have an intimate knowledge of their environment, know the variations and nuances in each weather pattern, and could foretell the weather accurately. In the past and to a certain extent today, this knowledge was/is of vital importance to their survival as it allows them to make decisions on travel, routes, dress, hunting, fishing, and other subsistence activities.

When we talk of weather we mean what is happening in the atmosphere today, tomorrow, or even next week. By Climate we mean weather over time.