How Does Climate Affect Biomes?

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Adapted from activities originally developed by Regina Sievert
and presented to the Big Sky Science Partnership Teacher Participants

Unit Overview:

This unit is designed to show students at the 6th grade level how climate affects the biomes of the United States, and how native peoples used knowledge about the biomes where they lived to develop their cultures. Students will engage in a variety of activities that help them gain a conceptual understanding of how a) temperature, precipitation, elevation and latitude affect the major biomes; b) to read and construct climographs; c) to match climographs to the correct biome; and d) to research and report on the food, clothing, and shelter of one tribe from a specific biome.

Montana Science Standards:
Standard 1.1 for 8th grade: …compare and analyze data.
Standard 3.4 for 8th grade: Investigate and explain the interdependent nature of populations and communities in the environment and describe how species in these populations adapt by evolving.
Standard 5.5 for 8th grade: Describe how the knowledge of science (weather/seasons) influences the development of the Montana American Indian culture.

Essential Understandings Regarding Montana Indians
Essential Understanding 1: There is great diversity among the 12 tribal Nations of Montana in their languages, cultures, histories and governments. Each Nation has a distinct and unique cultural heritage that contributes to modern Montana.

Students will:
1. Read through descriptions of different North American biomes to determine the climatic factors that are most influential in their classification.
2. Be able to explain the difference between climate and weather.
3. Construct climographs for different biomes.
4. Research on the Internet how the native people who live in different regions (biomes) have used knowledge of the climate and resources available where they live in the development of their culture (including food, clothing, shelter, etc.).
5. Examine the Salish calendar and listen to a guest speaker talk about how Salish people set the pace of their cultural practices to coincide with seasons and the weather/climate.

Time: The unit is designed to take between six and seven 45-minute periods.

Materials (provided in this lesson):

- Pictures of Bitterroot Valley
- Major Biomes of North America from: University of California, Museum of Paleontology http://www.ucmp.berkeley.edu/exhibits/biomes/grasslands.php

- Familiar Phenomenon Probe: Are You Smarter Than a 5th Grader?
- Average Missoula Temperature and Rain Fall information
- Climate Data for Santa Fe NM, Jacksonville FL, Seattle WA, Charlotte NC, Great Falls MT, and Barrow AK
- Biomes of North America (from Lesson One)
- Climographs and Biome sheet
- Climate and Its Effect on Native Culture worksheet

Materials (provided by teacher):

- Large graph paper
- Markers
- Rulers
- Computers with Internet access
- Color printers
- Poster board
- Glue sticks
- Salish Calendar
- Graph paper
- Note cards

What Are the Major Abiotic Factors that Affect a Biome?
Lesson 1

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Summary of the Lesson:

After reviewing the definition of a biome and looking at four pictures of biomes found in the Bitterroot Valley, students will read through a description of different North American biomes to determine the factors that are most influential in their classification.

Grade Level: 6

Time: One 45-minute session

Lesson Objectives and Montana Standards:

Science Standards 1.1 and 3.4
Students will identify the four major abiotic factors that determine a biome.

Materials:

- Pictures of Bitterroot Valley (included in lesson)
- Major Biomes of North America from: University of California, Museum of Paleontology (included in unit materials)
- Note cards

Procedure:

Engage:
Begin the lesson with a review of what a biome is. Biomes are communities that are classified according to the predominant organisms (both plants and animals) that live in that area. There are six major biomes, two are aquatic and four are terrestrial.

Pass out the Bitterroot Valley biome pictures. Pose the question to students: Why do these four places look so different? Students should work in small groups of three or four to come up with possible suggestions. Discuss ideas with students as a whole class, and list their ideas on the board.

Explore/Explain:
Pass out the Major Biomes of North America packet to each student. Have students determine in their groups which section (i.e., deserts, forests, grasslands or tundra) each of them will read. Have students read their section looking for the factors that determine that biome. When they are done, they should share their findings with their group. Together they will come up with their ideas of which factors are most responsible for determining a biome.

Formative Assessment:
Students will write down on a note card what they think are the major factors determining a biome. They will turn this in before they leave. The core factors to look for in students' responses are elevation, precipitation, latitude, and temperature.

Major Biomes of North America

From: University of California, Museum of Paleontology
http://www.ucmp.berkeley.edu/exhibits/biomes/index.php

Biomes are defined as "the world's major communities, classified according to the predominant vegetation and characterized by adaptations of organisms to that particular environment" (Campbell 1996).

Most resources divide the world up into 6 major biomes, two are aquatic (water) and four are terrestrial (land). These are further subdivided in to more specific biomes. We will focus on the terrestrial or land biomes of North America because that is where we live.

Major Biomes of the world: Marine, Freshwater, Dessert, Grasslands, Forests, and Tundra

Deserts:

Desert biomes can be classified according to several characteristics.
There are four major types of deserts:

- Hot and dry
- Semiarid
- Coastal
- Cold

We will look at the first two only, because these are found in the United States.

Hot and dry desert

The four major North American deserts of this type are the Chihuahuan, Sonoran, Mojave and Great Basin. Others outside the U.S. include the Southern Asian realm, Neotropical (South and Central America), Ethiopian (Africa) and Australian.

In hot and dry deserts, the seasons are generally warm throughout the year and very hot in the summer. The winters usually bring little rainfall.

Temperatures exhibit daily extremes because the atmosphere contains little humidity to block the Sun's rays. Desert surfaces receive a little more than twice the solar radiation received by humid regions and lose almost twice as much heat at night. Many mean annual temperatures range from 20-25° C. The extreme maximum ranges from 43.5-49° C. Minimum temperatures sometimes drop to -18° C.

Rainfall is usually very low and/or concentrated in short bursts between long rainless periods. Evaporation rates regularly exceed rainfall rates. Sometimes rain starts falling and evaporates before reaching the ground. Rainfall is lowest on the Atacama Desert of Chile, where it averages less than 1.5 cm. Some years are even rainless. Inland Sahara also receives less than 1.5 cm a year. Rainfall in American deserts is generally higher — almost 28 cm a year.

Soils are course-textured, shallow, rocky or gravely with good drainage and have no subsurface water. They are coarse because there is less chemical weathering. The finer dust and sand particles are blown elsewhere, leaving heavier pieces behind.

Canopy in most deserts is very rare. Plants are mainly ground-hugging shrubs and short woody trees. Leaves are "replete" (fully supported with nutrients) with water-conserving characteristics. They tend to be small, thick and covered with a thick cuticle (outer layer). In the cacti, the leaves are much reduced (to spines) and photosynthetic activity is restricted to the stems. Some plants open their stomata (microscopic openings in the epidermis of leaves that allow for gas exchange) only at night when evaporation rates are lowest. These plants include: yuccas, ocotillo, turpentine bush, prickly pears, false mesquite, sotol, ephedras, agaves and brittlebush.

The animals include small nocturnal (active at night) carnivores. The dominant mammals are burrowers and kangaroo rats. There are also insects, arachnids, reptiles and birds. The animals stay inactive in protected hideaways during the hot day and come out to forage at dusk, dawn or at night, when the desert is cooler.

Semiarid desert
The major deserts of this type include the sagebrush of Utah, Montana and the Great Basin. They also include the Nearctic realm (North America, Newfoundland, Greenland, Russia, Europe and northern Asia).

The summers are moderately long and dry, and like hot deserts, the winters normally bring low concentrations of rainfall. Summer temperatures usually average between 21-27° C. It normally does not go above 38° C and evening temperatures are cool, at around 10° C. Cool nights help both plants and animals by reducing moisture loss from transpiration, sweating and breathing. Furthermore, condensation of dew caused by night cooling may equal or exceed the rainfall received by some deserts. As in the hot desert, rainfall is often very low and/or concentrated. The average rainfall ranges from 2-4 cm annually.

The soil can range from sandy and fine-textured to loose rock fragments, gravel or sand. It has a fairly low salt concentration, compared to deserts that receive a lot of rain (acquiring higher salt concentrations as a result). In areas such as mountain slopes, the soil is shallow, rocky or gravely with good drainage. In the upper bajada (lower slopes) the soil is coarse-textured, rocky, well-drained and partly "laid by rock bench." In the lower bajada (bottom land) the soil is sandy and fine-textured, often with "caliche hardpan." In each case there is no subsurface water.

The spiny nature of many plants in semiarid deserts provides protection in a hazardous environment. The large numbers of spines shade the surface enough to significantly reduce transpiration. The same may be true of the hairs on the woolly desert plants. Many plants have silvery or glossy leaves, allowing them to reflect more radiant energy. These plants often have an unfavorable odor or taste. Semiarid plants include: Creosote bush, bur sage (*Franseria dumosa* or *F. deltoidea*), white thorn, cat claw, mesquite, brittle bushes (*Encelia farinosa*), lyciums, and jujube.

During the day, insects move around twigs to stay on the shady side; jackrabbits follow the moving shadow of a cactus or shrub. Naturally, many animals find protection in underground burrows where they are insulated from both heat and aridity. These animals include mammals such as kangaroo rats, rabbits, and skunks; insects like grasshoppers and ants; reptiles represented by lizards and snakes; and birds such as burrowing owls and the California thrasher.

Forests:

There are three major types of forests, classed according to latitude:

- Tropical
- Temperate
- Boreal forests (taiga)

Tropical forest

Tropical forests are characterized by the greatest diversity of species. They occur near the equator, within the area bounded by latitudes 23.5 degrees N and 23.5 degrees S. One of the major characteristics of tropical forests is their distinct seasonality: winter is absent, and only two seasons are present (rainy and dry). The length of daylight is 12 hours and varies little.

- Temperature is on average 20-25° C and varies little throughout the year. The average temperatures of the three warmest and three coldest months do not differ by more than 5 degrees.
- Precipitation is evenly distributed throughout the year, with annual rainfall exceeding 200 cm.
- Soil is nutrient-poor and acidic. Decomposition is rapid and soils are subject to heavy leaching.
- Canopy in tropical forests is multilayered and continuous, allowing little light penetration.
- Flora is highly diverse: one square kilometer may contain as many as 100 different tree species. Trees are 25-35 m tall, with buttressed trunks and shallow roots, mostly evergreen, with large dark green leaves. Plants such as orchids, bromeliads, vines (lianas), ferns, mosses, and palms are present in tropical forests.
- Fauna include numerous birds, bats, small mammals, and insects.

More than one half of tropical forests have already been destroyed.

Temperate forest

Temperate forests occur in eastern North America, northeastern Asia, and western and central Europe. Well-defined seasons with a distinct winter characterize this forest biome. Moderate climate and a growing season of 140-200 days during 4-6 frost-free months distinguish temperate forests.

- Temperature varies from -30° C to 30° C.
- Precipitation (75-150 cm) is distributed evenly throughout the year.
- Soil is fertile, enriched with decaying litter.

- Canopy is moderately dense and allows light to penetrate, resulting in well-developed and richly diversified understory vegetation and stratification of animals.
- Flora is characterized by 3-4 tree species per square kilometer. Trees are distinguished by broad leaves that are lost annually and include such species as oak, hickory, beech, hemlock, maple, basswood, cottonwood, elm, and willow. Spring-flowering herbs are also common.
- Fauna is represented by squirrels, rabbits, skunks, birds, deer, mountain lion, bobcat, timber wolf, fox, and black bear.

Only scattered remnants of original temperate forests remain.

Boreal forest (taiga)
Boreal forests, or taiga, represent the largest terrestrial biome. Occurring between 50 and 60 degrees north latitudes, boreal forests can be found in the broad belt of Eurasia and North America: two-thirds in Siberia with the rest in Scandinavia, Alaska, and Canada. Seasons are divided into short, moist, and moderately warm summers and long, cold, and dry winters. The length of the growing season in boreal forests is 130 days.

- Temperatures are very low.
- Precipitation is primarily in the form of snow, 40-100 cm annually.
- Soil is thin, nutrient-poor, and acidic.
- Canopy permits low light penetration, and as a result, understory is limited.
- Flora consist mostly of cold-tolerant evergreen conifers with needle-like leaves, such as pine, fir, and spruce.
- Fauna include woodpeckers, hawks, moose, bear, weasel, lynx, fox, wolf, deer, hares, chipmunks, shrews, and bats.

Current extensive logging in boreal forests may soon cause their disappearance.

Grasslands:

There are two types of grasslands in the world, Savanna and Temperate. We will only look at the temperate since that is what is found in the United States.

Temperate grassland

Temperate grasslands are characterized as having grasses as the dominant vegetation. Trees and large shrubs are absent. Temperatures vary more from summer to winter, and the amount of rainfall is less in temperate grasslands than in savannas. The major manifestations are the veldts of South Africa, the puszta of Hungary, the pampas of Argentina and Uruguay, the steppes of the former Soviet Union, and the plains and prairies of central North America. Temperate grasslands have hot summers and cold winters. Rainfall is moderate. The amount of annual rainfall influences the height of grassland vegetation, with taller grasses in wetter regions. As in the savanna, seasonal drought and occasional fires are very important to biodiversity. However, their effects aren't as dramatic in temperate grasslands as they are in savannas. The soil of the temperate grasslands is deep and dark, with fertile upper layers. It is nutrient-rich from the growth and decay of deep, many-branched grass roots. The rotted roots hold the soil together and provide a nutrient source for living plants. Each different species of grass grows best in a particular grassland environment (determined by temperature, rainfall, and soil conditions). The seasonal drought, occasional fires, and grazing by large mammals all prevent woody shrubs and trees from invading and becoming established. However, a few trees, such as cottonwoods, oaks, and willows grow in river valleys, and some non-woody plants, specifically a few hundred species of flowers, grow among the grasses. The various species of grasses include purple needle grass, blue grama, buffalo grass, and galleta. Flowers include asters, blazing stars, coneflowers, goldenrods, sunflowers, clovers, psoraleas, and wild indigos.

Precipitation in the temperate grasslands usually occurs in the late spring and early summer. The annual average is about 50.8 to 88.9 cm (20-35 inches). The temperature range is very large over the course of the year. Summer temperatures can be well over 38° C (100 degrees Fahrenheit), while winter temperatures can be as low as -40° C (-40 degrees Fahrenheit).

The fauna (which do not all occur in the same temperate grassland) include gazelles, zebras, rhinoceroses, wild horses, lions, wolves, prairie dogs, jack rabbits, deer, mice, coyotes, foxes, skunks, badgers, blackbirds, grouses, meadowlarks, quails, sparrows, hawks, owls, snakes, grasshoppers, leafhoppers, and spiders.

There are also environmental concerns regarding the temperate grasslands. Few natural prairie regions remain because most have been turned into farms or grazing land. This is because they are flat, treeless, covered with grass, and have rich soil.

Temperate grasslands can be further subdivided. Prairies are grasslands with tall grasses while steppes are grasslands with short grasses. Prairies and steppes are somewhat similar but the information given above pertains specifically to prairies — the following is a specific description of steppes.

Steppes are dry areas of grassland with hot summers and cold winters. They receive 25.4-50.8 cm (10-20 inches) of rainfall a year. Steppes occur in the interiors of North America and Europe.

Plants growing in steppes are usually greater than 1 foot tall. They include blue grama and buffalo grass, cacti, sagebrush, speargrass, and small relatives of the sunflower. Steppe fauna includes badgers, hawks, owls, and snakes. Today, people use steppes to graze livestock and to grow wheat and other crops. Overgrazing, plowing, and excess salts left behind by irrigation waters have harmed some steppes. Strong winds blow loose soil from the ground after plowing, especially during droughts. This causes the dust storms of the Great Plains of the U.S.

Tundra:

Tundra is separated into two types:

- Arctic tundra
- Alpine tundra

Arctic tundra

Arctic tundra is located in the northern hemisphere, encircling the North Pole and extending south to the coniferous forests of the taiga. The arctic is known for its cold, desert-like conditions. The growing season ranges from 50 to 60 days. The average winter temperature is -34° C (-30° F), but the average summer temperature is 3-12° C (37-54° F) which enables this biome to sustain life. Rainfall may vary in different regions of the arctic. Yearly precipitation, including melting snow, is 15 to 25 cm (6 to 10 inches). Soil is formed slowly. A layer of permanently frozen subsoil called permafrost exists, consisting mostly of gravel and finer material. When water saturates the upper surface, bogs and ponds may form, providing moisture for plants. There are no deep root systems in the vegetation of the arctic tundra. However, there are still a wide variety of plants that are able to resist the cold climate. There are about 1,700 kinds of plants in the arctic and subarctic, and these include:

- low shrubs, sedges, reindeer mosses, liverworts, and grasses
- 400 varieties of flowers
- crustose and foliose lichen

All of the plants are adapted to sweeping winds and disturbances of the soil. Plants are short and group together to resist the cold temperatures and are protected by the snow during the winter. They can carry out photosynthesis at low temperatures and low light intensities. The growing seasons are short and most plants reproduce by budding and division rather than sexually by flowering. The fauna in the arctic is also diverse:

- Herbivorous mammals: lemmings, voles, caribou, arctic hares and squirrels
- Carnivorous mammals: arctic foxes, wolves, and polar bears
- Migratory birds: ravens, snow buntings, falcons, loons, sandpipers, terns, juncos, and various species of gulls
- Insects: mosquitoes, flies, moths, grasshoppers, blackflies and arctic bumble bees
- Fish: cod, flatfish, salmon, and trout

Animals are adapted to handle long, cold winters and to breed and raise young quickly in the summer. Animals such as mammals and birds also have additional insulation from fat. Many animals hibernate during the winter because food is not abundant. Another alternative is to migrate south in the winter, like birds do. Reptiles and amphibians are few or absent because of

the extremely cold temperatures. Because of constant immigration and emigration, the population continually oscillates.

Alpine tundra
Alpine tundra is located on mountains throughout the world at high altitude where trees cannot grow. The growing season is approximately 180 days. The nighttime temperature is usually below freezing. Unlike the arctic tundra, the soil in the alpine tundra is well drained. The plants are very similar to those of the arctic tundra and include:

- tussock grasses, dwarf trees, small-leafed shrubs, and heaths

Animals living in the alpine tundra are also well adapted:

- Mammals: picas, marmots, mountain goats, sheep, elk
- Birds: grouse-like birds
- Insects: springtails, beetles, grasshoppers, butterflies

What is the Difference Between Weather and Climate?
Lesson 2

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Summary of Lesson:

Part 1: Students will be given a familiar phenomenon probe that asks the question, "What is climate?" Students will first work independently and then share their ideas in a small group. Students can edit their ideas using different color ink. A whole class discussion will follow, then students will hand in their probes.

Part 2: Once a definition of climate and how it is different from weather is agreed upon, students will be divided into groups of three or four. Working together but constructing their own graphs, students will learn how to create a climograph of the Missoula/Lolo area. Next, each group will be given a different set of data to construct one group climograph. Each group will create a climograph representing a different biome.

Part 3: The climographs that were created in Part 2 of the lesson will be displayed around the room. Working in their groups, students will get out their packets on the biomes that they received in lesson 1. Together they will match the major North American biomes with each of the climographs in the room. They will hand in their answers.

Grade Level: 6

Time: Three 45-minute sessions

Lesson Objectives and Montana Standards:

Standards 1.1 and 4.5
Students will construct climographs for different biomes.

Materials:

- Familiar Phenomenon Probe: "Are You Smarter Than a 5th Grader?"
- Average Missoula Temperature and Rain Fall information
- Graph paper
- Climate Data for Santa Fe NM, Jacksonville FL, Seattle WA, Charlotte NC, Great Falls MT, and Barrow AK
- Large graph paper
- Markers
- Rulers
- Biomes of North America (from lesson one)
- Climographs and Biome sheet

Background Information

A climograph depicts the annual cycle of temperature and rainfall for a geographical location. On the graph, one vertical axis shows temperature and a second vertical axis shows rainfall. The horizontal axis shows time, usually in months.

The following website provides an example climograph and several helpful climate links: www.uwsp.edu/geo/faculty/ritter/glossary/a_d/climograph.html

Procedure:

Part 1:

Begin class by checking students' understanding of the factors affecting biomes. Explain that the four major factors are precipitation, temperature, latitude, and elevation. Through discussion, compare these factors with students' ideas and support students in developing understanding of how and why the four major factors combine to determine the biome of an area.

Pass out the Familiar Phenomenon Probe: Are You Smarter Than a 5th Grader? Have students answer the questions individually. When they are done, have them discuss their answers with their groups. They should make any corrections or additions to their answers using a different color pen or pencil.

As a class, discuss the differences between climate and weather. Come to agreement for the definition of each. Possible definitions could be similar to the following: Weather occurs over a short period of time in a given location and includes phenomena such as temperature, air pressure, precipitation, clouds, wind and humidity. Climate, however, is the average temperature, humidity, precipitation, air pressure, wind, and clouds over a period of at least several decades at a given location.

Have students hand in their worksheets.

Part 2:

Explain to students that they are going to learn how to make a climograph for Missoula (see Background Information for what a climograph looks like and how to construct one).

Pass out the climate data for the Missoula area and sheets of graph paper. Working as a class, construct the climograph.

Students will hand these in so that they can be checked for difficulties students may be having.

Pass out the next set of data so that each group gets different data (Santa Fe, Charlotte, Great Falls, Barrow, Seattle, and Jacksonville). As a group, students will construct a climograph using the large sheets of graph paper. As a class, set a common scale so that all graphs can be compared easily. Groups will be assigned a number to label their graphs. No other identification should be labeled on the groups' climographs.

Each group will hand in one large climograph.

Part 3:
Hang up the completed climographs around the room. They should be identified only by the numbers 1-6. Have students get out their Biomes of North America packets from lesson 1. Using these packets, groups will walk around and try to match the climograph with the correct biome using the Climograph and Biome worksheet. They must give a justification for their answers. When a group is done, they will send one representative to the teacher to check their work. The teacher will look over the answers and indicate how many are wrong, if any. Groups will be able to go back and make corrections.

At the end of the class, teams will hand in their final match of climograph numbers to biomes.

As a class, go over each of the climographs and connect it to the correct biome.

Assessment:

Students will hand in their "Are You Smarter Than a 5th Grader?" Familiar Phenomenon Probe (individual, formative), their individual climograph of Missoula (individual, formative), their climograph for the selected city (group, summative), and their Climograph and Biome worksheet (group, formative).

Name _____

Are you Smarter than a 5th Grader?

Some friends were watching the show, *Are You Smarter than a 5th Grader?* when they saw the following question:

What is the difference between weather and climate?

John said, "Oh, we learned that last year. Weather is what is happening outside right now, and climate is what usually happens."

Jane said, "No it's not. You have it exactly backwards."

"You're both wrong," said Tara. "Weather and climate are the same thing."

Tom said, "What are you guys talking about? Were you even in class last year? Weather is stuff that you can see like storms, clouds, and rain. Climate is air pressure, wind speed, and temperature. You know things that you can measure with instruments."

Which student do you agree with the most? Explain your answer.

Names _____

Climographs and Biomes

As you look at all the climographs that were created, match each one with one biome from your Major Biomes of North America packet.

Number of Climograph	Type of Biome	Reasons for Selecting this Biome
1		
2		
3		
4		
5		
6		

Names _____

Climograph grade sheet

Temperature scale…… /5

Precipitation scale……..…… /5

Months of the year……..…… /5

Line graph for maximum temperature…….. /10

Line graph for minimum temperature……..…… /10

Line graph for precipitation……..…… /10

Key…… /5

Total …….. /50

Grade……_____

Comments:

CLIMATE AND ITS EFFECT ON NATIVE CULTURES

You and your group have been given the name of one Native American tribe. You will be researching how the people in that tribe used their knowledge about where they lived to develop their cultural practices. You will focus on the food, clothing, and shelter, but you should also look at other aspects, such as transportation and general lifestyle (hunter/ gatherers, nomadic, farmers, tools). You should also include how cultural practices related to climate continue for the tribe today.

Requirements:

- Each person should be responsible for researching one of the major topics (food, shelter, clothing, etc.).
- Each person will write up what they found and include a bibliography (a list of where you got your information). Remember you are focusing on how cultural practices were developed to take advantage of climate and local resources.
- Each section should have <u>at least</u> 2 accompanying pictures (also include where you got the pictures) and your name should appear on the section that you created.
- Your poster should include a map of the original area that your tribe occupied and where the tribe's current reservation is located.
- You will create one poster that combines all of your work.
- You will attach your climograph to the poster.

How you will be graded:

- Your poster - It will need a title (the name of the tribe).
- Your map
- Each section will be graded separately on:
    - Following directions (topic, pictures, bibliography)
    - Accuracy
    - Neatness and spelling
- Extra information that you may have found.

How the Salish, Kootenai and Pend d'Oreille Peoples set the Pace of their Cultural Practices to Coincide with Seasons and Climate
Lesson 4

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Summary of lesson:

Students will listen to a guest speaker from the Salish, Pend d'Oreille or Kootenai tribe talk about how their people synchronized their cultural practices to coincide with seasons and the weather/climate. Students will then examine the Salish calendar and look for references to seasonal activities that were important to the tribe.

Grade Level: 6

Time: One 45-minute session

Lesson Objectives and Montana Standards:

Standard 3.4
Students will examine the Salish calendar and listen to a guest speaker talk about how the seasons and the weather/climate were important to their ancestors' lives.

Background Information:

Before you begin your unit, contact the Salish or Kootenai Culture Committee. Ask if there is a tribal elder who would be willing to come to your class to speak with your students about how the calendar, weather, and climate were important in the lives of their ancestors, and in the lives of tribal members today. Be sure to check if there is a set fee for this. It is customary to at least offer gas money and a meal. It is also important to honor your guest with a small gift.

If no tribal representative is available, you might use the DVD, *Season of the Salish/Kootenai* that comes with the *Place Names* curriculum, available in all Montana school districts through Montana's Office of Public Instruction. This DVD features the seasonal cycle and traditional calendars of both the Salish and Pend d' Oreille and the significance of the seasons to their tribes. These DVDs might also be incorporated into the general lesson even if a tribal representative is available.

Materials:

Salish Calendar

Procedure:

Start the lesson by asking students if there are certain activities that they and their families do each year. If students are confused, offer some personal examples (every first weekend in

December, my family goes out into the forest and cuts down a Christmas tree). Share these things with the class.

Explain that many cultures, both modern and old, have certain traditions or activities that they do each year. Tell them that they are going to be looking at some common activities of the Salish Tribe.

Divide the class into small groups of two or three. Pass out copies of the Salish calendar. If you don't have enough copies to go around, photocopy one month for each group. Have students look for references to different seasonal activities that were/are important to the Salish people. Have the groups report their findings to the class.

After working with the calendar and after students have become somewhat familiar with some of the Salish activities, tell the students that they will be having a guest speaker from the Salish or Kootenai tribe. They should think of some questions they might want to ask this speaker concerning what they have been studying. Have students write down some of these questions on an index card and hand in. Check the cards to be sure that questions are appropriate.

After the guest speaker has visited, have students write thank you letters. In their letters, they should name at least two specific things that they learned from their guest.

Formative Assessment:

Students will report to the class what aspects of Salish life they found on their calendar page.

Students will write letters to our guest speaker thanking the speaker for coming to our class and describing what they learned. Students will be required to name at least two specific things that they learned from the guest speaker.