

Biomes of the World**Grade Level**

no grade level listed on the word document

Theme

The artist in his or her environment

Curriculum Framework Emphasis

Science

Common Curriculum Goals*Life Science*

Understand structure, functions, and interactions of living organisms and the environment.

Understand the relationships among living things and between living things and their environments.

Describe environmental changes and how they affect populations, both plant and animals.

The Arts

Create, Present and Perform: Create a piece of art for presentation using experiences, imagination, artistic methods, and composition to achieve desired effect.

Aesthetics and Art Criticism: Explain how an artist conveys an idea or emotion through use of artistic elements.

Historical and Cultural Perspectives: Explore the themes of environment in a culture's artwork.

Objectives

Identify and describe the world's major biomes in terms of climate, animals, and plant life.

Identify characteristics of a particular biome in the artist's work.

Create independent artwork incorporating images of the characteristics of a biome.

Materials

Pictures or overhead transparencies of a variety of animals, plants, and ecosystems to present during class discussions.

Access to a computer lab and library for research.

Vocabulary

abiotic

habitat

rain forest

biotic

food chain

temperate forest

biome

latitude

grassland

adaptation

tundra

desert

ecosystem

taiga

Activities**Part A: (60 minutes)**

Prior to the first lesson:

- Prepare a large, blank world map on white butcher paper for display in the classroom. Title the map,

“Biomes of the World.” Make a map key, and designate a different color for each biome region assigned to a group.

- Prepare a large classroom chart with a row for each biome assigned. Draw a column for each of the following: Climate, Temperature Range, Annual Precipitation, Animals, and Plants. Provide enough room in each of these areas for students to write information and to paste or draw pictures. (About 1 square foot)
1. Explain to the class that a biome is a large geographic region that has a particular kind of climate and community.
 - For example, a desert biome is often quite hot in the daytime and cold at night, and is very, very dry.
 - Present the following questions for class discussion:
 - Name a desert biome and locate it on a world map.
 - Name some plants that might live in a desert biome.
 - Are there animals living in the desert? How do they survive?
 - Another type of biome is a rain forest. A rain forest is an area in which the vegetation is dense, tall and very green. Many species of plants and animals exist in rain forests. Rain forests are very wet ~ it rains anywhere from 100 – 400 inches of rain per year! (Helpful to relate rain forest rainfall to your local rainfall so students have a frame of reference.)
 - Name an animal that you might find in a rain forest.
 - There are two kinds of rain forests: Temperate and Tropical. When we think of a rain forest, we usually think of a tropical rain forest, with many birds and other animals, lush vegetation, and hot temperatures. These are rain forests that are located near the equator. A large tropical rain forest is the Amazon Rain Forest. Locate this rain forest on a map.
 - Temperate rain forests are found in coastal areas. One large temperate rain forest is in North America on the Olympic Peninsula in Washington State. Locate this region on a map.
 2. Divide the class into groups and assign each group a biome to research. Explain that each group, upon the conclusion of the research, will be required to present their learning in three ways:
 1. Complete the classroom Biomes of the World Map by coloring the areas of the world where the biome can be found.
 2. Complete the classroom Biomes of the World Chart with the following information:
 - Name, provide a picture, and describe of two animals found in the biome;
 - Name, provide a picture, and describe two plants found in the biome;
 - Describe the climate in that biome. Is it hot and dry? Cool and wet? Hot in summer and cool in winter? Include seasonal changes.
 - What is the temperature range and the annual precipitation?
 3. Create a presentation to teach the rest of the class about the biome. You can let students decide how they want to create their presentation: They could design a game, simulation, or another presentation that allows the other students they are teaching about the biome to be actively involved in learning. The final project must also include some way to assess what the students were expected to learn through the presentation.

Part B: (60 minutes)

1. Give each student a written copy of the expectations for the information they must know about their biome through the research project. Include the following requirements:
 - On a world map, locate where this biome region can be found.

- Describe the climate. Include seasonal changes.
- Explain how the climate affects the biome, and the organisms living there.
- Explain how latitude affects the climate of the biome.
- Identify the unique characteristics of the biome.
- Identify and describe two or more animals that inhabit this biome.
- Identify and describe two or more plants that are distinct to this biome.

2. Provide materials, and/or access to computers and begin research.

Monitor research progress and provide class time to complete as necessary.

Part C: (Two to Four 45-minute class periods)

1. Meet with students in each biome group:

- Assess research progress.
- Discuss ideas for presentation, including materials needed and how they will assess the learning of the other students and the conclusion of the presentation.
- Begin creating the presentation for the class.
- Assign groups to add information to the Biomes of the World map and chart as other groups continue to work on presentations.

Monitor groups as they construct the presentations. Provide class time and materials as needed.

Part D: (Two 45- minute class periods)

1. Group presentations of biome projects, including assessments for class.

Part E: (60 minutes)

1. Introduce Betty LaDuke; present a short biography of her as an Oregon artist.
2. Topics for discussion prior to watching the video:
 - Betty LaDuke has traveled the world extensively.
 - Images in her paintings reflect her travels.
 - Through her paintings, viewers are able to learn about those areas of the world.
3. Direct students to take notes on the following during the video for later discussion:
 - Name places in the world where Betty LaDuke has traveled.
 - List images in her paintings that reflect those travels.
4. Watch the video. Briefly discuss notes. Continue in next class.

Part F: (30 minutes)

1. Discuss students' notes on Betty LaDuke's travels.
2. Create a chart or list of the places visited by the artist. For each place:
 - Identify the biome of that location
 - List images in the artwork that reflect the biome (animals, climate, dress of the people which reflect the climate, agricultural practices, etc.)
3. Explain that students will create artwork that will contain images distinct to the biome they studied with their group. Examples might be:
 - Desert: Saguaro Cactus, Prickly Pear Cactus, Armadillo Lizard
 - Rain Forest: Banana Tree, Orchid, Chimpancé
 - Grassland: Prairie Blazingstar, African Elephant, Giraffe

- Taiga: Fir Trees, Bald Eagle, Ducks
- Tundra: Lichens, Cotton Grass, Arctic Fox
- Temperate Forest: Deciduous trees, Cardinal, Raccoon

4. Provide class time for planning and completion of student artwork in the style of Betty LaDuke.

Part E: Other Curriculum Connections

Writing:

- Write a narrative story about an adventure set in a particular biome. Display writing with the biome artwork.
- Write a play in which the character(s) travel through several biomes.

Art:

- Create paper mache animals and plants from each biome and create a three-dimensional display. Invite visitors to the display and have students artists from the class available for questions and discussions, or use as the setting for a student-written play.

References

Websites

POAH Online: Betty LaDuke: http://www.poahonline.org/bio_laduke.html

Enchanted Learning Online: Biomes: <http://www.allaboutnature.com/biomes/>

Missouri Botanical Garden. What's It Like Where You Live? Biomes of the World:
<http://www.mbgnet.net/>

The World's Biomes: <http://www.ucmp.berkeley.edu/glossary/gloss5/biome/>

World Biomes. Com: <http://www.worldbiomes.com/>

Habitats and Biomes: <http://library.thinkquest.org/11922/habitats/habitats.htm>

Vocabulary Definitions

abiotic - Nonliving - The abiotic factors of the environment include light, temperature, and atmospheric gases.

adaptation - The act or process of adapting. An alteration or adjustment in structure or habits, often hereditary, by which a species or individual improves its condition in relationship to its environment.

biome - A major regional or global biotic community, such as a grassland or desert, characterized chiefly by the dominant forms of plant life and the prevailing climate.

biotic - Of or having to do with life or living organisms.

desert - A dry, often sandy region of little rainfall, extreme temperatures, and sparse vegetation.

ecosystem - An ecological community together with its environment, functioning as a unit.

food chain - A succession of organisms in an ecological community that constitutes a continuation of food energy from one organism to another as each consumes a lower member and in turn is preyed upon by a higher member.

grassland - Biome characterized by few trees and many grasses. Receives between ten and thirty inches of rainfall per year.

habitat - The area or environment where an organism or ecological community normally lives or occurs.

latitude - The angular distance north or south of the earth's equator, measured in degrees along a meridian, as on a map or globe.

rain forest - A forest which receives much rainfall. Can be temperate or tropical.

taiga - A biome just south of the tundra, characterized by conifers, which has cold winters, and warm summers.

temperate forest - Biome characterized by trees which lose their leaves each year.

tundra - A biome which is cold and almost treeless. Contains areas of permafrost.