

## Biomes and Ecosystems: World Wide Web Approach



*Students will utilize the World Wide Web to learn the characteristics of different biomes as well as the defining characteristics of each.*

\*This lesson plan has been slightly modified from the original at <http://www2.gsu.edu/~mstjrh/biomes.html>

### **HYPOTHESIS:**

Organisms are directly affected by their environment. Different environments support different life forms.

### **Primary Learning Outcome:**

Students will learn how the local environment affects life.

- How do lifestyles differ from one biome to another?
- How does the student's geographic environment affect his/her life?

### **Assessed GPS:**

#### **SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.**

- a. Exhibit the above traits in their own scientific activities.
- b. Recognize that different explanations often can be given for the same evidence.
- c. Explain that further understanding of scientific problems relies on the design and execution of new experiments which may reinforce or weaken opposing explanations.

#### **SCSh3. Students will identify and investigate problems scientifically.**

- a. Suggest reasonable hypotheses for identified problems.
- c. Collect, organize and record appropriate data.
- d. Graphically compare and analyze data points and/or summary statistics.

#### **SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

- a. Develop and use systematic procedures for recording and organizing information.
- b. Use technology to produce tables and graphs.

#### **SCSh6. Students will communicate scientific investigations and information clearly.**

- a. Write clear, coherent laboratory reports related to scientific investigations.
- b. Write clear, coherent accounts of current scientific issues, including possible alternative interpretations of the data.
- c. Use data as evidence to support scientific arguments and claims in written or oral presentations.
- d. Participate in group discussions of scientific investigation and current scientific issues.

**SCSh9. Students will enhance reading in all curriculum areas by:**

- Read technical texts related to various subject areas.
- Respond to a variety of texts in multiple modes of discourse.
- Relate messages and themes from one subject area to messages and themes in another area.
- Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

- Demonstrate an understanding of contextual vocabulary in various subjects.
- Use content vocabulary in writing and speaking.
- Explore understanding of new words found in subject area texts.

d. Establishing context

- Determine strategies for finding content and contextual meaning for unknown words

**Total Duration:**

- **30 minutes** of class discussion and project introduction
- **1 to several hours** of internet time (depending upon teacher preference)
- **1 hour** for student reports

**Materials and Equipment:**

- Internet access

**Technology Connection:**

- Internet access

**Procedures:**

**Step One**

Biomes are introduced by the instructor. Students should be made aware of the different types of biomes present on earth and the nature of the organisms living in each. They should be aware of the ecological niche concept. The instructor should facilitate discussion by pointing out that a particular organism can be well suited to one environment and not adapted at all to another, i.e., a polar bear would not thrive in equatorial Africa. A class discussion should then ensue where students discuss the many ways in which environment affects living things.

- *What are some of the different types of environments found on earth?*
- *Are there some organisms that occur everywhere?*
- *Are there some organisms that only occur in certain places?*
- *What characteristics would a plant need in order to survive in a desert?*
- *Are there animals that thrive in a desert? What characteristics would they need?*
- *How are rainforest plants different from deciduous forest plants?*
- *What adaptations would help an animal to survive in the tropics? In the Arctic?*

## **Step Two**

Students are divided into groups and asked to visit one of the virtual expedition sites listed to gather information. Each group should choose a leader whose role is to organize the research effort. Each group should also choose one member to record the information they find regarding their expedition, information about their ecosystem, and the type of life found in it. One group member should be responsible for preparing a brief report that summarizes their expedition, the biome represented, and how life is affected in that region. If desired, an additional member could be chosen to report the findings of the group to the rest of the class. Students are encouraged to compare their finding with the initial brainstorm list that was made on how life is affected by the biome in which it inhabits.

## **Web Links:**

### **Expedition Sites**

<u><i>Virtual Galapagos</i></u> <a href="http://www.terraquest.com/galapagos">www.terraquest.com/galapagos</a>	<u><i>Expedition Africa (new)</i></u> <a href="http://www3.adventureonline.com/basecamp.asp?expeditionid=5">www3.adventureonline.com/basecamp.asp?expeditionid=5</a>
<u><i>Everest Assault 96</i></u> <a href="http://www.gsn.org/past/kidspeak/index.html">www.gsn.org/past/kidspeak/index.html</a>	<u><i>OS2000: Alone in the Arctic (new)</i></u> <a href="http://www3.adventureonline.com/basecamp.asp?expeditionid=3">www3.adventureonline.com/basecamp.asp?expeditionid=3</a>
<u><i>International Greenland Expedition / Arctic Challenge</i></u> <a href="http://www.adventureonline.com/ige/index.html">www.adventureonline.com/ige/index.html</a>	<u><i>Journey North (new)</i></u> <a href="http://www.learner.org/jnorth">www.learner.org/jnorth</a>
<u><i>Live from Antarctica 2</i></u> <a href="http://www.quest.arc.nasa.gov/antarctica2/index.html">www.quest.arc.nasa.gov/antarctica2/index.html</a>	

## **Assessment:**

Students will be graded on the thoroughness of their report as well as their presentation. They should describe at least five attributes that characterize their biome of study. They should also be able to list five organisms that are unique to their particular biome as well as discuss what makes each organism adapted to that particular environment. Students could also be quizzed or tested over the different biomes present on earth as well as the defining characteristics and life forms of each.

## **Extension:**

Students could choose a particular organism that is highly adapted to their environment (such as the kangaroo rat) and do a brief presentation about it, being sure to include where it lives and why it is unique. They could also describe why such adaptations could be useful for humans to study. For example, the kangaroo rat's kidneys are so efficient they can extract water from a seed; could this organism be utilized to learn more about human kidney function, particularly failure and dialysis?