Wet and Dry

Strand Living Systems
Topic Aquatic and terrestrial environments
Primary SOL 3.6 The student will investigate and understand that ecosystems support a diversity of plants and animals that share limited resources. Key concepts include
a) aquatic ecosystems;
b) terrestrial ecosystems.
Related SOL 3.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which
k) data are communicated.
3.6 The student will investigate and understand that ecosystems support a diversity of plants and animals that share limited resources. Key concepts include
d) the human role in conserving limited resources.

Background Information

The word ecosystem is a combination of the words ecology and system. An ecosystem is a community of living organisms (plants, animals and microbes), nonliving components, and a primary source of energy interacting over time within a defined locale, all interacting as a system. Ecosystems have no particular size. An ecosystem can be as large as a desert or a lake or as small as a tree or a puddle. All the parts in an ecosystem work together to make a balanced system. If they don't, the living organisms in the ecosystem will die.
The living organisms in an ecosystem are divided into three categories. Each is a producer, a consumer, or a decomposer. All the consumers are a herbivore, a carnivore, or an omnivore. All the consumers are also either a predator or are prey.
Terrestrial ecosystems include deserts, grasslands, rain forests, and forests. Aquatic ecosystems include ponds, marshes, swamps, streams, rivers, and oceans. Animals and plants have adaptations to help them survive in each distinct ecosystem. Their needs, food, air, water, shelter, and space, are limited and they must compete in order to survive.

Materials

- Book about ecosystems (make sure book defines the components of an ecosystem)
- Research sheets
- Materials for presentation
- Computer access
- Books about ecosystems

Vocabulary

ecosystem, inhabitants, terrestrial, aquatic

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Introduction

1. Read a book about an ecosystem or about ecosystems in general. Discuss with the class what an ecosystem is and what would happen if the system became unbalanced.
2. Review with the students the three categories that all organisms in an ecosystem are in (producer, consumer, decomposer), the three types of consumers (herbivores, carnivores, and omnivores), and the two roles of a consumer (predator or prey).

Procedure

1. Divide the students into ten groups.
2. Assign each group an ecosystem The ecosystems are: pond, marshland, swamp, stream, river, ocean, desert, grassland, rainforest, and forest.
3. The task of each group is to research the ecosystem, its inhabitants and problems the ecosystem is facing because of people. Specific information that each team needs to gather about the particular ecosystem they have been assigned includes:
   a. Information about at least three plants found in the ecosystem (may include more).
   b. Information about at least five animals found in the ecosystem (may include more).
   c. The category (producer, consumer, decomposer) that each organism that they have identified is included in.
   d. The type (herbivore, carnivore, omnivore) of each consumer.
   e. The role (predator or prey) of each consumer.
   f. Three food chains in their ecosystem.
   g. Identify any specific plant or animal adaptations (e.g., webbed feet, the ability of a cactus to store and conserve water, etc.).
   h. A map that shows the approximate location of an example of their ecosystem. (The map can be as small an area as the schoolyard to a full world map.)
   i. Any problems or issues with their type of ecosystem discovered during their research.
   j. If problems or issues were found, information about how they are being addressed or information about how they are not being addressed.
   k. Research will be completed on research sheet.
4. Allow for approximately one week for research. Monitor the groups as they work and offer suggestions regarding needed information and possible presentation ideas.
5. Have the student groups make a presentation with a visual. The visual can include a poster, a presentation using software, a billboard, or a musical piece to advertise the ecosystem, the animals that live there and what people should do or stop doing to help the survival of the ecosystem.
6. Have the student groups present their projects to the class. (Be sure to review the expectations for the presentations and the expectations for the student audience before the presentations are given.)
7. At the completion of the presentations, display the projects where students can use the resources for comparing and contrasting terrestrial and aquatic ecosystems.
8. Have each student choose an aquatic and a terrestrial ecosystem from the class display that they would like to compare.

9. Using a Venn diagram, have each student compare the two ecosystems they selected. The Venn diagram should include pictures and words to show an understanding of how the ecosystems are alike and different.

Assessment

- **Questions**
  - What happens to an ecosystem if one species of producer dies? If one species of producer dies?
  - Which ecosystem do you think is the most important? Justify your answer.
- **Journal/writing prompts**
  - Have the students write a descriptive paragraph about each environment, including its animals, plants, and any animal adaptations (e.g., webbed feet).
  - Pretend you are an animal in an ecosystem. Write about a day in your life.
- **Other**
  - Have the students place animals and plants in the correct ecosystem when given pictures or labels identifying parts of ecosystems.

Extensions and Connections (for all students)

- Create a shoebox biome for display in the school library. Have students present their biomes to another class.
- Create an ecosystem in a jar.

Strategies for Differentiation

- Create tiered expectations on rubrics depending on an individual student's needs. (e.g., Have some students research three animals and some research six animals.)
- Have students work in pairs to create the Venn Diagram activity.
- Provide various sounds associated with the different environments.
- Provide three-dimensional models of different environments.
- Take virtual field trips to terrestrial and/or aquatic environments.
- Use graphic organizers such as T-charts, and foldables for individual aquatic and terrestrial ecosystems.

Research Gathering Sheet

Ecosystem_____

Team Member Names: _____

Date: _____

Please gather the following information for your ecosystem presentation.

1. Information about a least three plants found in your ecosystem:

   _____

   _____

   _____

   _____

   _____

2. Information about at least five animals found in your ecosystem:

   _____

   _____

   _____

   _____

   _____

3. The category (producer, consumer, decomposer) for each organism that you have identified:

   _____

   _____

   _____

   _____

   _____

4. The type (herbivore, carnivore, omnivore) of each consumer that you have identified:

   _____

   _____

5. The role (predator or prey) of each consumer:

6. Three food chains in your ecosystem:

7. Identify any specific plant or animal adaptations which help them live in the ecosystem: