

Island Ecology Unit

Grade 5

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The goals and objectives for this unit are for the students to gain an understanding of an island ecosystem. The methods and approaches that they will use are hands on, visual, reinforcement by way of technology, self-discovery, and exploration.

We will introduce this concept by using a fifth grade core literature series "Island of the Blue Dolphins". Key concepts involved in the ecology of a local island are weather patterns, water cycles, flora, fauna, habitat, and the geography of an island.

The students will partake in a variety of culminating activities, which will reinforce their new understanding of the key concepts discussed. To show their understanding of the water cycle, the students will create a large size poster that depicts the cycle and should include the important terms that are associated with the water cycle. They will also have the opportunity to use hyper studio on the computer and create a story called "The Happy Raindrop", which depicts the water cycle. Another culminating activity will be a written summary and model of an island. This summary will show an understanding of the key components that are evident on the Channel Islands. they will also have the opportunity to dissect a piece of kelp and a fish, while labeling its essential parts.

TEACHING OBJECTIVE: ISLAND ECOLOGY

Time Line: One month to complete entire unit

50 minutes to an hour each day

I. Key concept: Island fauna: Local fish, garibaldi, rock bass, halibut

Materials: Plates, scissors, glue sticks, dissection tools, fish, t-shirts, and paint

A. Standards related to activity

1. Life Science-Animals have structures for respiration, digestion, waste disposal, and transport of materials. To understand this concept, students will know the sequential steps of digestion, the role of the mouth and teeth, esophagus, and stomach.
2. Investigations and Experimentation-Scientific progress is made by asking meaningful questions and conducting careful investigations. Students will draw conclusions based on scientific evidence.

B. Activities

1. Motivational activity- Paper plate dissection
2. Focus activity-Actual fish dissection and analysis of outer anatomy

C. Sources

1. For Sea: "Read a Fish"
2. For Sea: "Fish: What's on the Outside?"
3. Living in Water: Activity 34, 'Sink or Swim
4. San Pedro Science Center: Paper plate fish

D. Art extension

1. Fish printing- Marine Advisory Publication
2. "Gyotaku"- Japanese fish printing- For Sea

E. Assessment

1. Students should be able to locate fish's vital digestive organs, as well as be able to point out major features on fish's outside anatomy. This can be done using real fish or if students prefer, they can display their knowledge graphically.

II. Key concept: Island Fauna: Whales Dolphins

Materials: Tarp, Duct tape, scissors, Internet, Encyclopedias, and fish guides

A. Standards

1. Investigations and experimentation-Scientific progress is made by asking meaningful questions and conducting careful investigations. Students will record data using appropriate graphic representation, and make inferences based on those data.

B. Activities

1. Motivational activity-Inflatable whale
2. Focus activity-Research different whales and dolphins (Computer Assisted)

C. Sources

1. www.zoomschool.com
2. Sea Searchers Handbook-"Marine Mammals"

D. Assessment

1. Zoom.School.com has assessments, which students can log onto. The questions are more geared towards student's research and are suited for them to work in teams.

III. Key concept: Island Fauna: Kelp forests

Materials: Shells, kelp, paint, butcher paper, tape, and glue

A. Standards

1. Life sciences-Plants have structures for respiration and transport of materials. As a basis for understanding this concept, students know many multicellular organisms have specialized structures to support the transport of materials.
2. Investigation and Experimentation-Scientific progress is made by asking meaningful questions and conducting careful investigations. Students will be able to classify objects based on appropriate criteria.
- 3.

B. Activities

1. Motivational activity-Students construct kelp forest and create living sea wall in classroom
2. Focus activity-Students practice diagramming and labeling parts of a kelp strand
3. Culminating activity/Assessment-Students take apart real kelp strands and classify into main components: holdfast, stipe, blade, and float

C. Sources

1. Sea Searchers Handbook

IV. Key concept: Water Cycle

Materials: 2 liter clear plastic soda bottle, string, aluminum foil, masking tape, plastic cup, ice cubes, container for ice, salt water, and container for salt water, colored pencils or crayons, and a mobius strip worksheet.

A. Standards

1. Earth Sciences-Water on Earth moves between the oceans and land through the process of evaporation and condensation. To understand this concept, the students will learn that water moves in the air from one place to another in the form of clouds or fog, which are tiny droplets of water or ice, and falls to the Earth as rain, hail, sleet, or snow.

B. Activities

1. Motivating Activity-Map of the water cycle
2. Focus Activity-Water cycle crossword puzzle
3. Focus Activity-Living in Water- "Fresh from Salt"

- a. Students will build a model of the water cycle and apply personal experiences to an understanding of the states of water. They will also apply a test from a previous exercise to prove the function of the model.

4. Focus Activity-Mobius Strip

- a. Teacher reviews the vocabulary
- b. Students color in their pictures and cut out strips when completed
- c. Students twist their picture model once and join the ends to form a continuous piece of paper

5. Culminating Activity

- a. Students will create a large size poster that depicts the water cycle

C. Assessment

Students should be able to identify the different parts of the water cycle. Describing this process, the students should describe the differences between evaporation, condensation, and precipitation; and also how they are related to each other.

D. Technology extension

1. Using HyperStudio, the students will create a pictorial story called "The Happy Raindrop", which depicts the water cycle

V. Key concept: Weather

Materials: Pictures of different weather situations, and a worksheet for the culminating activity, drawing compass, tissue paper, scissors, transparent tape, thread, and tap water

A. Standards

1. Earth Sciences-Energy from the sun heats the earth unevenly, causing air movements resulting in changing weather patterns.

B. Activities

1. Motivating Activity-Look at pictures and determine which ones represent a sea breeze
2. Focus Activity-Make spinners to determine the effect that warm water has on air movement above it.
3. Culminating Activity/Assessment- "The Ocean? No Sweat!" How the oceans affect Temperatures.

C. Sources

1. The Ocean Book
2. Oceans for Every Kid: Easy Activities That Make Learning Science Fun

VI. Final Culminating Activity

- A. The students will create an island of their own. 1. They must include what they learned about island flora, fauna, weather patterns, geology and geography.