

Fourth Grade Lessons in March

Trees as Part of an Ecosystem

1) Introduction and Defining an Ecosystem

Objectives:

- Students will be able to define ecosystem, community and population
- Students will be able to identify living and nonliving components of an ecosystem

Students will begin by reading *Mama Miti*. Students will discuss how trees are an important part of the way of life and well being of the Kenyan rural communities. Trees are also an important component of the natural ecosystem in that environment. Use the Smartboard to give an overview of the difference between an ecosystem a community and a population. Play a matching/sorting game to practice identifying what fits under those terms/headings.

2) Food Chains and Energy Webs

Objectives:

- Students will be able to define, identify and classify producer, consumer and decomposer
- Students will be able to read and interpret a food chain and energy web

Students will play a game on the Smartboard to familiarize themselves as a class with the categories of organisms (producer, consumer, and decomposer), they will practice sequencing food chains both individually with drawings and pictures and as a class on the Smartboard. Students will learn how to read an energy web as connected food chains and conclude how the ecosystem could be affected if any part of the web is altered or changed.

3) Tree as a Producer (photosynthesis) and Center of an Energy Web

Objectives:

- Students will be able to create a food/energy web with a tree as the center main component.
- Students will describe what a tree needs in order to survive and convert energy as a part of the web
- Students will be able to define photosynthesis as the process plants use to convert energy from the sun into food for it's own growth.
- Students will be able to describe the natural resources required for photosynthesis to take place.

4) Tree as Center of the Energy Web and Other benefits (respiration cycle, habitat provider, etc.)

Objectives:

- Students will be able to demonstrate understanding of a tree's respiration cycle
- Students will be able to describe how a tree is an important habitat

Students can read the *Great Kapok Tree*. Students can create concept maps of a tree's importance to the rainforest after reading the story together. Students will pair-share their concept maps and then create one as a class. We will then review the respiration cycle and why that is one of the most important benefits of trees to all living things.

5) Trees and Soil (Why are trees good for soil and soil good for trees)

Objectives:

- Students will be able to explain how the relationship between soil and trees is mutually beneficial.
- Students will be able to identify the different types of soils and how they could affect tree growth
- Students will describe the special role that decomposers play in the soil

Students will read a non-fiction text about a soil scientist. Students will observe different types of soil and how they hold water differently. The students will observe the difference of how water moves through soil with no roots vs. simulated roots and discuss how trees filter the water and prevent erosion. Students will discuss how one of the problems with deforestation is that water becomes unfiltered/dirty and we lose the fertile and important for growing things, top soil.

6) Trees Adaptations to and Survival in Different Ecosystems (including the urban environment)

Objectives:

- Students will be able to identify benefits and challenges of an environment and describe how trees have made adaptations to survive there
- Students will be able to recognize stresses on urban trees and identify or suggest solutions to the problem or ways for the human community to protect them.

Students will be introduced to many different and diverse types of trees that survive in very different ecosystems. Students will study one ecosystem/tree per table group and discuss what is beneficial about the environment there, what is challenging for a tree in an environment like that and how the tree may have adapted to survive better there. Students will also discuss trees in the urban environment, and brainstorm some of the challenges to trees surviving here and identifying some of the possible/potential stresses on trees in the city. Groups will think of possible solutions to help protect the urban trees and help them survive so they can continue to contribute to our urban environment.