High School

Environmental Science

Lesson Objectives:
1. Describe the study of ecology — Explain how biotic and abiotic factors influence one ecosystem.
2. Define primary producers — Describe how consumers obtain energy and nutrients.
3. Trace the flow of energy through living systems.

Lesson Summary

Studying Our Living Planet: Ecology is the scientific study of interactions among organisms and between organisms and their environment.
1. Earth's organisms live in the biosphere. The biosphere consists of the part of the planet in which all life exists.
2. Ecologists study different levels of ecological organization.
   - Individual organism
   - A group of individuals belonging to the same species and living in the same area is called a population.
   - An area of different populations that live together in an area is referred to as a community.
   - A system that includes all the organisms that live in a particular place, together with their physical environment.
3. A group of organisms that have similar climates and organisms is called a biome.

Biotic and Abiotic Factors: Ecosystems include both biotic and abiotic factors.
1. Biotic factors are living parts of an environment. Its, oviparous, ovoviviparous, and viviparous are biotic factors.
2. A biotic factor is any living part of an environment. Ex. wind, water, and climate.
3. Primary producers: Photosynthesis is the main energy source for life on Earth. Organisms that can capture energy from sunlight or chemicals and store it in the form of food are called autotrophs, or primary producers.
4. Consumers: Organisms that depend on other organisms for their energy and food are called heterotrophs. Heterotrophs are also referred to as consumers.
   - Herbivores: eat plants or algae
   - Carnivores: eat only animals
   - Omnivores: eat both plants and animals
   - Decomposers: such as fungi, break down organic matter.
5. Scavengers: animals that feed on other animals.

Food Chain and Food Web: Energy flows through生态系统in one direction from primary producers to various consumers.
1. A food chain is a series of steps in which organisms transfer energy by eating and being eaten.
2. A food web is a network of all the food chains in an ecosystem.

Trophic Levels: Each step in a food chain or food web is called a trophic level. Producers make up the first trophic level. Consumers make up higher trophic levels. Level one consumer, second level consumer, etc. Each consumer depends on the previous level for its food source.

Environmental Science Questions:
1. What is ecology?
2. What does the biotic component contain?
3. Explain the relationship between ecosystems and biomes.

Name __________________________

Date __________________________

AT-HOME ACTIVITY

CHOOSE BOARD

Environmental Science

Choose one of the activities above to complete at home.

Directions:
Select a book that everyone in your home is familiar with. Assign everyone a character. Decide that each day must be a different character. Each day the new day's character reads a book algebra.

Improve a story with another person. You start the story, and another person adds the story. Take turns until all storytellers agree on the ending. If you cannot agree, flip a coin to decide who gets to end the story. If neither person is long-distance, send emails back and forth or use a shared document for the story.

Find two plants in your home, preferably in different rooms and imagine they are plants. Name your plants and give them a personality. Be creative, and let them talk to you throughout the day, and read them to them.

Choose a time of day to call Mr. Bad Mood O'Clock. It is when everyone is usually in a bad mood. When Mr. Bad Mood O'Clock strikes, start a dance party or work out together to the music you choose.

Challenge family members to construct a building that can hold two small boxes while you create your own building. Then join all the buildings to create a city. As you assemble the town, ask yourself questions like, "Where do people live?" and "What do they do?" What is the environment like?

Take pictures of at least four random objects around the house. Then create a story which includes these objects, either as characters or important objects.

Write a story, or narrate it, creating a video or audio recording.

Design a scavenger hunt where you use riddles or rhyming words to lead people to the next clue. Have a treat at the end of the hunt. It can be something you make for the people who played or something else they would enjoy.

Create an indoor competition. How many events will you have? What tools do you need? How long will it last? Establish the rules and expectations of the competition, gather the supplies, and set up the fun. Take pictures or a video to capture the competition!

Make a game to play with other family members with objects you have around the house. Write down the directions for the game, and be sure to include how to win!

Make a travel brochure for an imaginary city. What will people want to see or do? It can be realistic or a fantasy place you would like to visit.

Draw a chalk game board outside. It can be as simple as or as complicated as you can imagine. How many players will you have, and what are some tricks to win faster?