

Circles and Cycles in Nature

Introductory Watershed Activities to Activate the Senses

Overview

Cycles, such as water, nitrogen, and carbon, sustain the world and its ecosystems. Matter needed to sustain life is cycled and recycled within the “closed” atmosphere of earth. Life cycles sustain the multiple ecosystems on earth as organisms progress through birth, growth, reproduction, and death.

Grades: All grades

Materials: Journals or notebooks, pencils, pens, crayons or colored markers

1. Ask students to describe and illustrate in their notebook or journal a cycle of nature that they know about or have observed.
2. Discuss some of their observations and talk about other cycles that occur in nature. See examples that follow.
3. Ask students if they can think of anything in nature that does not have a cycle. Student may respond with non-living elements such as rocks or sand. Describe how these, too, were formed by nature. (Volcanic action produces lava that erupts from the earth and solidifies into igneous rock; water breaks rock into sand, etc.)
4. Encourage students to do research and to bring in articles involving the cycles of nature. These could include weather patterns, ocean currents, the changing of seasons, the life cycle of a plant or animal, etc.

Cycles in Nature

- Bound by gravity, billions of stars, including the Sun, spiral clockwise around the central region of the Milky Way.
- The stars and planets of the universe are shaped in the form of a sphere or circle because gravity from the center pulls the gases and particles together to form a living dynamic “ball.”
- The Earth and all the planets within the solar system rotate in an elliptical pattern counter-clockwise around the Sun.
- When the Sun’s energy reaches the Earth, heat (in the form of energy) from the air rises. As the air rises, it cools. The colder denser air in the atmosphere rushes in and causes winds. Winds over the ocean create waves. The energy of waves is caused by the energy of the wind that is caused by the energy of the Sun. The flow of air is affected by the rotation of the Earth. Solar energy and forces within the Earth and the Earth’s rotation are the basis for the circulation of ocean waters and the water cycle.
- Water covers 70% of the Earth’s surface and is vital to all life. It is continuously circulating in a cycle driven by the Sun’s energy.
- Green plants, called “Producers,” use the Sun’s energy to make food through photosynthesis. Plants convert light or solar energy into stored chemical energy. In the cells of green plants, carbon dioxide from the air, water from the Earth and light from the Sun react to produce sugar, a complex organic compound that stores chemical energy for later use. Oxygen is released by the plant as a by-product. When the plant is consumed by an animal, the chemical energy is converted to mechanical energy and heat.
- “Consumers” rely on plants to sustain life. These are the Herbivores (plant eating animals), Omnivores (animals that eat plants and animals) and Carnivores (meat eating animals). Scavengers and Decomposers live on dead and decaying plants and animals, thereby returning nutrients to the soil. The nutrient-rich soil provides the requirements for new plant growth.
- As Consumers, people inhale oxygen and exhale carbon dioxide (“respiration”). Much of the Earth’s oxygen is derived from phytoplankton in the ocean and from plants in the tropical and temperate forests. For eons, the interconnecting life cycles of plants and animals have held the oxygen level at 21% of the Earth’s atmosphere.
- There are other life-giving cycles moving in interconnecting loops (nitrogen, oxygen, carbon and phosphorus, etc.). All interact with each other to form the web of life.

Source:

Smokey’s Animal Friends, Teacher’s Guide, The USDA Forest Service and Knott’s Berry Farm.