



**Grade Level:** Elementary School

**Subject Correlation:** Science

**Objectives: Students will be able to:**

1. Describe the importance of a balanced ecosystem.
2. Identify the consequences of change in an environment and the difference between good and bad change.
3. Identify the ways in which humans positively and negatively affect the environment.
4. Appreciate the importance of environmental preservation.

**Length:** 45 minutes

**Teacher Preparation:** For this lesson, teachers will need to bring to class: one ball of yarn, blank white paper, markers.

**Outline (with times)**

10 minutes

*Introduction to the Life Cycle/Food Chain*

Discuss the natural life cycle with your students. Explain how each organism is dependent on others for survival, and that a break in the food chain can have disastrous consequences for particular species. Have the students draw a picture of a miniature food chain including the sun, rain, fruits, plants, grass, vegetarian animals, and ending with carnivorous animals and humans. How many steps does it take to get there? Explain where humans fit into the food chain. Is anything in the food chain above humans? Explain and discuss concepts that affect the food chain such as deforestation, global warming, and extinction.

20 minutes

*The Web of Life*

1. As a class discuss what is an ecosystem. The teacher will choose an ecosystem such as the Pacific Northwest, a beach on the coast of the Gulf of Mexico, or a natural area near the school community.
2. Students will create a list of living things that exist in the chosen ecosystem. (If the teacher chooses the forests of the Pacific Northwest, for example, students may not include a lion or a palm tree.) The teacher should keep the list in front of the class. Make sure the list includes various types of herbivores and

carnivores, plants, as well as things like fresh water, salt water, rain and sunlight. There should be at least as many items on the list as there are students in the class.

3. Assign each student one item from the list of organisms living in the chosen ecosystem. Make sure to assign water and the sun to students. Make certain to assign both plants and animals as well as herbivores and carnivores. Do not assign two students the same thing.
4. Students will have a few minutes to write their assigned organism on a piece of blank paper. Students can also draw a picture of their assigned item from the ecosystem.
5. Next have the students stand in a circle in the middle of the classroom. Choose one student to stand in the middle of the circle (it does not matter who). Give that student the ball of yarn and have the student name the organism he or she is and the name of an organism he or she depends on for survival. For example, a bird may depend on a worm or fresh water, while corn might depend on the sun or healthy topsoil and topsoil may depend on clean water and fertilizer. The student then tosses the ball of yarn to that organism, holding on to the end of the string. Repeat the process until each student is holding a piece of the yarn. Once the yarn comes to either water or the sun, the student playing that part should then toss the yarn to an organism he or she supports. It is okay if a student gets the ball of yarn more than once.
6. Once each student has a piece of yarn, the teacher then states a man-made change in the environment, such as global warming or deforestation. Any student (playing in the role of their assigned organism) potentially overcome by that change drops the piece of yarn and exits the circle or sits down. Any organism relying on the affected organism will also be influenced and should drop the string. Eventually nearly all organisms are affected. The students will see the results of a small change in the food chain. Will this scenario also affect the sun and/or water?
7. This process is repeated as many times as necessary using different scenarios so that only the sun is still holding the yarn (water may also still be holding the yarn, depending on how severe you decide to make the climate change process). How are humans and, more specifically, individuals affected?

### 10 minutes

#### *Concluding thoughts*

The students should return to their seats to discuss the game. What happens when an ecosystem is drastically altered? How can the interconnections of living things ensure survival and also put organisms at risk? How does human activity positively and negatively affect the food chain/the web of life? What can human beings do to prevent the extinction of organisms? What natural resources are most important for a species' survival? Why should we care whether other species survive or not? How are humans and, more specifically, individuals affected?

