

DROPS OF KNOWLEDGE FOR RIVERS OF CHANGE



GLOBAL TEACHING
AND LEARNING MATERIAL

A hands-on guide to teaching
and learning about
water, sanitation, hygiene,
and the environment

SWAROVSKI
WATERSCHOOL

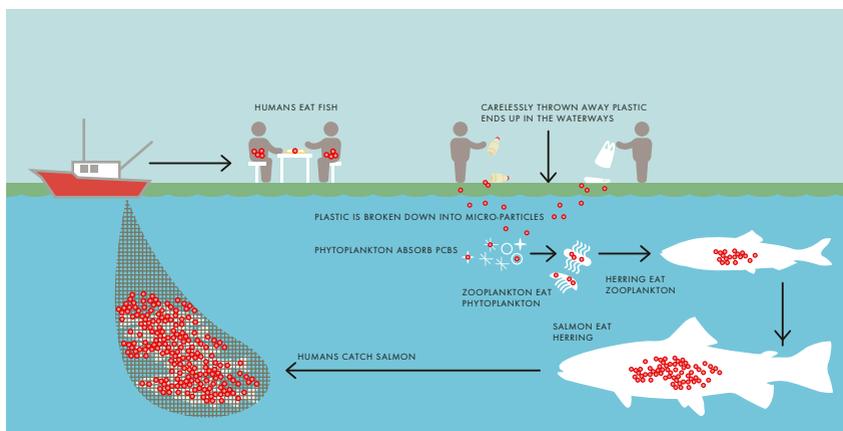
ACTIVITY 7.4

ACTIVITY 7.4: ECOSYSTEMS – THE WEB OF LIFE (Adapted from Swarovski Waterschool India)

Ecosystems are complex and interactive “neighborhoods” that are in place in many different climates and types of terrains or zones on our planet. Within a given ecosystem, the many different forms of life are dependent upon one another within the circle of life. In this case, all living things (plants and animals) are dependent upon water and other Earth elements for food webs and habitat formation. In India, the Swarovski Waterschool led by WWF refers to this complex system of give and take as a “holon”—a concept that is related to the theories of Professor Arthur Koestler and Nobel Laureate Herbert Simon.

This activity is designed to promote students’ understanding of the meaning of “ecosystem.” They will learn how to illustrate an interdependent system of life and discover ways to analyze a conflict occurring in nature by using the ecosystem model. This activity is ideal for students ages 10–18. The first part is a drawing session, and the second part is a role-play.

Time: 90 minutes / **Thematic Areas:** Ecology, Science / **Goal for Learning:** Gain the ability to express the characteristics of ecosystems as interdependent systems of life.



Source: <http://www.ecy.wa.gov/programs/hwtr/RTT/pbt/>

**PART 1: Drawing and discussion on ecosystems (50 minutes)**

Materials: □ Student workbooks / □ Colored pencils or markers / □ Flip chart paper / □ Rope (long enough for each person in the group to hold it at the same time)

ACTIVITY STEPS:

- 1 Divide students into groups of four or five and let each group pick a different theme for their ecosystem such as a mountain, river, forest, village, etc. Have them include the various characteristics like human beings, animals, plants, water, or the sun.
- 2 Let them draw and write about the ecosystem on a sheet of the flip chart paper, noting all the other aspects that are associated with their particular theme. They should be encouraged to include all the components of the ecosystem, whether big or small, and show how they are connected.
- 3 After 10 minutes, ask the groups to present their work and discuss it with the other groups. Ask them to describe their experience making the chart and what it meant for them.
- 4 Review the characteristics and structure of ecosystems, using the drawings they have produced and explaining connections and dependence between components.

DID YOU KNOW? Every part of the world, including each country, is divided into different ecological climate classifications, or “ecoclimatic” zones.

These zones are based on many factors, including short-term weather patterns, climate (the prevailing weather conditions over a long period of time), and examinations of vegetation within a particular ecosystem.

SOURCES: Bailey, Robert G., “Ecological Climate Classification,” USDA Forest Service, Inventory & Monitoring Institute, November 21, 2003, p. 1.

**PART 2: Web of life role-play (40 minutes)****Materials:** none**ACTIVITY STEPS:**

- 1 Ask the students to form a circle, and designate a name for each student based on an ecosystem component: for example, sun, grass, water, bird, fish, rabbit, tiger, vulture, gorilla, human, and so on.
- 2 Ask the “sun” to hold one end of the rope, then pass the rope along the different components (students) in order of their position in the food chain. Ensure the rope is held taut.
- 3 Once all students are holding the rope and the “web” they have created is complete, ask one of the components to step away. Gradually ask other students representing different points on the web to step away until only a few remain.
- 4 Examine the condition of the web at this point. Ask the students what they observe. Is the rope still held up? Explain how this relates to the concept of interconnectedness in biodiversity and within a biome (or ecosystem).
- 5 Facilitate a brainstorming discussion to talk about which points affected others, why this happens, and what students can do to prevent the web of life (ecosystem) from being damaged. Observations might include: “Even the smallest components have utility, and all the components are impacted by one another.”

OBSERVATION AND DISCUSSION:

Explore other examples of ecosystems in our daily lives, their components, and whether they are part of other ecosystems. What are the kinds of cooperation or conflict that we observe within and across ecosystems?

What is the relevance of this session to our local community? Ask students to note down their thoughts and feelings in their workbooks.

ACTIVITY 7.4



ADDITIONAL RESOURCES:

American Association for the Advancement of Science, "Chapter 5: The Living Environment," Science for All Americans Online, 1990, www.project2061.org/publications/sfaa/online/chap5.htm

Barrow, Mandy, "Food Chains," Primary Homework Help, www.primaryhomeworkhelp.co.uk/foodchains.htm

National Center for Ecological Analysis and Synthesis, "World Biomes: Freshwater," 2004, <http://kids.nceas.ucsb.edu/biomes/freshwater.html>

Shah, Anup, "Why Is Biodiversity Important? Who Cares?," Global Issues, January 19, 2014, www.globalissues.org/article/170/why-is-biodiversity-important-who-cares

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