

Nutshell

In this lesson, students will step outside to connect ecology concepts learned in the classroom to the ecosystem and communities found outdoors in the 'natural' environment.

Objectives

Students will be able to....

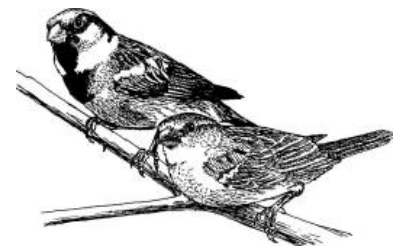
- Observe ecology concepts
- Sketch and label ecology concepts using correct biology terminology including: autotroph, heterotroph, producer, consumer, ecosystem, community, population, niche
- Identify and record observed food webs
- Hypothesize appropriate energy transfer methods and food pyramids found on the school grounds

WI State and Core Standards

Science: B.8.4, C.8.6, F. 8.8, B.12.5, C.12.3, F. 12.7, F.12.8, F.12.9, F.12. 10, F.12.1; *Environmental Education:* B.8.6, B.8.8, B.12.2, B.12.7; *Agriculture Education:* E.8.2

Materials

- Copies of *Ecology Observations* student worksheet
- Clipboard or hard writing surface
- Writing utensil



Teacher Preparations:

- notify the main office that you will be outside for a certain amount of time
- be sure students are appropriately dressed for the weather
- gather all needed materials so you don't have to run back inside
- classroom behavior guidelines are the same outdoors as they are in the classroom

Procedure

1. In class, students should already have learned basic ecology concepts. This includes energy transfer, community structure, and populations.
2. Take students outdoors to locate, identify, and sketch the required components of the *Ecology Observations* worksheet. Back in the classroom, students should utilize the information collected outside to answer the Ecology Critical Thinking questions.

Further Enrichment:

- Compile the observations students made during their analysis of the school site to create a large food web or pyramid of the ecosystem.
- Use the Ecology Critical Thinking questions to have a classroom discussion about ecosystem values, biodiversity, and how natural/human influences can have positive or negative effects on an ecosystem.



Ecology Observations on your School Grounds

Ecologist: _____

Date: _____

1. Identify and sketch 3 different autotrophs and 3 different heterotrophs during your time outdoors. Be specific.
2. Record 2 predator/prey relationships you observed.
3. Sketch 1 food chain you observed. Remember to start the food chain with a **producer** and it needs to have at least 1 **primary consumer** and 1 **secondary consumer**. Label those creatures on your food chain with their appropriate category in bold above.
4. Sketch and label one ecosystem you observed.
5. List all of the parts of the community you sketched in question #4.
6. Identify and list 1 population from the ecosystem in question #4.
7. Pretend it is the middle of July and you are observing the same ecosystem from question #4. Sketch 1 hypothetical (yet realistic) food web you could possibly observe in the ecosystem from question #4 in July.





8. Sketch and label 3 niches you observed today and a creature that would live in each.

9. Draw a food pyramid. Fill in the pyramid with the appropriate biotic creatures that would occupy the different trophic levels of the pyramid that would come from the ecosystems surrounding the school. Be sure to write in an appropriate amount of creatures to represent the different energy requirements each level can support.

Ecology Critical Thinking

- a. Describe the value of the ecosystem found on your school site from a natural and human perspective. In other words, how do living organisms, the school site, and humans interact in a beneficial way?

- b. Do you consider your school grounds to be a biologically diverse area? Why or why not? What changes could you realistically make to the landscape around the school building and grounds to increase the biological diversity of this ecosystem? Why is biodiversity important?

- c. Go back and look at the answers you put in question #3, 4, and 6 above. How do you think those organisms both cooperate and compete in your school grounds ecosystem?

- d. Use ecological terms to describe how your school site ecosystem would change or be different from what you see today if the groundskeeper changed the school grounds with these techniques....
 - a. ...raised the height of the mower?

 - b. ...cut down any large trees and replaced them with landscaping shrubs that take less water?

 - c. ...put birdfeeders outside of classroom windows?

