



Discussion Guide for

THE WEB OF LIFE: PRODUCER TO PREDATOR

Objectives

After viewing this program, students will be able to:

- Define community, predator, prey, decomposer, mimicry, mutualism, and symbiosis.
- Sketch a biome and identify its unique characteristics.
- List four basic requirements for life.
- Diagram the carbon cycle.
- Describe the nitrogen cycle and include any influence humans may have on it.
- Debate the use of fertilizers containing high levels of phosphate.
- Explain why plants are able to use only 3% of the solar energy that strikes the Earth.
- Contrast producers and consumers.

About This Program

This program is part of the AIMS Interactive Science Essentials Series. This twenty-four part series covers four subject areas- Earth Science, Biology, Physics, and Chemistry. There are six programs in each subject area.

The individual programs are divided into randomly accessible sections. A glossary provides written definitions of terms used in the program, and in most will run a section of the video where the word is used in context. A script of the narration is accessible, as well as a bulletin board containing a general introduction to the subject. A quiz allows the student to test their knowledge and the results are recorded for you. In the teacher's section you can view each student's test responses and edit or create your own quiz and test questions.

Overview

The Web of Life: Producer to Predator is part three of the Biology Essentials series which examines modern day biology. The program is a visual excursion into the world of energy pyramids, food chains, and nutrient cycles. Ecosystems serve as examples for discovering how organisms adapt to unique environments. Abiotic factors such as temperature, precipitation, nutrients and geography play a critical role in the survival and evolution of populations in these environments. Water, carbon, nitrogen, and phosphorous cycle between the biotic and abiotic worlds, and in doing so, transfer energy from the sun to fuel life. Life takes innumerable forms in the organisms of Earth, and these organisms fill their niches in remarkable ways. The variation found in these organisms and the relationships between them are investigated. The niche of humankind is also explored. Will our creativity lead to survival or extinction? Wander through these ecosystems and consider the options.

Teacher's Preparation

Before the student uses the program set up the computer so that they can easily reach the mouse and the keyboard. Load the CD-ROM into the computer so that it is ready for the student to begin using. While students are able to work at their own pace, some students may benefit from using the program more than once.

Suggested Discussion Questions

1. Describe the biome in which you currently live.
2. This program describes four basic requirements for life. Significantly alter one of those requirements for the biome in which you live, and discuss the possible effects on a population of humans, a population of rabbits, and a population of grass.
3. Diagram the carbon cycle. Speculate what might happen if decomposers did not exist to recycle the nutrients.
4. Debate the use of fertilizers containing ammonium phosphate.
5. Sketch the distribution of solar energy as it leaves the sun and strikes the Earth's surface. Indicate the relative amount of energy that is actually used in photosynthesis.



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6. Design a chart that contrasts the characteristics of producers and consumers. Hypothesize why, in any given biome, there are far more producers than consumers.

8. Describe the niche of either a fungus or a colony of bacteria.

9. Give an example of a predator-prey relationship you have witnessed in your own ecosystem. Be careful and think back to the definitions of these words.

10. Describe a situation in which a flower is pollinated by an insect. Relate how co-evolution may have taken place in these two organisms.

11. Compare the survival strategies of camouflage, warning coloration, and mimicry.

12. Differentiate between parasitism, commensalism, and mutualism and give an example of each.

13. Humans strive to eliminate or at least control the natural forces that limit our population size, such as starvation, disease, and predators. What are the results of these efforts? Make a list of the pros and cons of controlling such natural limiting factors for human populations.

Vocabulary

Biome
Camouflage
Carbon
Coloration
community
decomposer
Geography
Greenhouse
habitat
Mimicry
Mutualism
niche
Nitrates
Nitrogen
omnivores
Parasites
Phosphorous
producers
Symbiotic
water

Additional Benefits

Students will be able to:
Based on energy transfer, hypothesize why there are many more producers than consumers.
Identify the niches of bacteria and fungi.
Give an example of a predator-prey relationship.

Programs Details

Length:

26 minutes

Subject Areas:

Biology

Audience Levels:

Junior-Senior High

Order Number:

1-8999SG

Canadian Learning Company

95 Vansittart Avenue

Woodstock, ON N4S 6E3

Info@canlearn.com

Tel:(800) 267 2977

Fax:(519) 537 1035

