



## Using *Star Wars*®: The Gungan Frontier™ to Explore the Energy Cycle: Food Webs

**Curriculum Connection:** "...Populations of organisms can be categorized by the function they serve in an ecosystem. Plants and some micro-organisms are producers--they make their own food. All animals, including humans, are consumers, which obtain food by eating other organisms. Decomposers, primarily bacteria and fungi, are consumers that use waste materials and dead organisms for food. Food webs identify the relationships among producers, consumers, and decomposers in an ecosystem. For ecosystems, the major source of energy is sunlight. Energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis. That energy then passes from organism to organism in food webs..." *National Science Education Standards, Content Standard C, Grades 5-8*

### Lesson Plan (Grades 5-10):

To explore the transfer of energy and introduce food webs, begin by asking your students how they get their energy. Discuss sources of food and the role that food plays in the human energy cycle. Draw upon student examples to draw simple food chains or webs. Use the GBOK (The Gungan Frontier's glossary) to help establish definitions for key terms such as food chain, energy cycle, producer, consumer, and decomposition. Ask a student to demonstrate the interactive food web in **The Gungan Frontier**.

Divide the class into small groups and ask each group to decide how to load the ship in Advanced Game play. Before loading any plants or animals, ask each group to draw a food chain or web that reflects their choices. Next, ask them to decide which plants or animals to release first. You may want to display the poster that comes with the game to help them identify the plants and animals.

Begin game play by loading the ship. Ask each group to make a prediction about what will happen when the ship lands and their organisms are released.

Continue by letting each group, select a landing site, land their ship and play the simulation for a fixed amount of time. Encourage the students to check the graphs regularly and to keep track of endangered and/or extinct species.

At the completion of game play, debrief the students' experience by asking some of the following questions:

- How did the number of predators [herbivores, plants] affect what happened?
- How did the number of different kinds of species affect the outcome? Was diversity important?
- How did the order in which organisms were released affect the outcome?
- How did energy move through this system?
- What else did you observe?
- How did the results match your prediction? Explain any differences.
- What observations can you make about food webs?

Provide the groups with 3 x 5 index cards and ask them to brainstorm local plants and animals and write the name of each organism on an index card. Next, ask the groups to arrange the cards into food chains or webs and discuss the following questions:

- Is each of the food webs you created complete? Are there other important organisms in the area that complete these chains?
- How does energy move through this system?
- What are the prospects for survival of each species?
- What events or conditions might affect these food webs? What would be the impact of a drought? large-scale development? flood? pollution?

For homework or individual seatwork:

Ask students to draw a picture of a local food chain or web and to write a brief essay on how energy moves through its system.