Simulation Title:

Bird Beak Survival Competition

Learning Goal:

Define the term Niche.

Explain how adaptation allows individuals to avoid competing within the same niche so that each may improve chances of survival by gaining an increased share of available resources.

Mission Task:

Out compete other birds for food within different environments.

Cover Story:

You are a hungry bird in search of food. When you fly into a new territory and finally find available food, it quickly becomes obvious that other hungry birds have found this spot as well.

In order to gain enough energy to fly to the next food source, you must eat enough calories to build up your strength. If you do not out compete the other birds, you will likely die.

Sound easy? Guess again. Good Luck!

Role:

As your pre-selected species of *Bird*, you have control over your movement around the environment. You must search through nooks and crannies for food, however, the food that you can eat will be determined by the type of beak you possess.

Type of Beak (Species):	Foods (in no particular order):
Long & Thin (Hummingbird)	Small Fish
Short & Thin (Woodpecker)	Small Seeds
Flat (Duck)	Fruits
Hooked (Hawk)	Large Seeds

Small & Stubby (Finch)	Algae
Large & Curved (Parrot)	Nectar
Large Scoop (Pelican)	Worms

You may go anywhere within the environment and try to eat anything; however, some foods will be inaccessible for your style of beak. Think about your beak style in advance, as wasted efforts will allow your competitors to eat all the available food.

Seeds will come in two varieties:
Soft (smooth & green) and Hard (brown and spiky)

A Multi-player option to allow for direct competition is also available.

Scenario:

1) Desert:

-Low quantity/ low variety of foods.
-Few plants above ground.
-Walking is slow on sand/flying is more efficient.
-Hard cactus seeds are the most common food.

2) Rainforest:

-High quantity/High variety of foods.
-Food hard to find as it is hidden by large green leaves.
-Soft seeds, fruits, animals are most common.

3) Rocky Coastline:

-High quantity/high variety of foods..
-Food hard to find as it is hidden within rock crevices.
-Food available in the water if a bird can master swimming.

4) Evergreen Forest:

-High quantity of food in summer/low quantity of food in winter
-low variety of foods.

5) Grassland:
-High quantity/low variety of foods.
-Food hard to find as it is hidden by tall grasses.
-Walking is slow through tall grasses/flying is more efficient.

Resources:

A help menu will be available, in which a student may view diets of various types of birds.

A .pdf document may also be printed for hard copy reference with a table that identifies each bird by name, beak type, and food.

A .pdf document may also be printed for hard copy reference with a table that identifies the calorie totals for each type of food.

Feedback:

Statistic Table:

A window tallying the number of each type of food eaten as well as a running total of calories eaten vs. calories expended walking/running/flying/swimming to retrieve food.

Verbal:

If the simulation is performed virtually, the player may listen to real-time help from a partner, the observing class, a field "expert" viewing simultaneously from another part of the globe, or the instructor.

Needs:

Script the types of food that may be consumed by each style of beak.

Script computerized birds to automatically compete for food. User(s) should be able to decide how many players vs. how many automated birds will populate a given environment. Additionally, players should be able to choose how many of each species of bird will be automated, and how much initial food is available.