

Mouse Roulette

Every school child knows that owls have baby owls that they have to feed. In this active simulation game students expand on their knowledge, learning about food chain structure, the relationship between nestling survival rate and clutch size, distance to feeding ground, injury to hunting adults, and the random poisoning of the mouse supply.

Materials

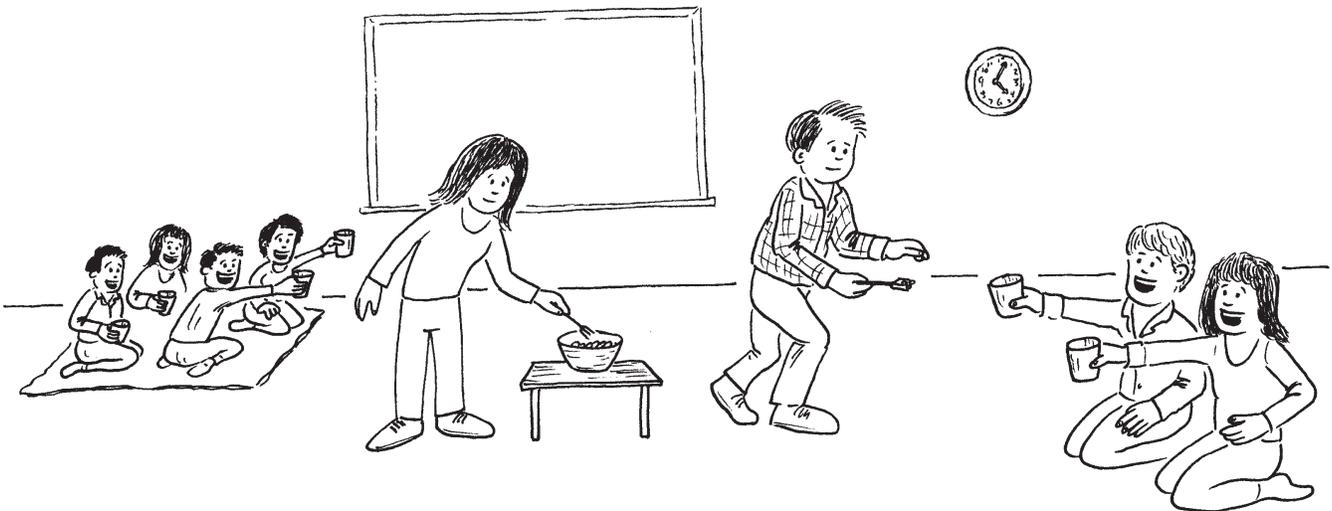
- small, different-coloured items (may be durable candies, buttons, etc. - in this activity description, 'candies' are used)
- forks - may be metal or plastic
- reusable cups
- large open bowl or tray

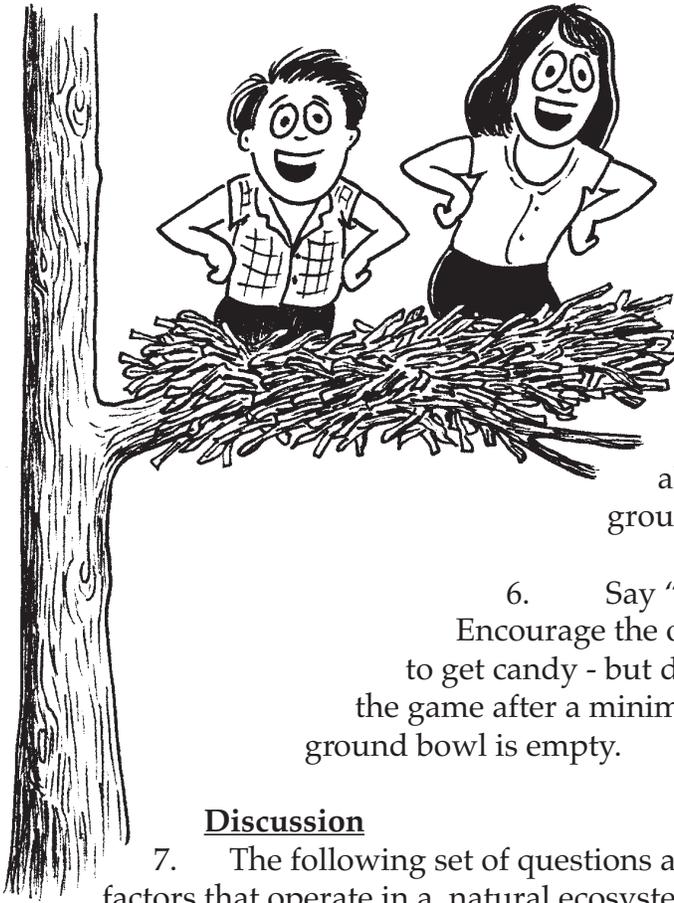
Time Required

40-60 minutes

Instructions for the Teacher

1. Divide the students into groups of between three and eight.
2. For each group, assign either one or two of the students to be the parent. Give each parent a fork to hunt with: some of these forks should have their tines either broken off or bent out of shape, representing a hunting adult that is injured.
3. The remaining students are all owlets! Give each student a cup: this represents the mouth and stomach of the owlet.
4. Place each nest of owlets at varying distances from the hunting ground (this is represented by the large bowl with the candies in it). Instruct the owlets to stay in





their nests, to make as much noise as possible during the game, and to endeavour to get as many candies from an adult as possible - just as a baby owl would.

5. Tell the adults that, when you say "go", they are to rush to the feeding area and pick up as many candies as possible with their fork. They are not allowed to put their hands over the fork to stabilize their load of candy, and they are not allowed to jostle other owls at the feeding grounds.

6. Say "go!" - and let the game commence. Encourage the owlets to crowd another out in their efforts to get candy - but don't let them become too physical! End the game after a minimum of five minutes, or when the feeding ground bowl is empty.

Discussion

7. The following set of questions allows the students to realize some of the factors that operate in a natural ecosystem.

- **Did you enjoy the game?**
- **How many students have three or more candies in their cups?**

NOTE: Following this initial question, ask the students to keep their hands up if they have five or more... ten or more... etc. Continue this until you reach a number at which only 50-70% of students still have their hands up - then tell students that, regrettably, it was *this* number of candies that you needed in order to survive. Those students who have less than this number of candies didn't make it - they died of starvation or malnutrition. Ask the students:

- **In this game, what factors determine whether an owlet will live or die?**

The following factors should be among those that students mention:

- *It is harder to feed a large family than a small family*
- *The ratio of parents to owlets is important*
- *Families with two adults have twice the feeding power of single-parent families.*
- *Those owls who had farther to fly to the feeding ground will be able to "catch" less food than an adult whose nest is close by.*
- *Sibling competition (i.e., more aggressive nest mates) may crowd out those weaker owlets (or at least the ones with the shorter arms!)*
- *hunters with damaged forks (an "injury") cannot bring home as many candies - i.e., their hunting efficiency is impaired, as if one of their talons were damaged.*

Notes:

1. For each of the above factors, have students relate the game to real life by asking if that is a factor in the life of a *real* owl.
2. It is interesting to compare humans to owls. In our society, we generally have enough food, and we don't encourage aggressive behaviour at the supper table! Ask the students if they could imagine any instances where aggressive behaviour, or even starvation, might occur among humans.

Tell the students that they were in fact playing "Mouse Roulette": some of the mice in the hunting grounds had in fact eaten some grain that had been contaminated with a high dose of pesticides. Ask the students:

- **Do any of you have two or more red candies in your cups? Because if you do - you died of poisoning!**
This offers a good opportunity to lead the discussion towards contamination of the environment, intentional or accidental, that can lead to deaths in animals that are at the top of the food chain. A good example of this is the insecticide DDT, which caused raptor populations to plummet in the 1970's. This is a particularly good example to use because banning DDT actually *worked*, restoring the numbers of North American raptors such as the Bald Eagle back to normal. Unfortunately this still hasn't helped the number of Peregrine Falcons, which spend their winters in Central America - where DDT is still allowed. For higher grade levels, the concept of adaptations and natural selection could be raised by asking the following question:
- **Would it be an advantage in this game to have a wider fork or a cup with a larger diameter mouth?**
Yes it would. According to the theory of natural selection, those animals with these advantages would be more successful, and therefore be more likely to have more offspring than other owls. As a result, this trait (wider fork, larger mouth, etc.) would become the dominant trait in the species. It is this process that results in the owl having the superb adaptations that it does.
- **What other traits would be an advantage in this game?**
Long arms and loud mouths may be among those traits suggested for the baby owls; fast legs and steady hands might be among those suggested for the parent owls.

Extension Activities:

Adapt-an-Animal: Have students design an animal that is wonderfully adapted to living in a particular environment, and present it to the rest of the class. You may choose to have them "perfect" the owl, or create a new animal.)

Food Chains Game (later in this guide): The activity involving the red candies can be used as a springboard to investigate the concept of food chains, webs, and bio-accumulation of toxics by those animals occupying a niche at the top of the food pyramid.