Using the Desert Model (Teacher Master)

Overview

This simulation is designed for full class participation. For easier management, however, you may want to have some students participate and others observe.

Materials

For the class:
- Piece of fabric, approximately 22" × 28" (The fabric design should simulate a desert-like environment.)
- 45 colored pom-poms, 7 mm or 10 mm in size (9 pom-poms of each color: red, yellow, brown, green, and black) (The pom-poms represent beetles.)
- 5 cups, approximately 8 ounces each (A cup represents a lizard's stomach.)

Roles

Game warden: As the teacher, you're the game warden in charge of telling the predators (lizards) when they can hunt. There will be six hunts that constitute one round. You should also make sure that everyone is following the rules of the simulation.

Lizards: Five students will play the lizard role. Lizards should close their eyes until the game warden gives the "Hunt!" command. Then they should open their eyes and use their thumbs and forefingers as pincers to grab the first pom-pom beetle they see on the fabric. Lizards should place their prey (the beetles they grabbed) in their cups and then close their eyes again, keeping them closed until the next hunt command.

Counters: Five students will be counters. Each counter will be assigned a pom-pom color. Before the round begins, counters should count the number of pom-pom beetles in their assigned color on the fabric and report this number to the recorder one at a time. At the end of the round (after six hunts), counters should count how many beetles in their assigned color are still on the fabric. Then they should report this information to the recorder.

Recorder: The student-recorder will maintain the class data table. Before the round begins, the recorder should write on the data table the number of pom-pom beetles of each color on the fabric as the counters provide this information. There should be a total of 45 pom-poms on the fabric, nine of each color (red, yellow, brown, green, and black). At the end of the round (after six hunts), the recorder should write on the table the number of pom-pom beetles of each color still on the fabric as the counters provide the data. Next, find the total number of pom-pom beetles remaining on the fabric by adding all the data that the counters provided after the six hunts. As a class, calculate the number of beetles eaten by subtracting the before-and-after results. (Example: Before there were nine red pom-pom beetles. After, there were only two red pom-pom beetles on the fabric. Therefore, seven pom-pom beetles were eaten).

Setup and Instructions

1. Place the fabric on the floor in an open area of the classroom. The fabric represents the environment in the story "Beetles in the Desert," so rather than smoothing it out completely, leave some wrinkles, curves, bumps, and crevices to represent geologic formations.

2. Assign each student a role to play during the simulation and explain the responsibilities for each role. (See Roles section.)

3. Direct the five "lizards" to sit in a circle around the fabric; then give each lizard a cup to place in front of him or her. The counters and observers should sit in a larger circle around the lizards, and the recorder should stand next to the class data table. As the game warden, position yourself where you can oversee the simulation and give instructions.

4. Explain the rules of the simulation and refer students to the rule chart you created. (See Rules section.)

5. Orient students to the class data table you created on chart paper and ask them to describe the environment where the beetles live (based on the description in handout 3.2, Beetles in the Desert). Record the description at the top of the table. (See the sample data table below.)

6. Before you begin the simulation, ask the lizards to close their eyes. Then spread the pom-poms across the fabric. (Make sure all of the lizards have closed their eyes before you scatter the pom-poms!)

7. When you call out "Hunt!" the lizards should open their eyes and grab the first pom-pom they see using their thumbs and forefingers as pincers. Then they should place their pom-poms in their cups and close their eyes again, keeping them closed until you cue them to hunt and grab their next pom-pom. Repeat this step five more times until each lizard has grabbed a total of six pom-poms. (**Note:** Six "hunts" = one round.)

Sample Data Table

Create the following data table in advance so the class recorder will be able to fill it in easily. (**Note:** In lesson 5, the class will perform the simulation again using a different environment, so you'll need to create a new class data table for these results. Display both data tables where students can easily refer to them.)

Environment:						
Pom-Pom Beetles	**Red**	**Yellow**	**Brown**	**Green**	**Black**	**Total**
Number of Pom-Poms **before** the 6 Hunts						
Number of Pom-Poms **after** the 6 Hunts						
Number of Pom-Poms (Beetles) Eaten						

Rules

Create the following list of rules on chart paper and display it where students will be able to refer to it during the simulation. This chart will be used for the simulations in lessons 3 and 5.

1. Everyone must remain seated at all times.

2. If you're a lizard, follow these rules:

- Your eyes must be closed when you aren't hunting. **Do not peek!**

- When the game warden says, "Hunt!" open your eyes and grab the first pom-pom beetle you see.

- Use *only* your thumb and forefinger (index finger) to pick up a pom-pom beetle. That's your "mouth."

- Each time you hunt, you may grab only *one* pom-pom beetle.

- Put the beetle in your cup and then close your eyes again.

- You will hunt six times. Six hunts equals one round.

3. If you're an observer, write your observations in your science notebook.

4. If you're a counter, write in your science notebook the color of the pom-pom beetles you're supposed to count. Before the round begins, count the number of pom-pom beetles in your assigned color on the fabric and report this number to the recorder. At the end of the round, count the number of pom-pom beetles in your color remaining on the fabric and report this information to the recorder.

5. If you're the recorder, record the number of pom-pom beetles for each color before the round begins. Then record the number of beetles for each color again at the end of the round. The counters will give you this data.