New Earth Classroom

ACTIVITY 3
DECOMPOSER GAME (20-25 minutes)

PLEASE NOTE: This activity works well in combination with **Activity 2: Living Soil.**

LEARNING OBJECTIVES

1. Students will distinguish between producers, consumers, and decomposers.
2. Students will cite examples of producers (plants), consumers (animals), and decomposers.
3. Students will engage in a running game that demonstrates how the food web depends on decomposers, which break down organic matter to provide soil and nutrients to grow new plants.
4. Students will analyze the results of the Decomposer Game to clarify the importance of the relationship between animals, plants and decomposers.

KEY WORDS

food web, food chain, consumer, decomposer, organic matter, producer, native

EQUIPMENT

- Bell or whistle
- Laminated photos of animals* (with yarn or string loosely attached so photos can be worn around kids' necks)
- ties or scarves
- orange cones, flags, or flagging tape to delineate perimeter of playing field**

* Should be a combination of herbivores, omnivores and carnivores, preferably animals native to your region. In the southwest high desert, examples include swallowtail butterflies, roadrunners, javelina and tarantulas.

** Playing field should be from about 20x50 feet to 30x60 feet, depending on how many kids are playing. The area should be large enough for the kids to be able to run around but not so large that they don't get tagged.

INSTRUCTIONS

DESCRIBE ROLES

ASSIGN ROLES

I. GO OUTSIDE
and have students sit in a circle to go over game instructions.

II. EXPLAIN THE RULES

A. This is a running game, but it's not a competition. It's a demonstration to show how all living things depend on each other to survive and create a balanced food web.

B. Each student will have an assigned role:

1. ***Animals*** (consumers) - eat or consume plants or other animals.
   Ask students for examples of animals from your region.
   (in the Southwest, examples include owl, bobcat, jaguar, javelina, kangaroo rat, Mexican wolf, butterfly)
2. ***Decomposers*** - What do decomposers do?
   Decomposers break down (decay) dead organic matter to create new soil and release nutrients for plants growing in the soil.
   Ask students for examples of decomposers.
   (examples could include bacteria, fungi such as mushrooms, mold & yeast, insects such as worms, beetles & flies)
3. ***Plants*** (producers) - produce energy from the sun.
   Plants are the foundation of our food chain.
   They produce energy from sunlight that is passed on to animals that eat them. Animals (predators) that consume plant-eating animals (prey), get energy from the animals they eat.
   Ask students for examples of plants from your region as well as others that may not be native but provide food.
   (juniper tree, desert willow, sunflower, sage, prickly pear cactus, poppy, apple tree, pumpkin, strawberries, cucumbers)

C. Assign each student a role in the game:

1. ***Animals:***
   a. Hold up a card of a native animal.
      Have the students identify it and ask them what it eats.
      Remind them that this is called a **consumer** because it consumes (or eats) plants and/or animals.
   b. (OPTIONAL) Introduce or review the terms herbivore, omnivore and carnivore when discussing each consumer and what they eat.
   c. Pass out animal cards to 5 kids. They will wear these and identify as animals.
2. ***Decomposers:***
   a. Ask again for examples of decomposers.
   b. Pass out ties or scarves to 5 kids who will wear these and identify as decomposers
   c. Please note that for the first round of the game, there should be an equal number of animals and decomposers with almost double the number of plants. For example, if there are 5 animals and 5 decomposers, there should be about 8-10 plants.

3. ***Plants:***
    a. Ask again for examples of plants.
    b. Kids who are neither animals nor decomposers will be plants.
4. Do a hand count and announce how many animals, decomposers and plants there are. This is an important point for comparison later in the game.

HOW TO PLAY THE GAME

D. Instructions:

1. **Animals tag plants** to symbolize that they have eaten them. Plants can try to avoid animals, but it is inevitable that many will be tagged (eaten). **Plants sit down** when tagged.
2. **Decomposers look for plants that have been eaten** (and are sitting down) **& tag them** to bring them back to life. <u>This shows that the decomposers are breaking down and recycling the plant material so new plants can be grown.</u> **Plants that are tagged by decomposers stand up** and are back in the game.
3. Point out the playing field boundaries, designated by orange cones, flags or flagging tape. The players should not go out of bounds.
4. Please emphasize that there is no need to be aggressive. This is not a competition but rather a demonstration to show how living things interact as parts of the food web. The students' roles will change in each round, so they will have opportunities to participate as different players in the game.
5. When students hear the bell or whistle, they will freeze.
6. Demonstrate the game procedure with kids representing one animal, one plant and one decomposer for clarity.

E. Play the game:

ROUND 1

1. <u>Ring the bell or blow the whistle to begin ROUND 1.</u> Animals tag plants, who sit down when they are tagged. Decomposers tag the plants that are seated, and those plants are back in the game. After about 2 minutes, ring the bell or blow the whistle. Students freeze.
2. Have kids in each group raise their hands in order to count the numbers of animals, decomposers and plants (only count the plants that are standing).
   Ask students: **Do we have the same number of each as when we started?**
   (Numbers of animals and decomposers will be the same. The number of plants will be close to the original number, even though a few plants may be seated.)

3. **Role change** - this gives kids a chance to try different roles and makes the game less competitive.
   a. Take scarves from 2 decomposers to reduce the number of decomposers in the next round.
   b. Have the other decomposers give their scarves to plants or animals.
   c. Animals give their cards to kids who want to be animals.
   d. Anyone who is not an animal or decomposer is a plant.

ROUND 2

4. Play Round 2. After about 2 minutes, ring the bell or blow the whistle. Students freeze.
5. Have each group raise their hands in order to count the numbers of animals, decomposers and plants (again, only count the plants that are standing).
   Ask students: **How have the numbers changed?**
   (There should be fewer plants.)
   Why are there fewer plants?
   (Because there are fewer decomposers available to break down dead plant material and make soil and nutrients for new plants.)
6. Let's see what happens if we have no decomposers.
   a. Collect scarves from remaining decomposers.
   b. Animals give their cards to someone who hasn't yet been an animal.
   c. Everyone else is a plant.

ROUND 3

7. Play Round 3.
   It won't be necessary to time this round because soon the plants will all be seated, and there are no decomposers to revive them.
8. Once all the plants are seated, tell students to freeze. Count how many there are in each group. There will be zero plants and zero decomposers.
9. Collect the animal cards and have students sit in a circle.

DISCUSSION

F. Discussion
   1. What happened when we had fewer decomposers?
      (There were fewer plants.)
      What happened when we had no decomposers?
      (There were no plants.)
   2. Why were there no plants without decomposers?
      (The dead organic matter was not "recycled" into soil and nutrients to make new plants.)
   3. What happened to the animals?
      (They had nothing to eat.)
   4. Conclusion: Decomposers break down dead plants, creating soil and nutrients so more plants can grow. They recycle organic material. Without them, the life cycle and food chains are broken.