

Oh Heron! Ecosystem Game

Lesson Concept Healthy ecosystems have a balance of components that depend on each other.

Link In the previous lesson, students learned that living things have needs that are met in their environment. In this lesson, students learn how a balance of food, water, shelter and space impact living things. In the next lesson, students learn how adaptations provide advantages that help living things survive in their environment.

Time 60 minutes (can be done in two sessions: session 1 through explain; session 2 as extend and evaluate)

Materials Whole Group
1 Large piece of butcher paper to record results
Bell or whistle
Marker
Masking tape create lines, if needed (see advance preparation)
Picture of Heron

Advance Preparation

1. Make sure you have a large open area to play this game (about 20 feet) with a line on each side, such as half of a basketball or handball court. Use masking tape if needed.
2. Divide the class into two even teams before starting the lesson.
3. Make a 3-column chart with these headings: round, number of herons, number of environmental factors.

Procedure:

Engage *(5 minutes) Living things depend on food, shelter, water and space to survive.*

1. Hold up a picture of a Heron.
2. In a think-pair-share, ask students based on what they know about the needs of living things, to discuss what a Heron would need to survive. Record responses on chart paper/whiteboard.

Explore *(25 minutes) Food, shelter, water and space are limiting components that affect the health of an ecosystem*

3. Explain to class that they will be doing a simulation game to understand how abiotic and biotic components are interdependent in an ecosystem.

4. Explain that one team will represent the environment and will be called the Environmental Team. The other team will represent the living things and will be called the Heron Team.
Explain that each team will use symbols to represent food, water, and shelter. Demonstrate the symbols:
 - a) The “water” students will show they are water by pretending to put a cup up to their lips as if drinking.
 - b) The “food” students will put their hand on their stomach.
 - c) The “shelter” students will raise their hands over their heads and make a triangle.
 5. Go outside and ask each team to line up on the lines (see advance preparation). Ask team members to stand shoulder to shoulder. Explain that when the simulation begins, the Environmental Team will stay where they are while the herons will quickly walk over to the Environment side.
 6. Explain that there will be 4 rounds of the simulation. The first is a practice round. Before the first round, record the beginning number of students on the Heron Team and Environmental Team. Record the number 1 on the chart for the round, and number of students on each team.
 7. Explain that each team member will decide what symbol they are, and that when the “go” signal is given, both teams will display their symbols, and the herons will run to the environment side to find a matching symbol. When they find a match, they tap the student lightly and the Environment student returns to the Heron side and becomes a heron for the next round. Any heron which is unable to find a matching symbol dies at the end of the round and through decomposition (lying down on the ground), becomes part of the Environment.
 8. Tell the students it is time for the first round. Ask students to turn their backs on each other and pick a symbol. Remind them that they may not change symbols once they have decided. Give the “go” signal (blow whistle, ring bell) and let the students find their matches.
 9. At the end of the round, enter round 2 in the first column and the number of herons and environmental factors in the appropriate columns.
 10. Repeat 2 more times, recording the information at the end of each round.
- Explain (10 minutes) Healthy ecosystems have a balance of food, water, shelter, space and living things.**
11. Ask students to partner with another student and discuss what they notice. What trends do they observe? What factors contributed to the trends (e.g., if the heron population increased, what happened to the environment factors? If the environment factors increased what happened to the heron population?).
 12. Ask several partner groups to share with the whole class.

Extend (10 minutes) Changes in any of the components impact the entire ecosystem

13. Have students line up as they did in the previous rounds, half Heron and half Environment.
14. Explain that students will do the simulation again for 4 more rounds.
15. Record the round and the number of Herons and Environment students.
16. Announce that pollution or oil spills had contaminated some of the water supply and that some of the water would be poisonous to drink. Secretly, assign students to be poison water, so any Heron that tags them would die.
17. Signal “go” and let the herons move. At the end of the two rounds, chart the number of herons and environment.
18. Ask students to compare these numbers with what happened in the previous rounds (in the explore stage). Why might the numbers be different? How did “pollution” impact the numbers?
19. Conduct two more rounds. This time, explain that the ecosystem has been limited due to housing tracks. Ask the shelter students to divide the amount of space in half by standing back to back, rather than separately as in previous rounds. Now each set of two shelters are combined to be enough space for only one heron. Signal them to begin and let the herons move.
20. Record the number of Herons and Environment. Have teams analyze this data. How does it compare with their other data? Ask herons how they felt in the crowded condition.
21. Return to the classroom.

Evaluate (10 minutes) Healthy ecosystems have a balance of components that depend on each other

22. Ask students to complete these three prompts in their notebook:
 - Based on the data from the simulation, describe how a balance of food, water, shelter and space impacts the health of the environment and the living things in it. “When the resources were not properly balanced with the heron population, the population _____.”
 - Propose the idea that humans created a sanctuary (protected space) for the herons. Based on what you learned from the simulation, ask them to complete the following statement: “If humans made a sanctuary to protect the herons, _____.”
 - Ask, “What ideas from the game ‘Oh Heron’ are easy for you to understand? Which are difficult? and have them state, “I am understand _____ but am having difficulty understanding _____.”

Pictures of Blue Herons

