Feeding Frenzy

Virtual Field Trip to the California Science Center

FOCUS QUESTION:

How do the changes in an environment affect what lives there?

BUZZWORD:

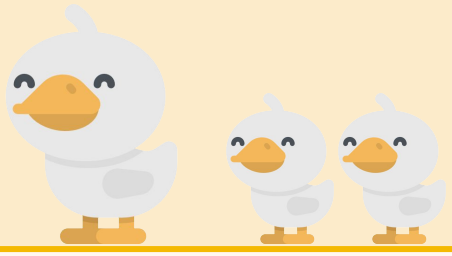
survive

NGSS STANDARDS:

PERFORMANCE EXPECTATIONS
3-LS4-3, 3-LS4-4

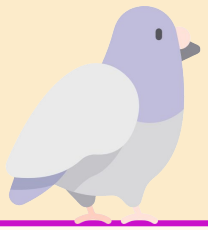
SEP - construct an argument from evidence

CCC - cause and effect



OBJECTIVE:

Students will play a game using household supplies to model how much food a bird can catch in a given environment. Using data from the game, students will construct an argument about how certain adaptations, like beaks, affect survival when the environment changes.



MATERIALS AND MODIFICATIONS

- All materials in the Student Guide are suggestions only.
- Students need multiples of each food item (~8 pieces of each).
- It is okay for students to use different materials from their peers. This can lead to a discussion of how slight changes in the structure of an animal or environment can lead to very different results.

Some students may want to keep playing the game!

Encourage the students to play the game again with different bird beaks.

Examples include:

- Hummingbirds = slurping beaks (slurp with a straw)
- Eagles, Owls, Hawks, and other birds of prey = hooked beaks (use a hook or stick to drag items off the plate)
- Storks, Cranes, and Herons = stabbing beaks (poke items with a toothpick or skewer)

FACILITATING THE EXPERIMENT

1. **Before students start the experiment:** Discuss what students know about what it means to survive and what happens to animals when their environment changes. Have students share their hypotheses.
2. **Set up the experiment:** Students may need assistance finding substitutions for the beak or food models. Use the Extra Information page in the Student Guide for ideas.
3. **During the experiment:** Students should spend equal time (30 sec) picking up food with each round. Remind them to only pick up one piece of food at a time and not to use their cup as a second "scooper". Encourage them to record their data on the data sheet at the end of each round.
4. **Wrap up:** Discuss the "What's Going On" questions together and guide students toward using their data to support their claims about how well the duck and pigeon survived. Challenge students to use the word "survive" in their answer.

WHAT'S GOING ON? PART 1

1. **Make a claim that your duck was able to survive well, survive less well, or cannot survive at all in the parking lot. Use your data as evidence.** Students should use evidence from the game to support whatever claim they make. An example student response could be:

   The duck was able to survive well in the field because it caught 4 worms, and that was all that it needed to survive. It caught 5 mice and 1 seed, making it even healthier.

2. **Make a claim that your duck was able to survive well, survive less well, or cannot survive at all in the parking lot. Use your data as evidence.** Students should use evidence from the game to support whatever claim they make. An example student response could be:

   The duck was not able to survive at all in the parking lot. Even though it caught a total of 8 pieces of food, only 3 were worms. In order to survive, it needed to eat 4 worms.

3. **Did the change in environment affects how well the duck survived. Explain why.** Students should compare the data results from Round 1 (open field) and Round 2 (parking lot) to describe how well the duck survived when the environment changed. A example student response could be:

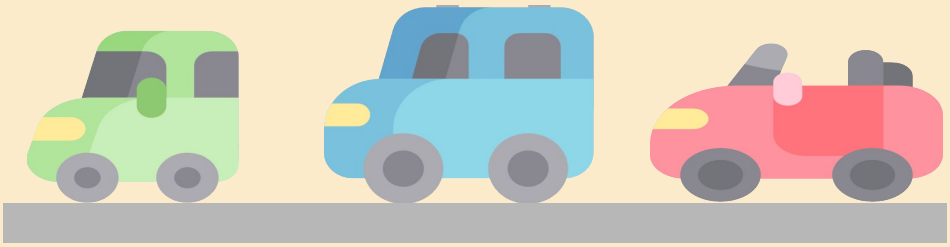
   The change in the environment affected the duck because it wasn't able to survive at all. The open field environment gave the duck more food to eat. The parking lot lowered the number of food for the duck, so it had to eat all of the worms to survive. It was also harder to catch the food that was available in the parking lot with the scooper beak.

WHAT'S GOING ON? PART 2

1. **Make a claim that your pigeon was able to survive well, less well, or cannot survive at all in the parking lot. Use your data as evidence.**
   Students should use evidence from the game to support whatever claim they make. An example student response could be:
   The pigeon was able to survive well in the parking lot because it ate 8 total pieces of food - 4 worms, 2 seeds, and 2 leaves. It only needed 4 pieces of food to survive but since it ate more food it is even healthier.

2. **Compare the duck's and the pigeon's ability to survive in the parking lot. Make a claim that one bird is able to survive in the parking lot better than the other.**
   Depending on various factors, such as the students choice of materials and dexterity, they may claim the pigeon or duck is able to survive better. Students may discover that due to the shape of their beak, one of the birds is better able or **adapted** to pick up a certain kind of food. Scientists would call this bird a **specialist**; in this case, the duck is a specialist. If a bird is able to eat any kind of food easily, it would be called a **generalist** (the pigeon). When the environment changes and food becomes limited, the specialist bird may not be able to eat the food that is left. The specialist's **survival** may be more sensitive to changes in the environment than the generalist.

If students are having difficulty writing their answers, turn the "What's Going On?" sections into a live discussion.



ADDITIONAL RESOURCES

Share your students' experiments on Social Media for a chance to be featured!

@californiasciencecenter

@casciencecenter

CONNECT WITH US!

Visit the California Science Center virtually or in person to explore this standard and extend the activity with related content.

- **Watch a free video**: Join our educators on a nature walk around the California Science Center to explore clues from the past and present. Think about how an environment transforms over time and how those changes can affect what lives there.
- **Reserve a live interactive experience**: Invite scientists from the California Science Center to visit your classroom virtually to explore our urban ecosystem and learn more about our wildlife neighbors.
- **Visit us in-person**: Check out our Island Zone in Ecosystems to explore how different organisms adapt to changing environments.

Website: www.californiasciencecenter.org
Phone: 213-744-7444

EXTENSIONS

Have your students propose a solution to help the ducks survive well once the parking lot is built. They can write a letter, make a poster, or draw a picture to share their solution with scientists, developers or community members.