

The Emperor Penguin's Egg

GRADE LEVELS	K – 2 nd ; Standards for K-2
SUBJECTS	Life Sciences
DURATION	Preparation: 10 minutes Activity: 30 minutes
SETTING	Anytime Lesson

Objectives

In this activity, students will:

1. listen to a story about penguins.
2. pretend to be an Emperor penguin carrying an egg using their feet to understand how they care for their young.
3. learn how harsh conditions can make it hard to survive.

Materials

- soft ball or toy to resemble a penguin egg (1 pound and about 4 inches, 1 per student pair if possible)
- standard size pillows (1 per student if possible)
- rope or string (1 long piece per student)
- flippers or slippers (1 set per student if possible)
- painter's tape or masking tape
- thick blankets or pieces of egg crate foam
- poster boards or fan to create the harsh winds (optional)
- books: *A Mother's Journey* by Sandra Markle or *Penguin Chick* by Betty Tatham
- DVD: *March of the Penguins*

Educator Background

Emperor Penguins are monogamous, meaning they only have one mate and stay faithful to that mate. They begin courtship during March and April when the temperature can be as low as -40°C (-40°F). This courtship involves a courtship call by the male, which attracts the female. Once in pairs, couples waddle around the colony together.

After laying her egg, the mother becomes very exhausted and she very carefully transfers the egg to the male, before immediately returning to the sea for two months to feed. The egg of the Emperor Penguin is 12×8 cm ($4\frac{3}{4} \times 3$ in) and somewhat pear-shaped. The female penguin lays one 460-470 g (1 lb) egg in May or early June. The transfer of the egg can be awkward and difficult, and many penguin couples drop the egg during this process. When this happens, the chick inside is quickly lost, as the egg cannot withstand the freezing temperatures on the icy ground.

The male spends the winter incubating the egg, balancing it on the tops of his feet and covering it with a thick layer of feathered skin, for 64 consecutive days until hatching. The Emperor Penguin is the only

penguin species where the father takes sole responsibility for incubating the egg. By the time the egg hatches, the male will have fasted for around 115 days since arriving at the colony. To survive the cold and winds of up to 200 km/h (120 mph), the males huddle together, taking turns in the middle of the huddle. They have also been observed with their backs to the wind to conserve body heat.

Preparation

1. Borrow *A Mother's Journey* by Sandra Markle, *The Emperor's Egg* by Martin Jenkins, or *Penguin Chick* by Betty Tatham and *March of the Penguins* from your local library.
2. Find a space where you can play the *Emperor Penguin's Egg* activity. A large open space, like a classroom with the desks pushed aside, works fine.
3. Mark the beginning and end of your activity space by placing a line of tape at each end. The lines only need to be a few meters apart.
4. Students will be working in pairs, so make sure you have an even number of participants. *Teacher tip: A willing principal, administrative assistant, or parent chaperone may be used to even out the number if necessary.*
5. Lay a couple of thick blankets or egg crate foam on your activity space to resemble the uneven ground the penguins have to walk on during their parenting process.

Introduction

1. Before you begin your activity, take a moment to read *A Mother's Journey* by Sandra Markle, *The Emperor's Egg* by Martin Jenkins, or *Penguin Chick* by Betty Tatham.
2. Discuss the story with the students:
 - What was hard about being a penguin parent? (*cold, snow, predators, having to transfer the egg are just a few ideas*)
 - What helps the penguin parents? (*working together*)

Procedure

1. Start by turning your students into emperor penguins:
 - Each participant will put on flippers/slippers to make them waddle like a penguin. *Teacher tip: Large pieces of cardboard rubber banded to shoes make quick, cheap flippers!*
 - Have all participants place a standard size pillow in front of their bodies and wrap rope to tie the pillow around them. These will be their penguin bellies.
2. Arrange students into pairs. Distribute one soft ball or toy to be used as the egg per pair.
3. Have one student from each pair go to the beginning line of the activity space, and the other partner to the end line of the activity space so that each partner pair is facing each other in two parallel lines. *Teacher tip: If your class is too large to all line up at once, or if you don't have enough costume supplies to go around, split your class into two groups. One group will do the penguin activity while the other cheers them on, and then switch.*

4. Have each student balance the "egg" on top of their feet. Once their egg is placed, their arms will remain by their sides.
5. If desired, you can use an electric fan or assign a student to fan a large piece of posterboard at the "penguins" to create the harsh wind penguins must face. *Teacher tip: This can be a good way for a physically disabled or injured student to participate.*
6. At your signal, students waddle towards each other while keeping the egg precariously perched on their feet.
7. Now, here is the tricky part! Once the partners meet in the middle, they will pass the egg to their partner's feet, without using their hands or letting the egg touch the ground. If the egg touches the ground and stays there, it will freeze and won't survive.
8. Once the egg is transferred, partners part ways and walk back to their respective ends.
9. This is not easy! Let students practice and keep trying for as long as is reasonable. Be sure to leave other waiting penguins enough time to also play.
10. Once students have experienced being an Emperor penguin parent, gather around to watch the documentary, *March of the Penguins*.

Wrap-Up

Discuss as a group what you learned. You can ask the following questions:

- What would happen to the egg if it wasn't protected on top of the male's feet?
- Would the baby penguin survive in its environment if it was left behind?
- What are the external features of the penguin and how do they help with survival?

Correlated California Content Standards

Grade 1

Life Sciences

2a. Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.

Grade 2

Life Sciences

2a. Students know that organisms reproduce offspring of their own kind and that the offspring resemble their parents and one another.

Next Generation Science Standards

Scientific & Engineering Practices	Disciplinary Core Ideas	Cross Cutting Concept
<p>Developing and Using Models: Distinguish between a model and the actual object, process, and events the model represents.</p> <p>Obtaining, Evaluating, and Communicating Information: Read grade-appropriate texts or use media to obtain scientific information to determine patterns in and evidence about the natural world.</p>	<p>LS1A: Structure and Function: All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. Plants also have different parts that help them survive and grow.</p> <p>LS1.B: Growth and Development of Organisms: Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.</p> <p>LS1.D: Information Processing: Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.</p>	<p>Structure and Function: The shape and stability of structures of natural and designed objects are related to their functions.</p> <p>Patterns: Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.</p>

Related Performance Expectations

The activity outlined here is just one step towards reaching the Performance Expectations listed below. Additional supporting materials and lessons will be required.

1-LS1-1: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

1-LS1-2: Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

References

Markle, S. 2005. *A Mother's Journey*. Charlesbridge Publishing.

Tatham, B. 2008. *Penguin Chick*. HarperCollins Publishing.

Wikipedia, The Free Encyclopedia. *Emperor penguin*. Retrieved February 9, 2012, from http://en.wikipedia.org/wiki/Emperor_Penguin

Pioche, B. and the *National Geographic Society* (producers). *March of the Penguins*. 2005

Jenkins, M. 2002. *The Emperor's Egg*. Candlewick Publishing.

