

Audience: Grade 3	Duration: 30-45 min	Department: Education
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Program Description:

As the Minnesota Zoo reimagines education programming, it is critical to understand how to create effective, relevant, and engaging content for our community. Virtual zoo programming offers an opportunity to fulfill our mission with audiences ranging from traditional zoo-goers to traditionally underserved communities near and far.

The Minnesota Zoo received a grant through Woodland Park Zoo to work with an evaluator and several schools throughout Minnesota to identify culturally responsive best practices for delivering virtual programming to guide future program development and implementation. This project will explore and enhance the efficacy of live virtual engagement with animals in fostering empathy for wildlife, while ensuring our future work is inclusive and accessible.

Intended Outcomes		
INSPIRE/FEEL	TEACH/LEARN	ACT/DO
<i>Affective (emotions & attitudes)</i>	<i>Cognitive (facts & concepts)</i>	<i>Behavioral (actions & behavior changes)</i>
As a result of this program, my audience will feel...	As a result of this program, my audience will learn...	As a result of this program, my audience will act to...
Feel emotionally connected to animals and nature.	Understand ecological principles that reveal the vital connections between humans, animals, and nature.	Make daily personal choices that benefit wildlife and habitats.

Learning Objectives

Learning Objectives:

- Learners will observe and be able to identify structures and functions that help an animal survive.
- Learners will understand that some structures are better suited for certain habitats.
- Learners will understand that traits are inherited and may vary among individuals within a species.
- Learners will observe and identify the similarity and differences between the traits of an offspring and parents.
- Learners will understand that traits can be influenced by the environment and some traits are more beneficial for an individual's survival.

Social/Emotional

- Social Awareness
- Relationship Skills

MN Graduation Standards Supported

2009 MN State Science Standards

- 3.4.1.1.1 Compare how the different structures of plants and animals serve various functions of growth, survival, and reproduction.
- 3.4.1.1.2 Identify common groups of plants and animals using observable physical characteristics, structures, and behaviors.

NGSS Standard

- 3-LS3-1 Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
- 3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

PROGRAM SERIES OVERVIEW

	Program A	Program B: Trail Tour
Theme	Animal Superpowers	Tropics Trail, Ocean
Animal Encounter	Observe and identify animal structures and function (adaptations)	Focus on unique adaptations and how these adaptations help animals survive. Review animal classification groups that apply to the animals you visit.

PROGRAM A: ANIMAL SUPERPOWERS

Activities/Abbreviated Procedure	Location	Outcomes
1. Introduction of staff, overview of logistics and Ice Breaker Activity (10 min)	Earth Classroom	Students will be familiar with the schedule and what to expect for the next couple of weeks.
2. Animal demo (20 min)	Earth Classroom	Students will observe and identify animal structures and functions. Students will understand that structures have different

		<p>functions to help animals survive in their natural habitats.</p> <p>Students will learn that some adaptations are better suited for different environments.</p>
<p>3. Animal Adaptations and Animal Superpowers Heads Up Game (10 min)</p>	<p>Earth Classroom</p>	<p>Students will understand that structures have different functions to help animals survive in their natural habitats.</p> <p>Students will learn that some adaptations are better suited for certain environments.</p>
<p>4. Conclusion & sneak peek for Trail tour (5 min)</p>	<p>Earth Classroom</p>	<p>Students will understand that adaptations help animals survive in its habitat.</p>

DETAILED OUTLINE:

Materials needed:

- 2 iPads & laptop
- (optional) Small white board with dry erase marker
- List and printed photos of students' favorite animals
- Owl camouflaged picture (found in Animal Adaptations PowerPoint)
- Animal Adaptations PowerPoint
- Animal Superpowers Heads Up cards

INTRODUCTION & ICE BREAKER (10 MIN):

1. **Start on the laptop in Earth classroom. Connect both iPads but keep the microphone disconnected.**
2. Introduction to instructor and a brief description of the program.
 - Instructor introduces themselves.
 - Hi, welcome back to the Minnesota Zoo! My name is _____. I use (insert pronouns), and I will be your naturalist today. If the group is small, take some time to have everyone introduce themselves.
 - Go over the logistics of participating.
 - Each class will meet with a zoo staff twice, once this week and once next week.

- Remind them that we can't wait to hear from them today. We want to give everyone a chance to share their ideas and questions so I am going to ask that if you have any questions, you can raise your hand and your teacher will call on you. Remind them to only ask appropriate questions and comments.
- 3. Ice Breaker Activity: Teachers have emailed their students' favorite animals and photos of these animals can be found in the "Students' Favorite Animal PowerPoint" found on basecamp.** Tell students that you really enjoyed learning about everyone's favorite animals. What do they like about their favorite animals? Invite students to share their answers by having their teachers call on them or type their answers in the chat. Show photos of these animals to give more context in case other students aren't familiar with every animal.
- 4. Ask students if there are any animals that make them uncomfortable. Give space for students to share their experiences and perspectives. What makes them uncomfortable? If they have had prior experiences with these animals, invite them to share it.
- 5. If there are shared favorite and uncomfortable animals, highlight these animals and point out that all animals are unique and special in their own way. There are millions of animals in the world including student's favorite animals. Some animals like (highlight their favorite animals) live on land, some (highlight their favorite animals) prefer to live in water. Animals live in habitats that provide them with their essential needs like food, water, shelter, and space to grow and live.
- 6. **Tell students that you also have a favorite animal (great horned owl) you'd like to share, and you chose the animal because it has superpowers.** Now share the camouflaged owl photo with them. Ask: Can you see it? Give students a little bit of time to look for it and tell them to give you a thumbs up when they find it. Tell them your favorite animal has the superpower to appear invisible to its predators. Ask a couple student volunteers with their thumbs up to tell you what animal it is then point out where the owl is in the photo.
- 7. **Ask students:** Did you know that each of your favorite animals have superpowers too? Students may say no. Today's class is all about animal superpowers because all animals have superpowers to help them live in places that are hard to live in. Some of these superpowers are so subtle that we don't often think of them as superpowers but without these superpowers, animals may have a hard time living in certain places. Another word you might hear these superpowers referred to is **adaptations**. Tell them we'll be exploring more of these superpowers in detail later.

ANIMAL DEMO (20 MIN):

1. Tell students that there are a couple of friends here at the Minnesota Zoo that you would like to introduce them to.

Introduce students to animal handler staff by spotlighting "Minnesota Zoo_animal handler's name". Keep the audio connected on the laptop and disconnected on the iPad. Use the spotlighting feature on Zoom to highlight different cameras as needed. Instructor will be in charge of sharing their screen to share photos, vocabulary words (as needed), and writing down students' ideas.

2. **(Animal handler staff takes over.)** Refer to the camouflaged owl and ask them what body part the owl had to help it blend in and be invisible to its predator. (The color and pattern on its feathers) Now ask if students can think of their favorite animals' superpowers. What body parts do they use?
3. After students have shared some ideas, ask what parts of their bodies they notice they use daily to help them function. Make a list of these and introduce the word *structure*. **Instructor will list their answers on a white board.** Structures are body parts that allow us to have superpowers to help us live or survive in our environment. Every structure has a *function*, or a job. Give an example, using one of the body parts on the list and incorporate the terms: *structure* and *function*.
4. Tell students that you have a friend you'd like to introduce them to, to help us learn more about these animal superpowers and it's important that we make our new friend feel welcomed, safe, and comfortable because each of us have been in a new unfamiliar place before. Before you bring your friend out, ask students what should we do to make sure *our new friend* feels safe, comfortable, and welcomed? Show them how you have set up the space to welcome our friend.
5. Introduce the animal ambassador using his/her name and pronouns. Invite students to greet animal ambassador (using a different language, gesture, etc.)
6. Ask students if they know what kind of animal, he/she is? How did they know? Share with students that he/she also has superpowers just like their favorite animals. Invite students to share what they already know about (insert animal ambassador's name) and guess what those superpowers are.
7. Do these structures give them a clue about where he/she lives? Have the teacher call on students to answer and provide their reasoning. Encourage students to use the words, *structure* and *function* when talking about different adaptations. Continue to explore what natural habitat the animal ambassador lives in. Ask students what kinds of behaviors or activities might he/she be doing in his/her natural habitat? What structures are important? What are the functions of these structures?
8. Assess their understanding by asking what the function of an observed structure is. You may also want to remind students that another science word they might hear structures being referred to is ***adaptations***.
9. Invites students to ask questions they have about animal ambassador.
10. Share with students that with all the knowledge they have now of different adaptations, they are going to play an animal superpower game.
11. Have students say goodbye to (insert animal ambassador's name).

Note: Remove the iPad cameras from the meeting by clicking on “manage participants” at the bottom of the navigation window. A list will appear on the right with a list of the participants in the meeting. Hover over the Animal Ambassador and Animal Handler Staff and click on the blue “More” button then click on “Remove”. Use your laptop for the second half of your program.

THEME OF THE WEEK (10 MIN):

1. Have students get up and stretch and move like their favorite animals. Try to see if you can guess some of their animals.
2. Tell students there are so many different animals all over the world that scientists must sort them into groups based on their structures and other characteristics to better understand how they are all related to each other. You may have heard of some of these groups (*Mammals, birds, reptiles, etc.*) For example, all mammals have fur and live babies, and birds have feathers and lay eggs. Sometimes, scientists sort animals into groups based on the way they behave (*carnivores, herbivores, nocturnal, diurnal, etc.*)
3. These are all examples of animal superpowers or **adaptations**.
 - Adaptations can be a physical structure on an animal or the way an animal behaves (behavioral) to survive and thrive in an environment.
4. Share with students, examples of each type of adaptation using the Animal Adaptations PowerPoint slides (found on desktop). Have students vote (thumbs up/down) whether it is a physical or behavioral adaptation.

Adaptations: (pictures and/or videos found in Animal Adaptations PowerPoint)

- Flamingos migrating (behavioral)
 - Sea otter fur (physical)
 - Viceroy mimicking Monarch (physical)
 - Rhinoceros Hornbill call (behavioral)
 - Baby Amur tiger stalking (behavioral)
 - Caribou antlers (physical)
5. **Animal Superpowers Heads Up:** This game is based on the “Heads Up” board game if students are familiar with that. Share with students that you have photos of different Minnesota Zoo animals. You are going to shuffle the cards and without looking at the card, you are going to pick one. You’ll look away as you show them the card. Then you’re going to set the card face down. Their job is to tell you the superpowers and adaptations they observed or have prior knowledge of, and you are going to guess what Minnesota Zoo animal it is. You may have to show them the photo more than once. Have teachers call on students or have students type the superpowers/adaptations into the chat.

CONCLUSION (5 MINS):

Animals have different structures on their bodies called adaptations to help them survive. Each structure functions differently to allow animals to survive in different environments. If there is an extreme change to an environment, an animal can move or risk not surviving but over time, through many generations an animal can develop structures or adaptations that are better suited to the environmental change.

Sneak peek for your next activity: Next week, we will meet you at the same time to visit one of our trails. We'll meet different animals and learn more about their amazing superpowers.

PROGRAM B: TRAIL TOUR

Instructor Note: The goal of the trail tour is to connect classrooms to the rest of the Zoo. Classroom teachers have emailed their trail preference. This information can be found on your schedule. Refer to the virtual tour notes found in the virtual tour folder on basecamp for background information on each trail. Use this as an opportunity to review what students learned in Program A.

Recap of Program A:

- What is an adaptation? (Physical/behavioral)
- How do adaptations help animals survive in their habitats?
- Introduce animal classification groups (mammals, fish, reptile, amphibians, birds, insects, arachnids)

Ocean (Discovery Bay & Penguin) -include Penguins if time allows	Tropics Trail
<ul style="list-style-type: none">• Highlight different ocean ecosystems. (Tide pool, coral reef, estuary)• Focus on where animals are found in the ocean and discuss adaptations that help them live there.• Review animal classification groups.• Highlight penguin adaptations.	<ul style="list-style-type: none">• Highlight different layers of the rainforest.• Focus on where animals are found in the rainforest and discuss adaptations that help them live there.• Review animal classification groups.