Audience: Grade 2	Duration: 30-45 min	Department: Education

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
Affective (emotions & attitudes)	*Cognitive (facts & concepts)*	*Behavioral (actions & behavior changes)*
As a result of this program, my audience will feel… Feel emotionally connected to animals and nature.	As a result of this program, my audience will learn… Understand ecological principles that reveal the vital connections between humans, animals, and nature.	As a result of this program, my audience will act to… Make daily personal choices that benefit wildlife and habitats.

Learning Objectives

Learning Objectives:

- Learners will be able to identify and sort objects into living and non-living groups.
- Learners will compare similarities and differences in living things.
- Learners will identify external parts of animals and plants.
- Learners will make observations and describe what animals and plants need to survive.

Social/Emotional

- Social Awareness
- Relationship Skills

MN Graduation Standards Supported

2009 Minnesota State Science Standards

- 2.4.1.1.1 Plant characteristics: describe and sort plants into groups in many ways, according to their physical characteristics and behaviors.

NGSS Standards

- 2-LS4-1 Make observations of plants and animals to compare diversity of life in different habitats.

PROGRAM SERIES OVERVIEW

	Program A	Program B: Trail Tour
Theme	Rainforest Layers	Tropics Trail, Ocean
Animal Encounter	Observe rainforest plants and animal adaptations	Focus on where animals are found in the rainforest and discuss adaptations that help them live there.

PROGRAM A: RAINFOREST LAYERS

Activities/Abbreviated Procedure	Location	Outcomes
1. Introduction of staff, overview of logistics and Ice Breaker Activity (15 min)	Earth Classroom	Students will be familiar with the schedule and what to expect for the next couple of weeks.
2. Animal demo (15 min)	Earth Classroom	Student will practice making observations. Students will identify similarities and differences among plants in the different layers of the rainforest. Students will identify adaptations that help animals survive in a rainforest. Students will understand the roles that animals play in a rainforest.
3. Introduction to plant characteristics in a rainforest and animal adaptation (10 min)	Earth Classroom	Students will identify adaptations that help animals survive in a rainforest.
4. Conclusion & sneak peek for trail tour (5 min)	Earth Classroom	Students will understand that like animals and plants have adaptations to help them solve problems.

Detailed Outline:

Materials needed:

- 2 iPads & laptop
- **Rainforest board:** white board, laminated tree photos, magnets
- Globe
- Rainforest photo saved on desktop
- List and photos of student's favorite animals
- A picture of your favorite animal
- **Movement activity:** various animal toys from different rainforest layers (tiger, tree frog, snake, butterfly, macaw, toucan, tortoise, armadillo, tarantula, beetle, lizard, type of primate, sloth)

***Instructor Note: Before the program, prep the items below.**

- **Look at the photos of students' favorite animals. Be ready to share your favorite animal and why.**
- **Use the laminated tree photos and white board from the Recipe for a Rainforest class to build a rainforest.**

Introduction & Ice Breaker (15 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. **Share with them your favorite animal along with a photo and what you like about that 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. Some animals live in a forest. Animals find a home that provides them with food, water, shelter, and space to live and grow.
6. **Today, we are going to learn more about a type of forest.** Have students raise their hands if they have spent time exploring a forest. What does a forest look like? What would you see in a forest? What would it feel like to stand in a forest? What kinds of sounds would you hear? What would you smell?
7. Has anyone heard of a rainforest before? What does a rainforest look like? Have students share what they already know about rainforests. **Share the screen briefly to show a picture of a rainforest.** Un-share the screen and ask students what they noticed? What kind of plants did they see? Share that a rainforest is a type of forest that has the most variety of plants in the world. Some of those plants are found only in rainforests and nowhere else. Rainforests have different layers that animals can live in. There is the bottom layer (forest floor) that is dark and damp, a more elevated layer up in the branches of green trees and shrubs (understory), a very high layer that is hundreds of feet above the ground (canopy), and the very top layer where you don't see the ground-only sky and treetops (emergent).
8. Use the globe to introduce where rainforests are located.

ANIMAL DEMO (15 MIN):

1. **Tell students:** Today I have some friends I'd like to introduce you to, to help us learn more about rainforests.

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.

1. **(Animal handler staff takes over.)** Say hello and tell students that you have a friend you'd like to introduce them to and it's important that we make our new friend feel welcomed, safe, and comfortable because each of us have been in a new place with new people 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 and what you have done to make the space safe and comfortable.
2. Introduce the animal ambassador using his/her/their name and pronouns. Invite students to greet animal ambassador (using a different language, gesture, etc.)
3. Ask students if they know what kind of animal he/she is? How did they know? Invite students to share what they already know about the animal.

4. What does an animal need to live and grow? (*Food, water, air, shelter, and space)*
5. Animals have unique body parts to help them eat, move, and build their shelters so they can survive in their habitats.
6. What layer of the rainforest do you think we would find (insert animal ambassador)? *(Rainforest animal if possible)* How did you know? Are there body parts that give us a clue about where he/she lives? Encourage students to make close observations. You may need to remind them how to make observations. *(watch, listen, ask questions*) Invite students to answer and provide their reasoning by raising their hands or typing in the chat.
    - A rainforest has many different layers (share the name of the layers but you do not have to go into details as it will be covered in the second half of the program), and each layer has different plants which means, there are different animals that live in each layer because each layer provides different kinds of food, shelter, and space.
    - Focus on adaptations that help the ambassador animal survive in relation to its habitat (rainforest layer) and highlight examples of plant communities found there.
7. Invites students to ask questions they have about animal ambassador.
8. Tell students that we are now going to take a closer look at the layers of the rainforest.
9. Have students say goodbye to (insert animal ambassador's name).

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. **Movement Activity:** We're going to do an activity to get us up and moving. You are welcome to stand if you would like to, but you do not need to move away from your spot. Make sure that there is enough space around you, and you can't touch anyone or anything. Have students remind you of the layers of the rainforest again. Tell them that we are going to practice some different motions to help us remember the different layers. Demonstrate the different motions for each layer below and highlight some plants or plant parts that are found in each layer. Invite students to do the motions with you. Try these motions several times. You can mix it up and see if students can use the correct motion for each layer.
    - *Emergent: Stick your arms straight in the air together like a big tree*
    - *Canopy: Put your hand up to make branches (like you are asking "why?")*
    - *Understory: Duck or get down*
    - *Forest Floor: Use your hands to mimic a little animal scurrying*
2. Once you have everyone's attention, tell students: I am going to show you an animal. For example, I might show you this animal (show a rainforest toy animal). What layer of the rainforest do you think this animal lives in? Have students make a guess by showing you the rainforest layer motion they practiced earlier. Give multiple clues and share unique adaptations the animal has to survive. Make sure to include animals from each layer.

- *Emergent – bat, butterflies, harpy eagle*
- *Canopy – tree frogs, howler monkeys, toucan, sloth, iguanas*
- *Understory – insects, snakes, jaguars, small primates*
- *Forest floor – tortoise, armadillo, tiger, tapir*

CONCLUSION (5 MIN):

There are so many kinds of plants that can be found all over the world. Rainforests only make up a sliver of the earth, but it is home to some of the greatest variety of plants, some so rare that they are found nowhere else. Each layer of the rainforest has different plants creating unique habitats, where animals use their special body parts to find water, food, air, and shelter to survive.

Rainforests are not only important because it is home to so many different species of animals, but people also depend on the rainforest. We breathe the oxygen plants give off, we eat many of the fruits from the rainforest, our medicine comes from rainforest plants, and we even use some the trees for wood to build things.

Sneak peek for your next activity: Next week, we will meet you at the same time to visit one of our trails. We'll explore plants in these habitats and meet the animals that live there.

PROGRAM B: TRAIL TOUR

Instructor Note: The goal of the trail tour is to connect classrooms to the rest of the Zoo. Refer to the Tropics Trail virtual tour notes found in the virtual tour folder on basecamp for background information. Use this as an opportunity to review what students learned in Program A.

Recap of Program A:

- What are the four layers of the rainforest?
- What plants are found in each layer?
- What animals are found in each layer? What adaptations help them live there?

Tropics Trail	Ocean (Discovery Bay & Penguin) -include Penguins if time allows
• Point out various plants like the fig tree, orchids, and bromeliads and highlight that plants are also living. How do plants grow and change? What do plants eat? • Review and point out the layers of the rainforest. (Forest floor, understory, canopy, emergent) • Highlight a mammal, reptile, bird, and fish and focus on how these animals find their essential needs to live. (Ex: how does the animal move, eat, reproduce, grow and change)	• Visit coral tank and compare coral reefs to the rainforest (biodiversity in coral reefs) • Compare the different ocean zones and highlight adaptations ocean animals have to survive in each zone. • Highlight penguin adaptations and compare penguins to tropical birds.