# ANIMAL CLINIC INVESTIGATION



Smithsonian National Zoological Park Conservation Biology Institute





# **LESSON PLAN**

## **OBJECTIVE**

Students take on the role of vets-in-training when their help is requested by Dr. Fonz to investigate Animal Care Clues and develop a diagnosis and treatment plan for an animal in need.

#### NATIONAL STANDARDS ADDRESSED

Listed at end of lesson plan.

#### MATERIALS

- Introduction letter
- Animal Care Clues 1-4
- <u>See, Think, Wonder Chart</u> (2 copies)
- Venn Diagram Chart
- <u>Prescription Form</u>
- <u>Glossary</u>

### **TEACHER INFORMATION**

- This activity has been adapted from an in-classroom, group experience. The current format allows the lesson to be delivered digitally or via printed materials for students with limited connectivity.
- *Enhancements*: If technical capabilities and platforms allow, we recommend students collaborate in pairs and/or small groups with the following modifications:
  - Group Clues into two sets (Set A: Clues 1 and 2; Set B: Clues 3 and 4);
  - Distribute only one set of Clues to each student group for analysis and discussion,
    - Record main points of the students' discoveries in a graphic organizer (e.g. create a circle map for each Clue, see <u>Educator</u> <u>Resources</u>; develop a series of Venn Diagrams to record details from each Clue.)
  - Join together as a whole group to discuss and make connections between Clue sets to develop consensus and group diagnosis.
- This investigation is based on a real experience with the giant pandas at the Smithsonian's National Zoo in 2016. Zoo keepers noticed that juvenile giant panda Bei Bei wasn't eating and was sleeping more than usual. They





monitored him closely, gave him anti-nausea medicine, and performed an ultrasound of his stomach. The ultrasound revealed a blockage in Bei Bei's small intestine and required surgery to remove the mass of bamboo. Thanks to the Animal Care Team, Bei Bei made a full recovery. https://nationalzoo.si.edu/news/bei-beis-recovery-updates

- In November 2019, Bei Bei departed the National Zoo for China. All giant pandas in the United States belong to China and all offspring born to those pandas return to China when they are four years old to become part of the breeding population there. <a href="https://nationalzoo.si.edu/news/giant-panda-bei-bei-departs-smithsonians-national-zoo-for-china">https://nationalzoo.si.edu/news/giant-panda-bei-bei-departs-smithsonians-national-zoo-for-china</a>
- Continue learning about giant pandas with your students:
  - Check out Smithsonian's National Zoo's giant pandas on the animal cam! <u>https://nationalzoo.si.edu/webcams/panda-cam</u>
    - Find activities and games to engage your students with the pandas in the Web Cam Activities Packet. <u>https://nationalzoo.si.edu/sites/default/files/documents/animal</u> <u>webcam activity packet 2.pdf</u>
  - Visit Smithsonian's National Zoo's website for more information about giant pandas. <u>https://nationalzoo.si.edu/animals/giant-panda</u>

## **INTRODUCTION TO LESSON**

- Use your preferred digital platform to introduce lesson, objectives, and activity materials to students, or print packet with materials listed above and your preferred directions for completion and submission of activities.
- Review the objective of the lesson: students will be investigating Animal Care Clues and developing a diagnosis and treatment plan for an animal in need at the Smithsonian's National Zoo.
  - They will use the materials to answer the questions:
    - What kind of animal is it?
    - Does the animal have a medical problem and if so, what is a potential diagnosis?
    - What are potential treatments to help the animal recover and/or feel better
  - Introduce/describe each of the handouts (letter, clues, charts, prescription form) with information about the order in which they should be completed.





### **DIRECTIONS FOR STUDENTS**

- Closely examine each Animal Care Clue, exploring images as well as text. What information is each Clue giving you about the animal, their behavior, and how they are feeling?
- Complete one row of the See, Think, Wonder Chart for each Animal Care Clue to help you organize and expand your thinking.
  - Questions to guide your observations and chart entries:
    - What did you notice?
    - What does that tell us?
    - What makes you say that?
  - Use the information about each of the Animal Care Clues below to give you more information to help deepen your observations.

## Fun Zoo Facts About the Animal Care Clues:

### Animal Care Clue #1- Ethograms

Ethograms may be used for a number of reasons, including to collect general data about animal behavior and on signs of breeding and birthing. For instance, volunteers with Friends of the National Zoo regularly monitor panda cubs during a cub's first year, observing their behavior and use of space. These behavior watches provide insight on developing panda cubs that can then be used to inform conservationists on best practices for animal care.

#### Animal Care Clue #2- Veterinary Visit

Animals at Smithsonian's National Zoo have the opportunity to voluntarily participate in their own healthcare. They may be asked to present a body part for inspection or climb upon a scale. If the animal chooses to participate, they receive a reward or special treat. Corn stalks, fruitsicles, and honey are some of their favorite treats!

Just like us, animals get routine checkups to make sure they are healthy, but they also get medical care when they aren't feeling well. If they do have a medical problem, depending on their diagnosis, they might receive treatments like:

- o Rest
- Follow-up visit with a veterinarian
- Medicine
- Change in diet
- o Surgery





### • Animal Care Clue #3- Bamboo

Giant pandas, red pandas, bamboo lemurs, mountain gorillas, and elephants are some of the animals that enjoy eating parts of the bamboo plant.

Animals have adaptations to help them survive. For example, both giant pandas and red pandas have a pseudo-thumb (an enlarged wrist bone that they can flex like a thumb) to help them better hold the bamboo in their hands while eating. Elephants can use their trunks to reach for leaves high on a tree. They have a small projection on the end of their trunk, called a "finger", that helps them with precisely grasping something small and delicate, like leaves on a tree.

#### • Animal Care Clue #4- Keeper Report

Zoo keepers complete a detailed daily report about each animal and note anything unusual regarding behavior, diet, or potential injury. When there are disruptions in their patterns of behavior, it's usually a good indicator that the animal should be monitored more closely. Sometimes the keepers will notify the curator who will then notify the veterinarians.

- Place the information from your See, Think, Wonder Chart into the Venn Diagram Chart, using one circle for each Animal Care Clue.
  - In the overlapping spaces, write the conclusions that you can draw from putting the information from those Clues together.
- Put together the information you recorded on the Venn Diagram Chart to answer the following questions and then complete the Prescription Form:
  - What kind of animal is it?
  - Does the animal have a medical problem and if so, what is a potential diagnosis?
  - $\circ~$  What treatments might help the animal recover and/or feel better

#### **CLOSURE FOR STUDENTS**

- Great job, Vets-In-Training!
  - What Clues were the most helpful for you in making your diagnosis?
  - What behavior changes would you look for to make sure the animal was feeling better?
  - What was the most challenging Clue to work with?
  - What Clue do you want to know more about?
  - What questions do you still have?





## **INTRODUCTION LETTER**

# Dear Vets-in-Training,

The Smithsonian's National Zoo in Washington, DC needs your assistance. We have collected four "Animal Care Clues" and need you to use your investigative skills to put them together so we can help an animal at the Zoo feel better.

Look at each Clue carefully and decide what information it gives you about which kind of animal we are treating, how they are feeling, and what might be wrong. When you are finished, we will talk about your discoveries and figure out how you think we can help this animal feel better. Are you ready to save the day?

Your Partner in Saving Species, Dr. Fonz





## **ANIMAL CARE CLUE #1 - ETHOGRAMS**

Observer: Volunteer Caroline					Date: Tuesday, November 22, 2016 at 8:15am			
	Animal Behavior							
Minute	Resting	Alert	Drinking	Eating Bamboo	Solitary Physical Play	Social Physical Play	Investigating Scent	Scent Marking
0							Х	
2								Х
4			Х					
6					Х			
8					Х			
10					Х			

X = animal activity

Observer: Volunteer Caroline				Date: Wednesday, November 23, 2016 at 7:30am					
	Animal Behavior								
Minute	Resting	Alert	Drinking	Eating Bamboo	Solitary Physical Play	Social Physical Play	Investigating Scent	Scent Marking	
0				Х					
2				Х					
4				Х					
6				Х					
8	Х								
10	Х								

X = animal activity

Observe	bserver: Volunteer Caroline				Date: Thursday, November 24, 2016 at 8:00am				
	Animal Behavior								
Minute	Resting	Alert	Drinking	Eating Bamboo	Solitary Physical Play	Social Physical Play	Investigating Scent	Scent Marking	
0	Х								
2	Х								
4	Х								
6	Х								
8	Х								
10	Х								

X = animal activity





## ANIMAL CARE CLUE #2 – VETERINARY VISIT

## Date: November 25, 2016; 3:00PM Veterinarian: Dr. Fonz Procedure Ordered: Abdominal Ultrasound



# ANIMAL CARE CLUE #3 - KEEPER JOURNAL (2 pages)

WEDNESDAY November 23, 2016 7:15 AM

## A Day in the Life of an Asia Trail Keeper

I started my day by receiving a new delivery of bamboo for our animals. It was just harvested at the Smithsonian Conservation Biology Institute in Front Royal, VA. There's lots of room to grow bamboo there, which is great because so many of our animals get it as part of their diets! I'm glad I brought my gloves because those bamboo stalks can be really hard and heavy.







After we unloaded all the bamboo, I started getting the exhibits ready while the animals were outside for the morning. I placed some bamboo and other treats in the exhibits for their breakfast. Here I am prepping the exhibit for one of my favorite animals. I left them a surprise: an apple, one of their favorite treats.







## **ANIMAL CARE CLUE #4 – KEEPER REPORT**

## From the Desk of Zoo Keeper Lynn

Thursday, November 24, 2016 3:00PM

The animal showed signs of stomach discomfort and nausea. They were sleeping more than normal and not eating. They were given an anti-nausea medication injection and remained in their indoor enclosure under observation. Zoo animal care and veterinary staff observed them closely throughout the day and will make periodic checks overnight to monitor their condition.

For Animal Clinic Use Only

Keep Out of Reach of Animals





## **SEE, THINK, WONDER CHART**

Vet-in-Training (name): \_\_\_\_\_

Date:







## **VENN DIAGRAM CHART**



## **PRESCRIPTION FORM**

Vet-in-Training (name): \_\_\_\_\_

Date:



For Animal Clinic Use Only

Keep Out of Reach of Animals





# NATIONAL STANDARDS ADDRESSED

#### Next Generation Science Standards (K-5)

K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

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.

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

K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

#### Common Core State Standards for English Language Arts (K-12)

CCSS.ELA-LITERACY.CCRA.R.1 Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

CCSS.ELA-LITERACY.CCRA.R.7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

CCSS.ELA-LITERACY.CCRA.R.10 Read and comprehend complex literary and informational texts independently and proficiently.





# **EDUCATOR RESOURCES**

- The Circle Map
  - <u>https://www.thinkingmaps.com/why-thinking-maps/what-are-</u> <u>thinking-maps/the-circle-map/</u>
  - o <u>https://www.thinkingmaps.com/why-thinking-maps-2/</u>
- See, Think, Wonder Thinking Routine
  - <u>http://www.visiblethinkingpz.org/VisibleThinking html files/03 ThinkingRoutines/03c Core routines/SeeThinkWonder/SeeThinkWonder</u> <u>Routine.html</u>





# GLOSSARY

<u>Abdomen</u>: the area of the body that contains organs involved in digestion, such as the stomach and intestines.

<u>Adaptation:</u> a trait or behavior that a species developed in response to stimuli and conditions in its natural habitat, which has been perpetuated by natural selection, that makes it easier for the species to survive and compete in its natural habitat.

Bamboo: a tall treelike tropical grass with a hard, hollow, jointed stem.

<u>Conservationist</u>: a person who cares about and tries to preserve natural resources so they will still be around in the future.

<u>Curator:</u> Oversees an institution's entire animal collection and animal management staff and is responsible for strategic collection planning.

<u>Diet:</u> the kinds of food that a person, animal, or community habitually eats.

Ethogram: a data collection sheet specific to behavior watches.

<u>Intestine</u>: the lower part of the digestive canal that is a long tube made up of the small intestine and large intestine and in which most of the digestion and absorption of food occurs and through which waste material passes to be discharged.

Investigate: to inquire and discover facts.

<u>Keeper:</u> provides daily care to the institution's animals, including diet preparation, cleaning, general exhibit maintenance, and record keeping.

Observe: to notice or look.

<u>Pseudo-thumb</u>: enlarged wrist bone that they can flex like a thumb (giant pandas, red pandas).

<u>Species</u>: a group of organisms with common traits, especially the ability to produce young. Species are classified in nine groups, set through criteria such as rate of decline, population size, area of geographic distribution, and degree of population and distribution fragmentation.

<u>Treat:</u> to give care, to try to heal.

<u>Ultrasound</u>: An ultrasound exam uses sound waves to create live pictures of the inside of the body. It can help doctors learn what is causing pain, swelling, or infection inside the body.

<u>Veterinarian</u>: an animal doctor who is responsible for the healthcare program for the animal collection and the maintenance of health records.

<u>Zoological Park:</u> a place that provides engaging experiences with animals and creates and shares knowledge to save wildlife and habitats.



