Observing Animal Behavior

Collaborative Inquiry Project

Grade Levels

Grades 7-8

Engage

This activity is designed to start your students in recognizing themselves as scientists and thinking critically about problem-solving. The goal is to teach concepts through discovery and to encourage using scientific thought processes. As with all lessons provided, please feel free to adapt them according to your students' abilities. You may find it more successful to lead activities and discussions as a whole group rather than using individual Research Plan sheets. Certain scientific vocabulary may or may not be appropriate for your students' level of understanding. Take these ideas, make them your own and your students will have a greater chance at success.

What types of behaviors might elephants exhibit if they are threatened? What types of behaviors might elephants exhibit if they are at play?

1. Begin the lesson by explaining to students that they are going to record data as a biologist would at the zoo. In order to achieve this, they should have a basic understanding of the types of behaviors they may see.
2. Brainstorm and record ideas to the above questions as a class or in smaller groups.

Explore

3. After finishing the discussion, ask students to come up with ways they could investigate their questions and test their predictions scientifically. What tools might they need to carry out their suggested explorations? What kinds of records will they need to keep? What will they do with the information once they have it? How will they know if they have successfully answered their question?

Explain

4. Biologists have a specific way of understanding animal behavior through precise observation techniques. Biologists observe animals in both zoos and in the wild and record their observations. In order to make this process simpler, they create an ethogram, or list of observed behaviors, prior to beginning their observations. Once this list is compiled, a coding system is created, much like short-hand, to make the recording process much easier.
5. Students will be using the same ethogram that will be used during their visit to the zoo. Distribute copies of the ethogram and data sheet in order to familiarize your students with the list of observed behaviors they should be watching for.

6. Students will then be tasked with finding an elephant video to observe. The video should be at least 3-5 minutes in length. Videos can be found in various locations on the internet. Recommended searches include “elephant behavior video” and “elephant observation video”.
7. When students have selected their videos, it is important to remind them that they will be following a process called “scan sampling”. Scan sampling is a method use by biologists to provide an overall picture of how an elephant or elephants are spending their time. It focuses on a sample of times, as opposed to specific times when an elephant might perform a certain behavior. At a specific time interval, biologists “scan” and record behaviors of all animals in a group or area. They then record a “sample” of the behaviors they see each animal doing at that moment.
8. Students will record their observations every minute on the minute. They may pause the video at each minute mark to properly take the time to code their observations, but make sure they are aware they will be unable to pause the elephants while they are observing at the zoo.
9. Remind the students that they will see many different types of behaviors between each minute while watching the videos, but it is important that they “sample” the behaviors by only recording at specific intervals.

Expand

10. After the students have viewed their videos, ask them what the pros and cons are for scientists to use this method of scan sampling instead of just recording all of the behaviors they see? Different sampling methods all have strong and weak points. Any time a biologist makes an observation, they are recording a sample. A biologist must determine a few things before taking a sample. Which animals are going to be observed and when? And how will they record their observations? These questions help them determine what sampling style is appropriate.
11. Different types of sampling methods can teach biologists about the intensity, frequency, sequencing, and duration of animal behaviors.
12. Students will be using a combination of behavior, scan, and time sampling methods in order to record what a group of animals is doing at specific intervals of time.
13. This type of sampling allows for biologists to gather a range of information and gives them a better idea of how animals are spending their time throughout the course of days, months, or even years. Instead of focusing on the behaviors that may be appealing to the biologist, it allows for large picture of how the animals are spending their time. Focusing on a group of elephants allows for observation of how they interact with each other.
14. However, this type of sampling method would not be able to determine the sequencing or duration of behaviors. For example, if an elephant was wagging its ears for the bulk of the minute, but stopped just in time for the biologist to record, none of the ear wagging would be recorded.
15. Have students refer back to the brainstorming list they made at the beginning of the lesson and determine what behaviors they observed while elephants were at play, and what behaviors they observed when they were threatened? How is an elephant’s body language different during these behaviors?
16. Why is it important to understand animal communication? How can this study help humans and animals interact? What can elephant behavior teach us about our own behavior?

Assess

17. Verify that the students' data forms are filled out correctly using the appropriate codes.
18. Have students answer one or more of the following questions: What did you learn about elephant behavior today? What did you learn about coding and recording elephant behavior? Define: sample, ethogram, data, and/or behavior.

Standards

Next Generation Science Standards
Engineering Design MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

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Supplemental Materials

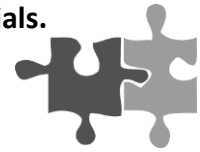
My Research Plan

1. Questioning
State the problem.
Make a hypothesis.

What types of behaviors might elephants exhibit if they are threatened? What types of behaviors might elephants exhibit if they are at play?

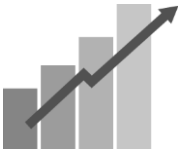
2. Planning
Make a plan by asking these questions (think, talk, write)

3. Implementing
Gather the materials.
Follow the procedures.
Observe and record the results.



4. Concluding
Draw a conclusion.

5. Reporting
Share my results (informal)
Produce a report (formal)



African Elephant Ethogram

Behavior	Abbreviation	Description
Crossing Legs	CL	Elephant is resting with its legs crossed
Standing	STA	Elephant is in upright position, not moving
Walking	WA	Elephant is moving at a steady pace
Running	RU	Elephant is moving at a quick pace
Eating	EA	Elephant is using trunk to place food in mouth
Drinking	DR	Elephant is using trunk to place water in mouth
Defecating	DE	Elephant is standing, expelling feces
Urinating	UR	Elephant is standing, expelling urine
Swinging Trunk	ST	Elephant is swinging its trunk left and right
Trunk Searching	TS	Elephant is using its trunk to search for objects
Trunk Holding	TH	Elephant is holding an object with its trunk
Flapping Ears	FE	Elephant's ears are moving back and forth
Throwing Mud	TM	Elephant is throwing dirt or mud on its body
Bathing	BA	Elephant is in the water or spraying itself with water
Rubbing Rocks	RR	Elephant is rubbing its side against large rocks
Touching Trunks	TT	Elephant is using trunk to touch another elephant
Sleeping	SL	Elephant appears to be asleep, eyes closed
Laying Down	LD	Elephant is laying down on its side
Bobbing	BO	Elephant is bobbing its head up and down
Swaying	SW	Elephant is swaying its head or body left and right
Trumpeting	TR	Elephant is making a loud noise with its trunk
Out Of View	OV	Elephant is not visible to make an observation
Other Behavior	Other	Any other behavior not listed

Animal Behavior Data

Are you observing indoors or outdoors?_____ Date _____

Weather Conditions _____

Start Time _____ End Time _____

Other Conditions _____

Time	Elephant #1	Elephant #2	Elephant #3	Elephant #4	Elephant #5
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					