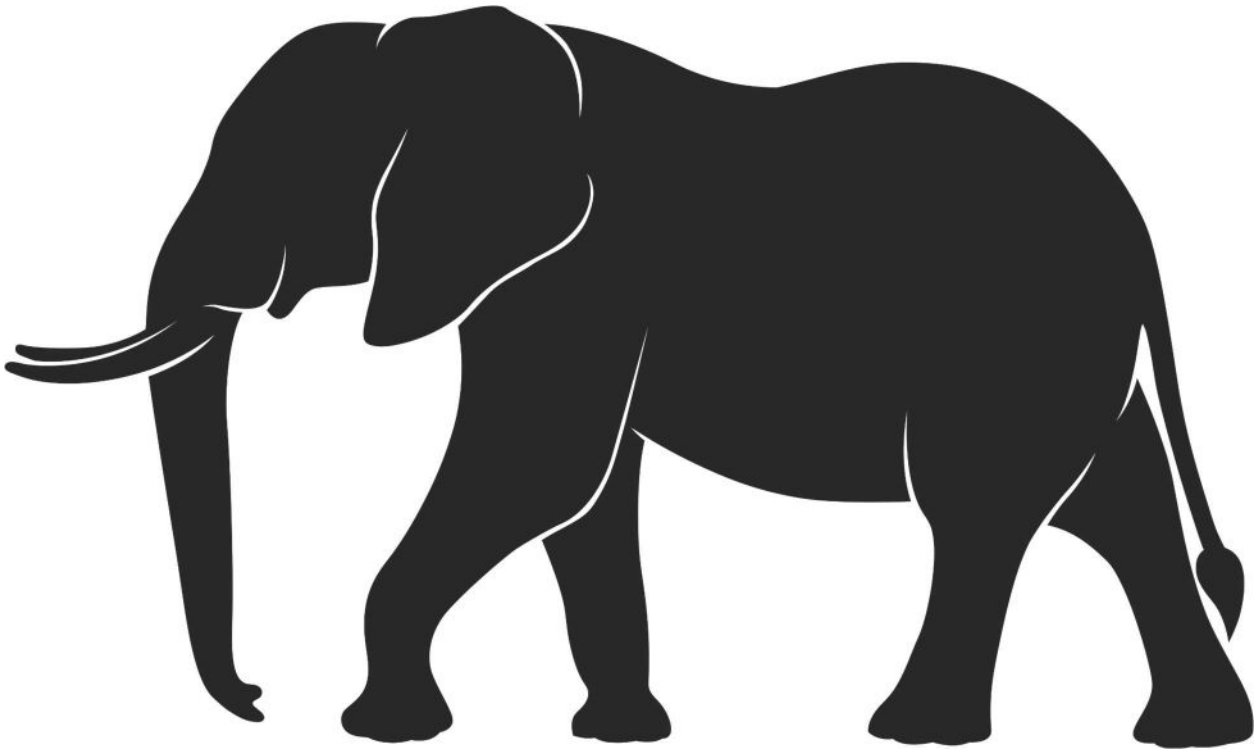
STEM-Based Activity Packet

Grades 3 and Up

Thank you for choosing Reid Park Zoo for a field trip this year!



Guidelines for Chaperones

Thank you for acting as chaperone for your group's trip to the Reid Park Zoo. Below is a list of guidelines and rules to review with everyone in your group, to ensure a safe and fun trip.

- 1 adult is REQUIRED for every 5 students.
- The youth assigned to you must be with you at all times in the Zoo – including in the café, gift shop, and restrooms. Inadequate supervision can result in your group being asked to leave the Zoo.
- It is the expectation that you will actively monitor youths' behavior at all times.
- In the event a member of your group is separated from you, please bring your entire group to the front gate and alert staff.

Please review and enforce the following Zoo guidelines with your group:

- Food, coolers, and insulated bags are not allowed inside the Zoo. Lunches and other food should be left on your bus or in personal vehicles.
- Do not feed or touch any animal, on exhibit or free-roaming (such as peacocks).
- Stay on sidewalks and designated paths - do not cross over, under, or climb on any guardrails, fences, rocks, trees, or other structures.
- Pick up all your own trash and dispose of it properly.
- Do not throw any object - especially into any animal enclosure. This can be very dangerous for the animals.
- Voices should be kept low.
- Please walk at all times while in the Zoo. No rough-housing please!
- Please review and use the Zoo activities provided by the group's teacher(s).
- Encourage the youth in your group to actively participate in activities by asking them questions and encouraging them to come up with their own questions and answers.
- Encourage your group members to ask Zoo docents questions and explore the artifacts at each docent station.
- Follow Zoo staff instructions at all times.
- Do not provide resources or activities (such as giraffe feeding or carousel rides) for some children in your group, but not others. All should have an equal experience.

We hope you and your group enjoy your trip to the Zoo and we appreciate your assistance in making your experience fun and safe.

What is a Bio Bag?

A Bio Bag is an easy-to-use tool that helps teachers focus and enhance a self-guided zoo tour for their students. Each Bio Bag is filled with artifacts that focus on animal adaptations, animal diets, and habitats. Information sheets provide instruction and additional information on each artifact.

How do I reserve a Bio Bag for my next trip?

It's easy! Contact the Zoo's Education Department at 837-8200. When calling, please be ready to provide us with the date and time of your upcoming field trip so we can have a Bio Bag waiting for you at the front gate when you arrive with your class.

If you would like to explore the contents of a Bio Bag to prepare for an upcoming field trip, please call 837-8200 to arrange a time to meet with one of our educators.

BioInspiration Step 1: Observations

Observe an animal at the Zoo for 10 minutes. During your observation time, draw the animal and take notes on anything and everything about the animal and what it's doing. From your observations, try to figure out the purpose behind each feature or behavior in your observation notes. For example, if you picked a rhino and it's rolling in the mud, why do you think it is rolling in the mud? If you don't know the exact purpose, write down what you think the purpose is.

SKETCH:

OBSERVE:

BioInspiration Step 2: Design

Using the notes from the observational exercise, brainstorm a bio-inspired innovation. Bioinspiration is looking at an animal's or plant's adaptations (behavioral or physical), and coming up with an invention inspired by that adaptation which can help others. Draw your innovation below. You will then share with the group. When presenting, be sure to explain what problem it is solving and what in nature you were inspired by.

INVENTION:

Problem Solving at the Zoo

Something's a Flock!

Zoo Keepers have noticed that there are more and more ducks flying into the flamingo habitat at the Zoo and they're competing with the flamingos for food. Your mission is to create a flamingo feeding station that will encourage flamingos to come and eat, but will discourage ducks and other non-flamingo species from taking food from it.

Step 1:

Observe flamingos eating either at Reid Park Zoo, or by watching Reid Park Zoo's flamingo webcam. Take special note of the flamingos' beak shape, size, and how they eat.

Step 2:

Observe how and what type of food a duck eats. Compare and contrast your observations with your flamingo observations.

Step 3:

Develop a feeding method or structure that will specifically encourage flamingos to eat from it, but discourage ducks and other wildlife.

Step 4:

Once you have your design, determine how many flamingos can feed at one time at your feeder. Then calculate the number of feeders you will need to feed Reid Park Zoo's flock. (Make sure you accurately count how many flamingos are in the flock!)

Enriching Designs

An Elephant's Best Behavior

In this multi-part activity, you will be asked to create an enrichment item for an elephant at Reid Park Zoo.

Steps to Creating Awesome Enrichment

1. Know the species – learn the natural history by observing behaviors of elephants in the wild (videos).
2. Using the behaviors observed in the videos, create an ethogram and observe and record behaviors of Reid Park Zoo's elephants.
3. Determine which behaviors the elephants do more often and which behaviors you would like to promote.
4. Plan what items are needed to encourage the desired behaviors.
5. Design an enrichment item to encourage the elephants to do the desired behaviors.

STEP 1 - Know the Natural History

Follow the links below to access several videos of elephants in the wild. For each video, make a list of all the different behaviors you see. Remember, describing behavior needs to be short and precise. Step one is nothing more than a list of observed behaviors.

http://explore.org/livecams/mpala/african-watering-hole-animal-camera: This link is to a live camera of a watering hole in Kenya that elephants frequent. Depending on the time of day, animals may or may not be active. Students may also see other African animals such as birds, hippos, or zebras.

If elephants are not active at the live camera, follow the link below to a nature documentary about African and Asian elephants:
https://www.youtube.com/watch?v=4zxAxbBuz8s&t=113s
"Wildlife Africa and Asia: Elephants"
Suggested timestamps to watch: 3:26-9:00, 13:00-19:00, 24:00-29:00, 35:00-41:00

Step 2: - Identify Behaviors

Highlight or separate out behaviors Reid Park Zoo's elephants could exhibit from the list you created in the previous section. Once you have selected the behaviors, insert them onto your ethogram.

Step 3: - Elephant ethogram

Spend 12 minutes watching the elephants at Reid Park Zoo or on our webcams here: http://reidparkzoo.org/cameras/elephant-cam/. Document each time the behaviors that are listed on your ethogram are observed. After observing the elephants, analyze your data to decide which behaviors are seen more often versus which behaviors are seen less often. For example: eating is a common behavior that does not need further encouragement; however, moving throughout the whole yard might be a behavior we want to see more often.

Step 4: - Planning Enrichment

Use the Enrichment Plan worksheet to assist you in planning your enrichment for the elephants. List two behaviors you would like the elephants to exhibit more and then list the components of that behavior. For example, what does the elephant need to show those behaviors? If you chose drinking, the elephant needs a water source. If you chose digging, the elephant needs something to dig in. Keep in mind that if we are trying to encourage digging, placing a ball on the mulch will not likely encourage that behavior. But, if we put scents on the ball and buried it, the elephant might dig the item up. List as many items as you can think of as it will lead to more creative enrichment.

Step 5: - Creating enrichment

After your class trip to the Zoo, research online to gather ideas about enrichment that is already being used by Zoo Keepers across the country. You can look at zoo websites for photos or videos they post, or research in other ways.

Then, based on your research, your list of desired behaviors, and your planning session, your last step is to design an enrichment item for the elephants at the Zoo. Please remember your enrichment needs to be suitable for an elephant, so it must be very durable; and, if using food, must include food that an elephant can eat.

After your design is complete you may submit it to Reid Park Zoo for consideration as possible future enrichment for the elephants. (Please note: not all enrichment is approved by Zoo Supervisors.)

Taking a Closer Look: Sheet 1

Before you begin, complete the chart below by inserting the behaviors you observed while watching the webcam/video on elephant natural behavior. Next, make a prediction about which of the behaviors below you think you will see the most. Choose one elephant to observe for twelve minutes. Place a tally mark next to all behaviors you observe within each minute. After you have recorded all the behaviors, place your results on the bar graph on the next page (don't forget to insert your observed behaviors into the bar graph). Review your prediction to see if it matches your results.

Behavior predicted to see most: _____

Behaviors Time (min.)

	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00
Example **Running**												

Taking a Closer Look: Sheet 2

(Continues from previous page)

Predicted behavior from sheet 1: _____

Behaviors

# of times observed	*Example* **Running**						
12							
11							
10							
9							
8							
7							
6							
5							
4							
3							
2							
1							

Actual behavior observed most:

_____

_____

_____

_____

_____

_____

_____

Enrichment Planning: Page 1

Enrichment Goals and Panning

Species: _____ Date: _____

BRAINSTORM:

1. What behaviors do you want to encourage and why?

2. Types of enrichment that might be appropriate to use (use the categories below to organize your ideas):

    Social

    Cognitive

    Physical

    Sensory

    Food

GOALS:

The goal of the enrichment is:

1. What items will you need or have available to create your enrichment?

Enrichment Planning: Page 2

Enrichment Goals and Panning Continued

Species: _____ Date: _____

2. What is the design of the enrichment, and how do you visualize the animal(s) utilizing it? Draw, write, or use a combination to explain your enrichment design.

3. What safety factors have you considered?