



**MINNESOTA ZOO**  
Changing how you see the world

# Plants and Animals- United They Stand, Divided They Fall Pre-visit Activity

## **MN Graduation Standards supported: Grade 7**

Strand IV.B.3.

The student will recognize that behavioral responses of organisms may be determined by heredity and past experiences.

Strand IV.C.4.

The student will explain the factors that affect the number and types of organisms an ecosystem can support, including available resources, abiotic and biotic factors and disease.

## **Grades 9-12**

Strand IV.B.2

The student will recognize that organisms have both innate and learned behavioral responses to internal and external stimuli, including the tropic responses in plants.

Strand IV.C.1.

The student will describe the factors related to matter and energy in an ecosystem that both influence fluctuations in population size and determine the carrying capacity of a population.

## **Introduction:**

When viewing animals at the zoo, the animals are often studied without thought about exhibit design or animal and plant interactions. This activity simulates the design process that zoos must complete to ensure the survival of the animal displayed at the zoo.

## **Objectives:**

At the end of this lesson, students will:

1. Explain why and how zoos display animals.
2. Explain factors an animal needs for survival in the wild and at a zoo.
3. List four resources that are necessary for an animal to survive in captivity.
4. Design an exhibit based on animal behaviors, needs and preferences.
5. Design the exhibit to promote animal viewing at a zoo.

**Procedure:** *(If internet access is not available to students, a teacher could print the screens and copy them for students to read)*

1. Before class, print and provide the worksheet titled, "Plants and Animals-United They Stand, Divided They Fall".
2. Open the class by having the students create a list of items a zoo would need for a tiger to survive and thrive. Compile a class list. Review the four basic needs of all animals- food, water, shelter and space.
3. Tell students they are going to design a zoo exhibit using the resource information provided on the Minnesota Zoo Web Site. Students should review the activity, "Designing a Zoo Exhibit" by accessing the web site:

<http://www.mn zoo.com/education/ticadventures/handbook/c1.htm>

**Vocabulary:**

Ecosystem  
Arboreal  
Camouflage  
Carrying Capacity  
Behavioral Response  
Innate Behavior  
Internal Stimuli  
External Stimuli

**Links:**

Designing a Zoo Exhibit:  
<http://www.mnzoo.com/education/ticadventures/handbook/c1.htm>

MN Zoo Web Site  
(Animal Information):  
[http://www.mnzoo.com/animals/animals\\_a-z.asp](http://www.mnzoo.com/animals/animals_a-z.asp)

Information on Exhibit  
Design:  
<http://www.sfzoo.org/education/pdf/ZDLP.pdf>

**Procedure Continued:**

Reading through the information will give students the information they need to use in designing an exhibit for an animal

4. Next, small student groups will pick an animal to learn about from the list below. The information can be accessed by clicking on the home icon at the bottom of the tiger information or by logging into the zoo website (see links).
5. Select the animal from the A-Z list and click on the more information icon. *(You may want to limit the number of different animals so that all students are chaperoned adequately at the zoo.)*  
Choose from the following animals:
  - a) White-Cheeked Gibbon
  - b) Komodo Monitor
  - c) Ring-Tailed Lemur or the Red Ruffed Lemur (These are at the same location.)
  - d) Sun Bear
  - e) Tree Kangaroo
  - f) Clouded Leopard
  - g) Amur Tiger (This would be a good one to use for students with limited abilities.)
  - h) Students will use the zoo information and access other internet sites to determine the needs of that animal. Things that are listed on the worksheet.
6. Lastly, have students design the exhibit for their selected animal by:
  - a) Creating the exhibit layout for the animal's basic requirements including sanitation needs.
  - b) Ensuring the animal is unable to escape from the exhibit.
  - c) Allowing zoo keepers to tend to the animal.
  - d) Providing for the vegetation requirements for the animal.
  - e) Adding important features the animal would need based on the answers from the worksheet.
7. After the sketch is completed, have another group check the sketch to make sure it fulfills the above requirements. Students should keep their sketch and worksheet so they can bring them to the zoo and compare it to the actual exhibit at the zoo.