



# SeaWorld/Busch Gardens Physics

## K-3 Classroom Activities

### Capturing Sound

#### OBJECTIVE

The student will identify various animal adaptations and behaviors that enhance the sense of hearing. The student will participate in an experiment that demonstrates a method of harnessing and amplifying sound waves.

#### ACTION

1. Explain to the class that they are going to conduct research on why animals have certain adaptations and behaviors that help them hear more effectively. If needed, define adaptation as “an animal’s shape or action that helps it survive in its home” and behavior as “the way an animal acts.”
2. Ask students to form a line against the back wall of the classroom and then sit down.
3. Dim the lights in the classroom and have the students close their eyes.
4. Explain that you are going to play some music and progressively decrease the volume. Ask students to remain still as the sound volume goes down. Students can not turn their heads or cup their ears to hear better.
5. Play the music at a reasonable volume so that all the students can hear it.
6. Next, decrease the music a little and ask students to raise their hands if they can still hear the music. Count and record the number of hands on a piece of paper
7. Continue decreasing the volume five to eight more times until the volume is off. Tally hand counts at each interval. Note when the majority of students can no longer hear the music. (NOTE: if possible, mark the positions of the volume control on the tape recorder as the sound is turned down.)
9. Turn on the lights and review the findings.
10. Distribute an amplifier (cup) to each student. Explain that they are going to conduct the same experiment again, this time using the amplifiers. The students may turn their heads in any direction with the amplifiers to help them hear the music better.

continued next page

11. Repeat the experiment again using the same number of total trials as in the first experiment. Keep note of when the majority of students can no longer hear the music.
12. Turn on the lights and review findings. The students should have been able to hear the music longer with the amplifier.

### **BACKGROUND INFORMATION**

Dogs, cats, birds, and many more animals have incredible hearing. Such a highly developed sense allows them to hunt, detect predators, or communicate with family members. For example, the fennec fox, a small canid found in Northern Africa, has large ears (which are usually 4 to 6 inches long) and extraordinary hearing. This fox can find prey burrowing underground. By swiveling its ears around, it is able to hear sound in several directions.

### **MATERIALS**

#### **For each student:**

- 8 oz. plastic cup (with bottom cut off and cut edges taped)

#### **For class:**

- scissors
- masking tape
- tape player
- tape of appropriate music or nature sounds
- pencil
- paper



A student listens intently using the activity's plastic cup amplifier.