

## Lesson Plan

### Tell the Difference

**Book:** *Hearing Devices*

**Series:** Engineering the Human Body

**Level:** Navigator

### Objective

To help students compare and contrast the details presented in two texts about how hearing works.

### Supplies

- Several copies of the *Hearing Devices* book
- “Ears and hearing” web page on the DK Findout website: <https://www.dkfindout.com/us/human-body/senses/ears-and-hearing/>
- Tell the Difference Guided Reading Assignment (attached)
- Computer access for students
- Pencils and paper

### Before the Activity

Read *Hearing Devices* out loud, or assign it to students to read on their own. Print a copy of the Tell the Difference GRA and cut it so each group’s questions are on a separate piece of paper.

### Activity

Divide students into three groups, giving each group a section of the Tell the Difference GRA. Help each group navigate to the DK Findout web page. Students in each group should click on each label with a dot and read the caption text in the bubble that appears. Then, students should work together to answer the questions on their group’s GRA. Students can use the book’s index to find information on their topic. Students should write their answers on a separate piece of paper.

### Evaluation

Use the following sample answers to evaluate each group’s work.

### Group 1 Sample Answers

- Both say that sound travels from the outer ear down a tube to the middle ear (p. 11).
- Both describe the outer ear’s shape as helping to collect or direct sound waves into the ear (p. 11).

- The website describes the outer ear as made up of the earlobe and the earflap, or pinna.
- The website describes the outer ear as made of cartilage, a springy tissue.
- The book says conductive hearing loss is when sound does not move well through the outer or middle ear (p. 13).
- The book says some hearing aids fit into the outer ear (p. 18) or curve behind it (p. 19).

### **Group 2 Sample Answers**

- Both say that sound waves reach the eardrum and make it move. Its movement makes tiny bones called ossicles move as well. Their movements send vibrations into the third part of the ear (p. 12).
- The website describes the eardrum as a thin membrane.
- The website describes the ossicles as linked. Their movement pushes and pulls on a membrane at the entrance to the inner ear, called the oval window.
- The book says the middle ear contains the eardrum and three tiny bones called ossicles, which are the smallest bones in the human body (pp. 11–12).
- The book says the ossicles move in a way to make sounds louder (p. 12).
- The book says conductive hearing loss is when sound does not move well through the outer or middle ear (p. 13). Infections in the middle ear can make it difficult for the eardrum and ossicles to move. But there are hearing devices that can move the middle ear bones and help the person hear (p. 14).

### **Group 3 Sample Answers**

- Both describe the cochlea as shaped like a snail and filled with fluid. Both say that hair cells in the cochlea vibrate and turn those vibrations into nerve signals (p. 12).
- Both say that the hair cells connect to nerves, which connect and send signals to the brain (p. 12).
- The website calls the nerve that sends signals to the brain the cochlear nerve.
- The book calls the nerve that sends signals to the brain the auditory nerve (p. 12).
- The book says some of the hair cells make the vibrations stronger, while others respond to the vibrations and send electrical messages to the auditory nerve (p. 12).
- The book says sensorineural hearing loss is when the hair cells in the inner ear fail to send electrical messages to the brain (p. 14).
- The book says a cochlear implant involves placing a set of electrodes in the inner ear. The electrodes pick up electrical signals from a microphone and speech processor and then send those signals to the nerve endings in the cochlea. The auditory nerve signals the brain, and the person hears sound (p. 22).

### **Standards**

This lesson may be used to address the Common Core State Standards' reading standards for informational texts, grade 4 (RI 4.1).

## **Tell the Difference GRA**

### **Group 1: The Outer Ear**

Both the book and the website describe the role the outer ear plays in hearing. What information about the outer ear is the same in both sources? What information is different?

## **Tell the Difference GRA**

### **Group 2: The Middle Ear**

Both the book and the website describe the role the middle ear plays in hearing. What information about the middle ear is the same in both sources? What information is different?

## **Tell the Difference GRA**

### **Group 3: The Inner Ear**

Both the book and the website describe the role the inner ear plays in hearing. What information about the inner ear is the same in both sources? What information is different?