

NOW HEAR THIS



#3494

OPEN-CAPTIONED
AMBROSE VIDEO

1994

Grade Levels: 9-13+

25 minutes

2 Instructional Graphics Enclosed

DESCRIPTION

The ears are a masterpiece of miniature engineering, and our link to the world of sound. But their most important role is that they contain the tiny tubes that control our sense of balance. Presents the functions and parts of the ear in this look at the anatomy of hearing, speech, and balance. Graphics and microphotography vividly illustrate each part of the ear.

ACADEMIC STANDARDS

Subject Area: Science

- Standard: Understands the basic concepts of the evolution of species
 - Benchmark: Knows that heritable characteristics, which can be biochemical and anatomical, largely determine what capabilities an organism will have, how it will behave, and how likely it is to survive and reproduce (See Instructional Goals #1 and #2)

INSTRUCTIONAL GOALS

1. To describe the components of the ear.
2. To illustrate the functions of the components of the ear in relation to hearing, speech and balance.

VOCABULARY

1. cochlea
2. anvil
3. stirrup
4. eardrum
5. hammer
6. vocal cord
7. balance
8. semicircular canals
9. oval window
10. organ of Corti
11. voice box
12. pitch

BEFORE SHOWING

1. Note the differences in individual ears by examining all ears in the classroom. List and discuss similarities and differences.
2. Discuss what function ears perform other than hearing.

3. Examine an anatomical model of the ear in the skull. Identify the organs for hearing and balance and the speech mechanisms.
4. Provide an outline of the components and functions of the ear. (See INSTRUCTIONAL GRAPHICS.)

DURING SHOWING

1. View the video more than once, with one showing uninterrupted.
2. Pause after the opening gymnastics scene and discuss why Zita's ears are her most important organs.
3. Pause at the scenes that depict the actual middle ear and vocal cords. Discuss how improvements in technology now allow observation of many bodily processes.
4. Compare the actual photographs of the ear and vocal cords to a model or graphic. Describe the function of each of the ear's components. (See INSTRUCTIONAL GRAPHICS.)
5. Identify the components of the ear and the speech mechanisms shown in the video.

AFTER SHOWING

Discussion Items and Questions

1. Predict what would happen if a person had no middle ear, or no semicircular canals or no vocal cords.
2. Discuss the ability of the human ear to perceive and distinguish sound. Include: identifying the location of sound, discrimination of different voices, and determination of directionality of sound.
3. Discuss how balance is important to everyday life.
4. Describe the effects of age on hearing and on the voice.
5. Describe the bones of the middle ear. Discuss how their names are related to their shapes.
6. How does one's gender affect the quality of speech and communication?
7. List activities that can cause dizziness. Explain what happens in the inner ear to cause this effect.
8. Why does a change in altitude affect the middle ear? How does the body compensate for this change?
9. Explain how the semicircular canals assist in balance.
10. Describe how the ear, the brain, and the muscles work together to maintain a sense of balance and location.

Applications and Activities

1. Using flexible foam material, build a model of the ear. Color-code the areas which perceive sound and those which assist in balance.
2. Research ears in the animal kingdom. Note that all animals have ears, but that they may look different and may be used differently in some animals than in humans.
3. Compare vocal cords to the strings of a guitar. Demonstrate how lengthening or shortening the strings changes the pitch of the sound.
4. Using a computer program that shows how different pitches appear, compare the pitches of environmental sounds. Classify the sounds.
5. Investigate the relationship between sound energy and electrical energy in the function of the human ear.
6. Investigate and report on diseases of the inner ear which affect hearing and balance.

INSTRUCTIONAL GRAPHICS

- COMPONENTS OF THE HUMAN EAR
- HUMAN VOCAL CORD DEVELOPMENT

RELATED RESOURCES

Captioned Media Program

- I Am Joe's Ear #2075
- Hearing #7959
- Understanding Hearing Loss #7870
- Now Hear This #2094

World Wide Web

The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid-safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

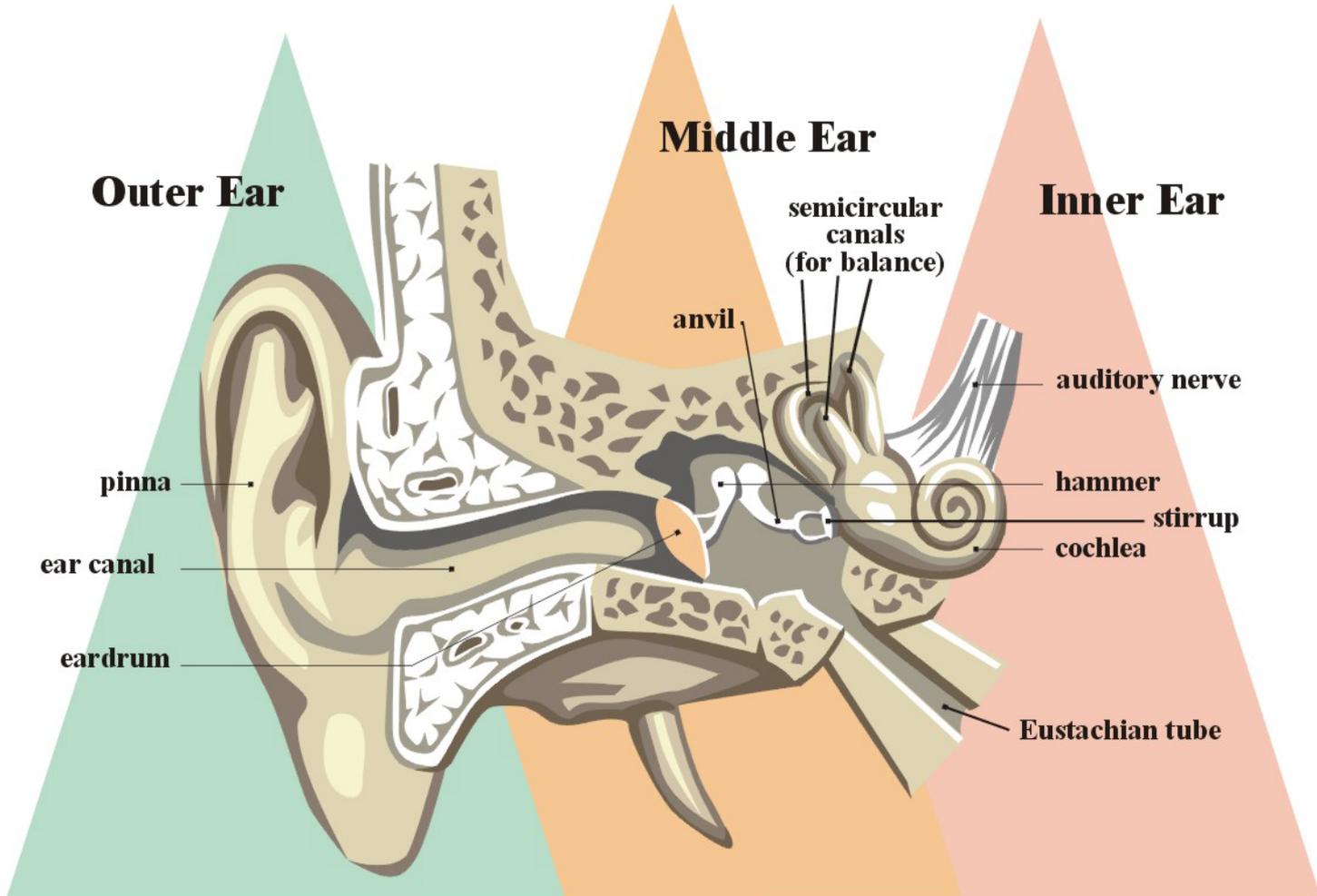
- KIDSHEALTH.ORG FOR KIDS <http://kidshealth.org/kid/>

Get answers to health questions, learn how the parts of the body work, read cool articles and features, enjoy animations and games; just for kids.

- THE EAR INFOSITE <http://www.earinfosite.org/>

Sponsored by the Portland Otologic Clinic, this site covers anatomy and physiology of the ear, balance, common syndromes, and new treatments for problems associated with the ear.

The Human Ear



Outer Ear

Middle Ear

Inner Ear

pinna

ear canal

eardrum

semicircular
canals
(for balance)

anvil

auditory nerve

hammer

stirrup

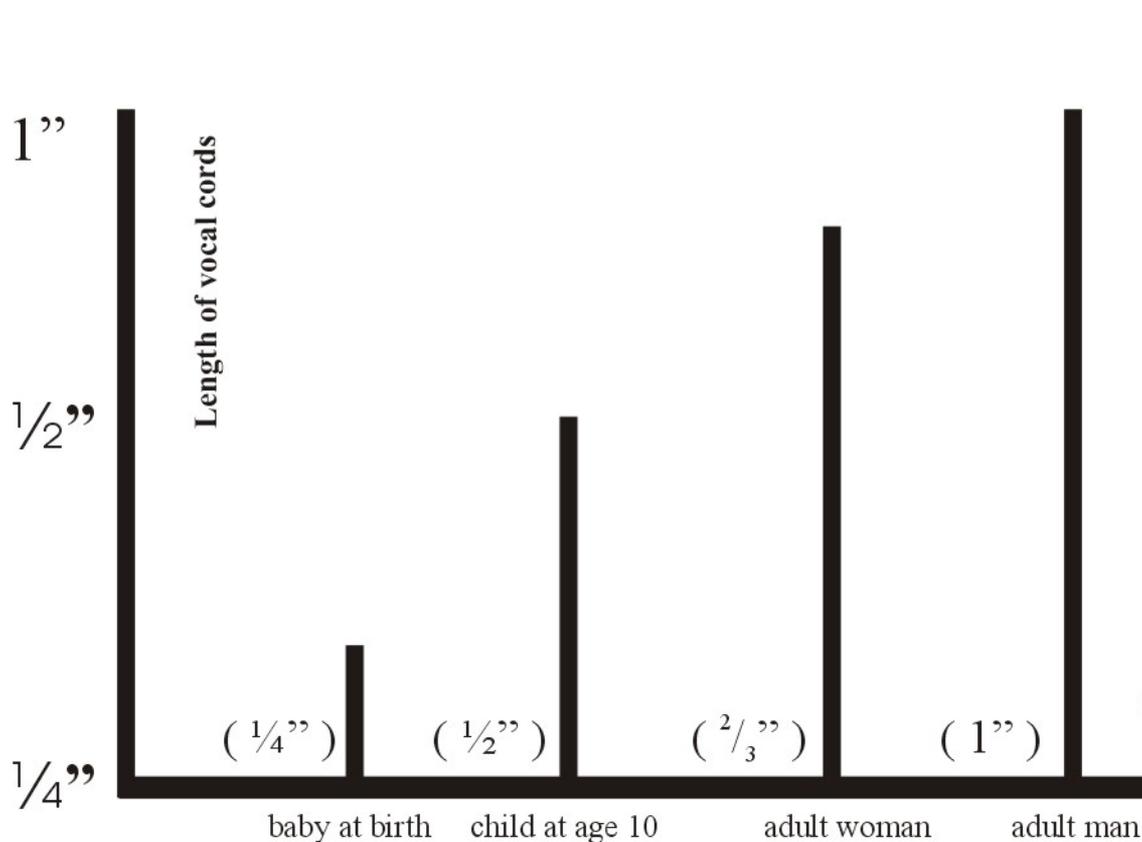
cochlea

Eustachian tube

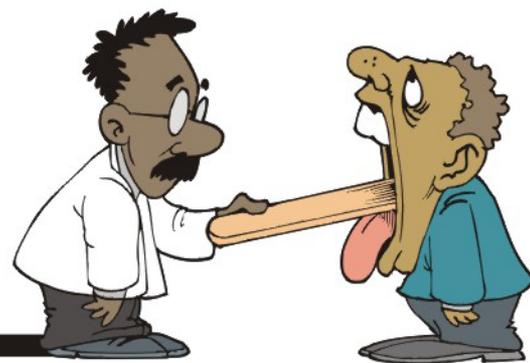
Diagram of the Human Ear

The Human Vocal Cords

This graphically shows the growth of the human vocal cords from birth to adulthood.



Scale
 $\frac{1}{4}'' = 1''$
 $1'' = 4''$





**PLEASE RETURN LESSON GUIDE
WITH VIDEO**

**Lesson guide also available
online at *www.cfv.org***

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