

## Content package for interactive whiteboards – The structure of the ear (ES)

This guideline provides an overview of the content and didactic context of the media in the content package for interactive whiteboards entitled “The structure of the ear” for elementary school. General information on the use and teaching concept of the content packages for interactive whiteboards is provided in the teaching method “Working with a content package for interactive whiteboards,” which is also included in the media package.

### 1 Introduction to teaching this topic

#### 1.1 Motivation for the topic

We perceive sounds in our environment through our sense of hearing. The importance of this sense becomes very clear in traffic, for example, because we usually hear approaching cars before we see them. Many students like to listen to music at high volume on their MP3 players. But continuous noise permanently damages our sense of hearing. Protecting one’s ears and keeping them healthy are therefore part of the curriculum starting from elementary school. The structure and function of the ears are also included in personal, social, and health education (PSHE) at elementary schools.

The media of the content package provide a suitable way of acquainting students with the structure of the ear and the hearing process. The media can be used in PSHE at elementary schools. The content package is designed for a period of about two lessons.

#### 1.2 Media selection

The content package for interactive whiteboards entitled “The structure of the ear” contains 17 individual media.

- **Four images:** One photo of an ear, one image for discussion and two unlabeled graphics, one for the entire ear and one for the entire ear and the brain
- **Three interactive graphics:** “The structure of the ear” with two levels of complexity, “Hear, recognize, and understand speech”
- **Two text documents:** “The structure and function of the ear” (guideline for teachers), “This is how we hear!”
- **Four interactive exercises:** One labeling task of the individual parts of the ear and one matching exercise with the areas of the ear, each with two levels of complexity
- **One worksheet:** “Do you know the parts of the ear? (ES),” with answer sheet
- **One link list:** “The structure of the ear”
- **One guideline** for teachers for the interactive whiteboard content

The media package contains also: One video clip: “Anatomy of the ear”.

### 1.3 Background information for teachers

Depending on the focus of the class, the media can be related in various ways in terms of content and can be used in line with any teaching concept.

The following recommendation on working through the topic consists of the basics and the opportunities for further study:

- Introduction/motivation: Sense organ ear
- Teaching phase: The parts of the ear
- Practical work phase: The hearing process
- Further study phase

Note: The button for calling up each medium is also indicated in the following list of media.

## 2 Introduction/motivation: Sense organ ear

The cover image and a photo of an ear are suitable for an introduction to the topic. Teachers can conduct a brainstorming session with students on the subject of the sense of hearing and write the keywords into the medium by hand. This type of introduction is suitable for all grade levels.

Media



“Listen”



“Sense organ ear” (photo)

## 3 Teaching phase: The parts of the ear

The ear consists of three areas: inner ear, middle ear, and outer ear. The interactive graphic shows a cross-section of the entire ear, which can be used to work through the individual areas. Teachers may choose between two media in advance: one with a simple and one with a complex labeling mode.

### The basics

The simple labeling mode is intended for teaching the basics, since it shows only the most elementary terms. The ear graphic itself can be labeled using the specified labeling mechanism or by hand.

Medium



“The structure of the ear (simple)”

Alternatively to the interactive graphic, teachers can label the two unlabeled cross-sections of the entire ear (with and without the brain) by hand as desired. Interactive elements are not available in this case.

Media



“Entire ear with brain – unlabeled”



“Entire ear section – unlabeled”

The information sheet “This is how we hear!” provides more details on the structure of the ear and the functions of the individual parts. It can be printed and distributed to the students. The video describes the hearing process based on the most important parts of the ear.

Media



“Anatomy of the ear”



“This is how we hear! (ES)”

### For further study:

For in-depth lessons, teachers may choose the complex labeling mode for the interactive graphic. This mode provides more detailed labeling.

Medium



“The structure of the ear (complex)”

As when teaching the basics, teachers can also use the graphics relating to the entire ear.

Media



“Entire ear with brain – unlabeled”



“Entire ear section – unlabeled”

A guideline for teachers describes the functions of the individual parts of the ear as well as the senses of hearing and balance. Teachers can use it to prepare their lesson.

Medium



“Structure and function of the ear (ES)”

## 4 Practical work phase: The hearing process

In a simulation, the students will learn about the sound path (in this case, the spoken word) through the ear to the brain. The simulation stops at certain points, where teachers can call up an explanation of the respective step as needed.

Medium



“Hear, recognize, and understand speech (ES)”

## 5 Further study phase

### 5.1 Exercises

The two interactive exercises that can be worked through on the interactive whiteboard are suitable for testing students' level of knowledge. They can be used at the end of the lesson as an aid to memorization of the material that has just been learned, or for review at the beginning of the next lesson. A simple and a complex variant may be selected in the two exercises. The simple variant tests students' basic knowledge.

In a labeling task, the students should match the terms to the cross-section of the ear.

Medium



“The structure of the ear (simple, labeling task)”

In a matching exercise, the areas of the ear (outer, middle, and inner) are to be matched to the different parts of the ear. The boxes can be filled in by hand or by dragging and dropping the letters.

Medium



“The areas of the ear (simple, matching exercise)”

The complex variant of each exercise is suitable for further study.

Media



“The structure of the ear (complex, labeling task)”



“The areas of the ear (complex, matching exercise)”

## 5.2 Worksheets

The worksheet can be given to students as homework, worked through as a class, or worked through in groups during the lesson. The worksheet “Do you know the parts of the ear?” contains an unlabeled cross-section of the ear and a simple craft project.

Medium



“Do you know the parts of the ear? (ES)”

Generally, all graphics that can be labeled are suitable for creating similar worksheets. However, the graphics can also be used as the basis for short tests that students can take by hand or on the interactive whiteboard.

## 5.3 Further information

Using the link list on the structure of the ear and with instruction by the teacher, students can do a simple inquiry task.

Medium



“Structure of the ear (link list, ES)”