



Unit 6 — Vision, Hearing and Aging Overview and Background for Teachers

Vision and hearing impairments are very common as persons age. Their presence is like a shroud, enveloping the individual and disabling their ability to interact fully with the world and other individuals. This unit is designed to teach students about basic anatomy, function, measurement, and the associated disabilities associated with the visual and hearing systems. The unit follows a parallel structure with the first four lessons devoted to vision and the second four lessons devoted to hearing.

VISION

Lesson 1, “Anatomy of the Human Eye” is an introduction to the basic anatomy and vocabulary of the eye. Overhead transparencies, line drawings of the eye, and glossaries are provided for students to use in learning the anatomy.

Lesson 2, “How We See” is an introduction to the basic processes whereby a visual image is perceived and transmitted to the brain. Worksheets and overhead transparencies are provided for tracing the visual path. Activities are provided to discuss changes that may affect the ability to focus on an object. There are also some fun activities related to optical illusions where students learn they can’t always trust their eyes.

Lesson 3, “Measuring Visual Acuity” introduces students to the underlying concepts of how visual acuity is measured. Central to this concept is the understanding of ratios. Visual acuity is typically reported as a ratio with the distance for the test being the top number and the angle of resolution (in minutes of arc) the bottom number. Worksheets are provided for students to explore changing ratios with changes in distance and letter height. A visual acuity sheet for near vision (ETDRS) is provided for students to measure each other’s acuity at different distances and then graph the results.

Lesson 4, “Living with Visual Impairments” is designed to sensitize students to the problems that may occur with sight in the setting of different eye diseases and conditions. Teachers may either make their own impairment glasses with the students or order them from the source given in the lesson.

HEARING

Hearing impairment is the third most common chronic condition (after arthritis and hypertension) affecting persons over the age of 65 years. Nearly one fourth of elders will report some problem with their hearing. Men have more difficulty with their hearing late in life than women. Unit 6 begins exploring problems related to hearing in lesson 5, “Anatomy of the Human Ear.” This lesson is an introduction to the basic anatomy and vocabulary of the ear. Overhead transparencies, line drawings of the ear, and glossaries are provided for students to use in learning the anatomy.

Lesson 6, “How We Hear” is an introduction to the basic processes whereby sound is channeled and transmitted to the brain. Worksheets and overhead transparencies are provided for tracing the auditory path. Background information on sound waves and sound intensity is provided in this lesson.

Lesson 7, “Measuring Hearing Impairments” introduces students to the underlying concepts of how hearing is measured with pure tone audiometry. Worksheets are provided for students to explore different definitions of hearing impairment and to graph audiograms with data provided to them. These data contrast the audiograms of a younger and an older person.

Lesson 8, “Hearing Handicap” is designed to sensitize students to the problems that may occur with hearing loss. The first three activities illustrate in the classroom the types of difficulties that may occur with speech understanding. Activity 8D is a class activity designed to have the whole class do a survey of hearing handicap in older persons. Data collection forms are provided (in English and Spanish) and each student is expected to survey 5 older adults. The responses are anonymous without any identifiers. The class then pools their data and develops a bar graph to create a frequency distribution of hearing handicap. The prior results of a similar survey are provided as a bar graph: this graph may be used to compare, contrast, and discuss differences between what the class found and what has been previously measured in other groups.

