

Human Eye and Eye Disorders Part 1

Lesson Overview

In this lesson, students will learn about the parts of the human eye and their functions. Students will make pinhole cameras to replicate how the brain processes and responds to sensory information from the eye (*optional*).

Objectives

- Learn how humans receive important information about their surroundings from the sense of sight
- Conduct in-depth research from multiple sources to learn about the parts of the eye and their functions
- Build a model that demonstrates how the brain normally processes the sensory information from the eye (*optional*)

Standards (NGSS and Common Core)

For state specific standards visit edu.zspace.com/activities

Life Science- Structures and Processes

Next Generation Science Standards

- Life Science – Structures and Processes
 - MS-LS1-8 Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

Common Core Connections

- Language Arts
 - RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
 - W.6-8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

Differentiation

- Group students heterogeneously to allow students with a strong command of the English language to assist in reading or interpreting questions
- Provide paper copies of diagrams to students to use as a reference
- Provide a handout with a list of vocabulary terms and definitions that will appear in their activity
- Allow students to provide answers that are handwritten, typed, or verbal
- Work in partners or small groups (younger children could partner with older buddies)

Grade Level: 6th – 8th

Lesson Time: 90 Minutes

Key Terms:

Cornea
Iris
Lens
Optic nerve
Pupil
Retina
Sclera
Sensory receptors

Resources:

Human Eye worksheet
Let's Make a Pinhole
Camera worksheet

Materials needed:

Research center about
eyes and eye
disorders
Center with materials to
make pinhole
cameras (*optional*)
Round containers
Wax paper
Tape
Push pins

Introduction

Students need a prior knowledge of the five senses and a basic understanding of the nervous system. The teacher will explain that they will learn more about the parts of a human eye and their functions. In preparation for the students, the teacher should open the “Human Eye” session in Cyber Science 3D on all stations.

Activity – Human Eye and Eye Disorders Part 1

CENTER 1:

1. Open the “Human Eye” session in Cyber Science 3D.
2. Click on the “Presenter” mode at the top left corner of the screen. This will display a list of slides along the left side.
3. Follow the presentation: Click on the “Play Slides” button to pause the session at the first slide. When you are ready for the next slide, click the next slide on the list. Follow the directions on each slide and explore at your own pace.
4. Using the "Human Eye" worksheet, draw a cross section of the eye and label its parts. Pay special attention to the optic nerve that sends information to the brain.

CENTER 2:

1. Conduct in-depth research on the main parts of the eye and their functions.
2. Record your findings on the chart of the provided worksheet.

CENTER 3 (optional):

1. Make a pinhole camera that replicates the actions within the eye. See directions on the "Let's Make a Pinhole Camera" worksheet.
2. Try out your pinhole camera and answer the questions on the worksheet.

Closing

After the students complete their worksheets and the optional pinhole cameras, the students will discuss the parts of the eye and their functions. They will share their observations about how the pinhole camera replicates the actions within the eye (optional). They will make conclusions about how the brain processes and responds to stimuli from the eye.

Questions for Discussion

1. Could you find the pupil in the eye?

Answers will vary. Sample Answer: When I was looking at the iris, I could see the whole that is the pupil. But I could not pick it up.

2. Based on your observations, how does the pinhole camera replicate the actions within the eye?

Answers will vary. Sample Answer: Both the pinhole camera and the eye gather light, focus objects with a lens, and produce an image that is upside-down and backwards.

3. Can you see if there is no night?

Answers will vary. Sample Answer: No if there is no light, your eye will not see. Even when your eyes adjust to the dark, there is some light.

Δ Investigate Further

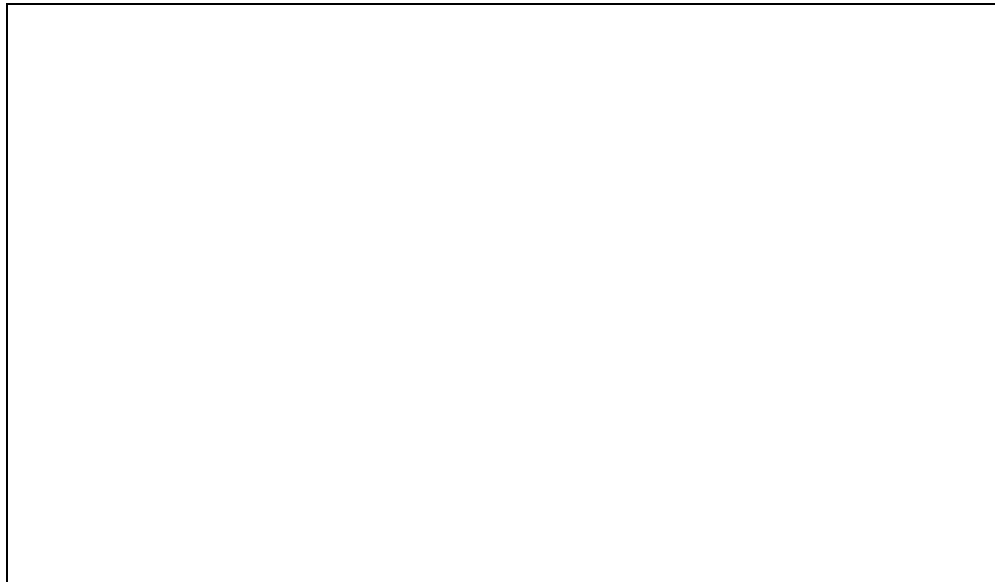
Follow-up Activity: Human Eye & Eye Disorders Part 2

Extension Activity: Students could conduct various experiments about the eye and the sense of sight, for example pupil size, blind spots, depth perception, afterimages, and optical illusions, to learn more about how the brain normally processes and responds to sensory information from the eye.

Students could research the compound eye of insects and compare its parts/functions with the human eye.

Human Eye

Directions: Draw a cross section of the human eye and label its parts.



Directions: Research the parts of the eye and their functions.

Part of the Eye	Function
Cornea	
Lens	
Sclera	
Iris	
Pupil	
Retina	
Optic Nerve	

