

Assignment Discovery Online Curriculum

THE EYE: STRUCTURE AND FUNCTION

Curriculum Focus

Life Science

Grade level

6-8

Duration

Two or three class periods

Objectives

Students will

- research the diversity of eyes online and in library materials;
- report on and illustrate the eyes of animals;
- choose, write a description of, and illustrate an eye for the class to identify.

Materials

- Computer with Internet access
- Writing paper, drawing paper, and poster paper
- Pens, markers
- Scissors
- Glue

Procedures

1. Review with students what they learned about the human eye, including its structure (e.g. such parts as the cornea, pupil, and retina), how the eye protects and cares for itself, and how it receives visual images.
2. Tell students that, having learned about the workings of the human eye, they will explore the diversity of eyes in the animal kingdom. Students will contribute to a group report and present individually a quiz on this subject.
3. Direct students' attention to two Web sites:
 - <http://www.newton.dep.anl.gov/natbltn/natbltn.htm>
 - <http://www.ebiomedia.com/gall/eyes/eye1.html>.
 - Tell students they will give group reports to the class based on the Eyes of Animals essay at the first Web site. They will use the second Web site to explore the diversity of eyes and get ideas for further individual research in the library.
4. Divide the class into five groups. Have them go to the following Web site: www.newton.dep.anl.gov/natbltn/natbltn. It features Nature Bulletins from the Forest Preserve District of Cook County (Illinois). Scroll down to number 403, Eyes of Animals. Print out copies of the essay and distribute them to each group. Assign each group a paragraph. Instruct the groups to read their paragraphs

carefully. Then have them cut out their paragraph and glue it onto the center of a piece of poster paper. Tell them to decorate the area around their paragraph with illustrations of the animals and behaviors cited in the paragraph.

5. When the groups have finished illustrating their paragraphs, have them read their paragraphs to the rest of the class (in the order in which they appeared in the essay) and hold up their illustrated posters. (Students may find it easier to read from a printed copy of the Web site's essay rather than from the paragraph on the poster.)
6. If possible, post the illustrated paragraphs in order on a bulletin board titled "The Eyes of Animals."
7. Now tell students that they are going to do individual research and write a paragraph on the eye of an animal of their choosing. Give them time to browse the Web site www.ebiomedia.com/gall/eyes/eye1. Encourage them to check out the "Eye, Eye, Eye, Eye" gallery and the link to "Whose Eye Is It Anyway". They may want to browse through the questions and answers at the bottom of the page and explore such links as the Eye to Eye Annotated Web Link Set (AWLS).
8. Once students have picked an eye they want to "look into," tell them to research the eye and the animal it belongs to online, through AWLS (see Step #7), and in library materials. Tell students they must write a paragraph about the chosen eye. They will then read their paragraphs to the rest of the class to see if the other students can guess which animal's eye is being described. Advise students to include in their paragraphs such information as how the animal makes a living, how the eye serves the animal's particular lifestyle, and any special properties or characteristics of this eye.
9. Have students illustrate their paragraphs with a drawing, or, if available, a photograph of their animal's eye from a magazine or newspaper from home.
10. Have students read their paragraphs to the class and show their illustrations and see if the rest of the class can guess which animal's eye is described. If there is room in the classroom, post the students' illustrated paragraphs on a special Eye Chart or Eye Gallery bulletin board.

Evaluation

Use the following three-point rubric to evaluate students' work during this lesson.

3 points: Students demonstrated proficiency in using the Internet as a research tool; worked cooperatively in their groups to present a report on their paragraph of the essay on animal eyes; researched and wrote thorough quiz paragraphs on an eye of their choice.

2 points: Students demonstrated an understanding of how to use the Internet as a research tool; worked cooperatively in their groups to present a report on their paragraph of the essay on animal eyes; researched and wrote on-grade quiz paragraphs on an eye of their choice.

1 point: Students demonstrated little skill or interest in using the Internet as a research tool; had trouble working cooperatively in their groups to present a report

on their paragraph of the essay on animal eyes; had difficulty researching and writing a quiz paragraph on an eye of their choice.

Vocabulary

pupil

Definition: The circular opening in the center of the pigmented iris of the eye, through which light passes to the retina

Context: Our pupils tend to contract in bright light and dilate in the dark.

reflection

Definition: The phenomenon of light or sound waves being thrown back from a surface; the act of reflecting, or turning or sending back

Context: As Shakespeare wrote, "The eye sees not itself, But by reflection...."

retina

Definition: The light-sensitive membrane that lines the back wall of the eyeball and is composed of several layers, including one containing the rods and cones.

Context: The retina receives an image formed by the lens and converts it into chemical and nervous signals that reach the brain by way of the optic nerve.

rods and cones

Definition: The elongated cells or elements of the sensory layer of the retina, some of which are cylindrical, others somewhat conical

Context: The structure of rods and cones in the eyes of owls gives these nocturnal birds of prey excellent night vision.

Academic Standards

This lesson plan addresses the following *National Science Education Standards*:

- Life Science: Structure and function in living systems

Credit

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