

## **Inquiry A: The Eyes Have It**

### **A review of functional parts of the eye and the neurological pathway from eye to brain.**

In this activity, students engage in a review activity designed to connect the names of various structures of the eye and visual pathway to the function of each. The intent here is to get them thinking about functions before attempting to apply the information to related scenarios and/or problems. Assume there is a class size of 20 students.

1. Divide the class into pairs of students, e.g., 10 pairs. Each pair will take a stack of 15 3x5" cards.

A list of the following structures is then given to each pair of students:

*cornea, pupil, iris, suspensory ligament, ciliary muscle, retina, central fovea, photoreceptor cells (rods & cones), optic disc, optic nerve, optic chiasma, thalamus, primary visual cortex of cerebrum, visual association area of cerebrum.*

Each pair will divide the list in half (7 each). Each student will then take his/her list and neatly copy the name of the structure on one side of the card and also very neatly print the function of that structure on the reverse side. Before the next class meeting they must locate and be able to show their classmates a visual representation of each of these, i.e. bring in a photograph/drawing/scanned image etc. (may be taken from a textbook, library book, internet, magazine, encyclopedia) which may be used to represent each of these structures. Students will use the reading material assigned and class notes to complete this assignment. To save time it is possible to assign this first series of steps to be done prior to the first in-class meeting, depending on the time available in class and student access to the resources needed. To save time the teacher may also assemble the images and make them available to students. Ideally, each pair of students should be able to see the graphic representation of each of the structures they are learning so they can make a visual connection to each of the parts of the eye and visual path.

2. Once the cards have been completed and the graphics gathered, allow no more than 10 minutes for students to share and review them among their group one final time. Organize the class such that 2 pairs of students are sitting together as a group, keeping the original pairs together. Give each new group of four (5 groups altogether) 5 minutes to compare graphics, cards, definitions, etc. within the group. Emphasize to the students the expectation that each of them really know this material and that they should do all they can to be sure each of them are well prepared to answer the teacher's questions.
3. Tell the class that each group (of 4) will now have an opportunity to show what they know about the eye by taking turns answering questions about the material. It is the teacher's option to decide if the group should be allowed to use its notes. In general, experience suggests that allowing students to use notes slows the pace and is not necessary if all members of the group are allowed to collaborate during preparation.

The classroom teacher should have a prepared a list of questions to be read aloud to assess the assembled groups' factual recall and understanding. This will serve as

### **TxCETP Course Component: The Working Human Eye**

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progressive assessment, applying a “quiz show” atmosphere to the activity. A list of sample questions which could be used can be found at Appendix A. By acting as the quiz show host, the teacher will have to decide how much time to spend on the activity before beginning, but ten minutes should be more than adequate to make the necessary assessment. Lest ye lose sight of the goal here, it is to familiarize the students with the nomenclature and solidify connections between the names we call these things and generally what we expect them to do under normal circumstances in facilitating vision.

Depending upon the physical configuration of the classroom, there are a variety of ways in which this activity can be carried out. Each group of four could be given a team name to set them apart from the others and remain seated together in one area of the room. The group then assigns an order in which each student of the group will attempt to answer the questions, i.e. a kind of “batting order.” Once the game begins with the reading of questions, no discussion between group members will be allowed; therefore, it is important to emphasize that each group must do its best to see that all of its members are well prepared to answer potential questions. The “quiz show” host reads the question to the class. The group member first on the “batting order” list for each working group writes their answer correctly first, but without the help of their teammates, on the blackboard, overhead projector, etc. but covered until all have finished writing a response. A side benefit of this activity is that spelling can also be monitored. The teacher can also monitor the success of the other groups in answering correctly as well. A point is given to the first group’s “contestant” to answer each question correctly. At the end of the allotted time the number of correct responses is tallied and the best group(s) is rewarded with recognition for their achievement. Everyone loves honor and praise, but let’s face it, sometimes a tangible reward is called for. At the teacher’s discretion, age-appropriate prizes, such as candies, pens, pencils, stickers, trading cards, free homework coupons, etc. can be given as rewards to the winning group members.

At the conclusion of this example a dynamic assessment is made to determine if students are adequately prepared to progress on to the next activity. Assuming this is so, students would then progress to activity Inquiry B, time permitting.