Eye Can Learn About Physiology through PhUn Week

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PhUn week in San Antonio (TX)
Physiology Understanding (PhUn) Week, a national science outreach program of the American Physiological Society provided a great opportunity to deliver innovations in teaching into the classroom in San Antonio. This year, through a collaboration between the Optometry school and the Biology department at UIW we developed activities to introduce and enhance middle school student’s understanding of the eye physiology. The schools targeted were Driscoll Middle School (NEISD) and ET Wren Middle School (EISD). Because the city of San Antonio has a high prevalence of vision problems, some of them which may be preventable with proper nutrition, we included a section to connect nutrition, safety and eye health.

Activities
We started with the introduction of what is “Physiology” and proceeded to stations with hands-on activities.
Three stations were set up and groups of 6-8 students rotated during 10 minutes at each station:

Station 1. Anatomy of the eye: Dissection of a cow eye and sheep brain. Students held the organs, checked the consistency and orientation of the different parts of the eye, and located the connection between both organs.

Station 2. Physiology of the different eye components: Explanation of the function of the cornea, iris, lens and retina with clinical correlates for each structure such as color blindness, presbyopia, refractive errors (myopia, hyperopia), glaucoma and diabetes. Students interacted with the eye models with and without the muscle inserted and the orbit placement. We used videos, slides and pictures to address the function of the eye components.

Station 3. Hands-on physiological activities: With simple exercises we showed applications of eye function.
   a) Blind spot: where is the lost image?
   b) Pupils response to light: how do we control illumination?
   c) Depth perception: how far is that object?

Nutrition, safety and the eye
Wrapping up the session we provided slides with basic information about eye nutrition and safety and used quiz games to learn facts about eye safety and health.

Outcome and Feedback
• A total of 460 students from 7th grade participated in these activities.
• Ten minutes was not enough to satisfy student’s curiosity for understanding the basics of eye physiology.
• Students were inclined to ask questions regarding their families and their own health issues, which made it easier to engage them in the subject.
• Finally, students were able to answer some basic questions about the eye physiology.

Scientists-Volunteers team
• Drs. Amit Aurora, Lourdes Fortepiani, and Jessica Ibarra
• Volunteers: James Martinez, Jordan Scofio, Lauren Delgado
• Teachers: Anne Joy and Amy Calvet (Driscoll); Cynthia Ritz and Esperanza Soria (E.T. Wrenn)