Assistive Technology Spotlight – Spring 2013:

Eye Gaze Computer Access

Greetings from the AT Spotlight! I hope this column finds you well and nearing the close of another successful school year. I'm sure that many of you are in the middle of state testing and IEP/eligibility season at this moment (as am I), so I encourage you to take a five-minute break and read this as a form of respite. While you are taking this deep breath I hope that you will learn something along the way too that you can use either in what's left of this school year or next!

I have chosen to focus on eye gaze technology in this quarter, specifically as used in computer access for individuals with disabilities that limit physical dexterity resulting from Cerebral Palsy, Rett, ALS, Stroke, or TBI. Recently I have been introduced to eye gaze equipment created by the Tobii corporation (www.tobii.com), the PCeye in particular. This device is a stand-alone sensor bar unit that can be attached to any Windows PC, but can be calibrated/individualized to meet a particular user's needs. Once installed and calibrated, the user can simply use their eyes as the mouse to move the cursor around the screen and make selections. The PCeye can be used in tandem with switches for individuals that have the physical ability to "click" selections using a switch or it can be calibrated to "click" on certain items when an individual's gaze lingers on an icon or button for a pre-determined amount of time. This technology opens computer access to individuals with significant physical limitations (but with eye control), allowing them to surf the Web, check and compose email, compose Word documents using an onscreen keyboard, etc. PCEye can also be used as an interface with Tobii's communication software as well, allowing individuals to access a sophisticated communication software suite exclusively with eye gaze. If you would like to see this device in action, as well as other device demonstrations, Tobii has a YouTube channel. Visit this YouTube link for a nice snapshot of how this assistive technology can be used. Check out this link to see a more in-depth description of the PCeye go (for laptops and small PC monitors) and PCeye Pro (for larger monitors). Both should be available to ship this year.

As amazing as this technology is, there are of course some considerations that should be taken into account before investing the roughly $4000 this device costs. A suggested checklist to evaluate the appropriateness of this technology for a particular student/individual might include:

- Is the student easily distracted?
- Does the student attend to photos/images?
- Does the student have limited or extraneous eye movements?
- Is the student able to visually track an object?
- Does the student wear glasses (and what is the diopter)?
- Are there concerns regarding the student's visual acuity?
- What are the student's positioning needs?
- Does the student have frequent/limited head movement?

These considerations are meant to be a starting point for evaluating the appropriateness of utilizing eye gaze assistive technology with a student/individual under your care. It should of course be supplemented and individualized on a case-bycase basis.

For those of you (like me) who are interested in the science of the human eye and the engineering behind eye gaze technology and how it works, I'd suggest that you visit this website. Here you will find explanations and videos detailing eye gaze technology and how companies like Tobii create these devices. Well, I hope that this column and the associated links provided you with a few minutes of diversion from the rush of the end of the school year and maybe some ideas to implement next year. If you have any questions or comments about using eye gaze assistive technology for computer access, please don't hesitate to contact me at matthewn@vt.edu. I'd also love to hear about your successes and failures if you purchase and use one of these Tobii devices or something similar. Have a great summer! -Matt