The B.E.A.T.

Bulletins in Education and Assistive Technology

Heather's Freedom

When she introduces herself to classmates in her online courses, Heather Baker, 28, begins by explaining that she is able to access the internet thanks to EagleEyes. While her classmates may not understand the EagleEyes technology, they can nonetheless appreciate her achievements; Heather has been disabled since she had a stroke at the age of 12, altering her movement and language skills. Participating in on-line adult education classes offered by “Barnes and Noble University” is thus a significant accomplishment.

As with most users, Heather began her journey with EagleEyes using many of the custom programs – Eye Paintings, Aliens and the like. EagleEyes gave Heather a new outlet to create and play games without the need for hands guiding her movements. These activities also helped Heather to increase her voluntary control of the mouse pointer as she chased moving targets across the screen using EagleEyes. Little by little Heather has developed enough control to use the system for her academic and personal pursuits.

Right now, Heather enjoys using EagleEyes to access the internet. Her favorite activities include searching for music or video clips, sending e-cards or using the Clicker 4 program to compose messages to send via e-mail. Her next project will be to take the information gleaned from these experiences and use it to present activities to her peers in social settings.

“Heather’s journey has been a long one, but well worth the effort,” says Amy Penniman, of the South Shore Educational Collaborative in Hingham, MA. “Some stages were more painstaking than others, but, looking back over the process, the rewards have been many. The system offers a unique freedom which is not commonly held by folks with these medical needs—it must be wonderful to create and explore all on your own when such an experience has been absent for a period of time.”

Heather’s next challenge is fighting the fatigue that accompanies the intense concentration her computer use often demands. Heather wants to build up her stamina for the intense visual focus required for longer periods of computer use.

Heather spends many of her sessions previewing educational software for younger students and evaluating its possible uses for others using EagleEyes. Creating lists of commercial software that work well with EagleEyes has proved to be very useful. Heather enjoys being able to work in the role of evaluator and being able to make contributions back so she can help others.

Heather looks forward to each new challenge that is made possible by the freedom offered to her by the EagleEyes system.

A new version of the Eagle Applications software, including popular programs such as Aliens, Paint, and Staggered Speech, is available for free download at http://www.eagleeyes.org/EagleAppsInstaller.exe or on CD. These fourteen programs are specifically designed, most by Boston College students, for use with EagleEyes and Camera Mouse.
New Technology Under Development: Eye Tracker Mouse

The EagleEyes Project is developing a new system for controlling the mouse pointer through eye movements. The Eye Tracker Mouse is a computer program that controls the mouse pointer based on readings from the commercially available Applied Science Laboratories (ASL) R6 eye tracker. The ASL R6 measures eye movements using the pupil/corneal reflection technique. The Eye Tracker Mouse currently is being tested in our Fulton Hall lab. The underlying hardware costs over $25,000 and was purchased through a grant from the Boston College Academic Technology Fund. Donald Green, former student, and founder and principal of Mekinesis, Inc., is overseeing the software development. For more information, or to give the system a try, contact Prof. Gips (gips@bc.edu).

The Opportunity Foundation Moves Forward

The Craighalbert Centre in Cumbernauld, Scotland and the Jordan Valley School in Midvale, Utah, were both recently gifted the EagleEyes and CameraMouse technologies by the Opportunity Foundation of America (OFOA).

On May 20, 2005, a Press Conference was held at the Craighalbert Centre, and Boston College Professor James Gips, developer of the technologies, demonstrated both systems. Debbie Inkley, Founder and Executive Director of OFOA, announced the initiation of an international network of training centers that educate young children and adults with disabilities.

At the Press Conference, Dr. Lilimor Jernqvist, Centre Director said, “I am very proud that the Craighalbert Centre has been chosen by The Opportunity Foundation of America and Boston College to be part of the network of training centers. It is a crucial element of our own learning community consisting of the children, staff and parents that we can work together to develop theory and practice through the use of pioneering technology. This project epitomizes the Scottish Executive’s call for development and sharing of expertise and puts Craighalbert’s expertise at the forefront of computer assistive technology on a worldwide basis.”

On June 17, 2005, the Jordan Valley School in Midvale, Utah, was presented with the EagleEyes and CameraMouse technologies by OFOA. John Gardner, principal of Jordan Valley stated, “EagleEyes has the potential of changing the world for so many people. And not only the children, but their families.” Britt Allen, a Salt Lake Community College student and OFOA volunteer, gave an outstanding EagleEyes demonstration for parents, therapists, teachers and government agencies.

A “Train the Trainer” seminar for EagleEyes and CameraMouse was also held at Jordan Valley School on June 16, 2005. The training was facilitated by Maureen Gates and Linda Carfora from the Boston College Campus School.

The Opportunity Foundation recently has signed a licensing agreement with Boston College to manufacture and distribute the miniature EagleEyes boxes. The boxes were designed by Professor William Ames of the Boston College Computer Science Department. The new EagleEyes box runs off two 9-volt batteries, connects to the USB port of a Windows notebook or desktop computer and has the functionality of the previously used $6,000 system. It acts as an eye-controlled mouse replacement for all standard Windows software and can travel with the person on the wheelchair as an input device to a notebook computer.

The first EagleEyes boxes have been manufactured by OFOA and are in the process of being distributed. The Boston College Campus School; Goodwill Columbus in Columbus, Ohio; and United Cerebral Palsy in Salt Lake City, Utah also will be part of the international network of training centers.

Children and adults with severe disabilities will have the opportunity to be evaluated and trained on EagleEyes and CameraMouse at no charge. Weekly training will be encouraged at all locations. The objective of OFOA is: to provide EagleEyes and CameraMouse systems to schools in the US and the UK serving children with special needs and to make both technologies available to individuals and families who make a commitment to utilize the systems.
“See I Told You He Was In There”

The BEAT recently had a chance to talk to Kelly Kooharian about her son Anthony and the EagleEyes system.

What kind of illness / disability does your son have?
Anthony has a genetic disorder called metachromatic leukodystrophy. He was diagnosed when he was 2½. Anthony progressed relatively normally from birth to one year. At one year, he was doing all the things one year olds do except he wasn’t walking independently. By 18 months, when he still wasn’t walking, we had him evaluated. At this time, he was still talking, eating, playing with his toys (he loved Thomas the train, puzzles, coloring, play dough, playing with race cars), and walking with assistance (holding his hand). By the time he was 2 years old, he was experiencing declines in his overall strength. He was having a harder time walking and was not able to walk as far and was becoming more unstable. At this point, we had moved back to MA so that he could be evaluated at Children’s Hospital in Boston. When he was diagnosed in November of 1994, Anthony could no longer pull himself to standing, and cruise along furniture. He could, however, still talk (and he talked a lot!), color using crayons and markers, play with his toys. To move about, he went back to crawling. When Anthony turned three in May, he entered a period of rapid steady decline. He lost his ability to crawl, eat independently, speak. He became essentially paralyzed. It was also at this time, he began having seizures. By November of 1995, Anthony was a patient of Hospice and it was not expected that he would live to Christmas.

How is Anthony doing now?
Since 2000, Anthony has been relatively stable. He is extremely frail and tires quickly and is very susceptible to respiratory infections. But he has school every day (at home) for four hours. He has two wonderful tutors. He follows a normal grade 7 curriculum. He loves playing and being home-schooled with his 9 year old brother, Sam and 7 year old sister, Madison. He adores his 2 year old sister, Anna.

How did you first hear of EagleEyes?
We first heard about EagleEyes though a previous tutor who had seen a special on TV about the system. We didn’t know what to expect because we unfortunately did not see the special and we weren’t online at the time so we really had no idea what EagleEyes was all about. I was forever telling people that he spoke with his eyes. Now they can see that he really does!

What has your son been working on with EagleEyes?
Anthony spends approximately three to five hours per week on EE. He uses it along with Clicker Software to share feelings, make choices, and answer questions. When using the Internet EE enables Anthony to explore different interactive websites. For example, when studying Africa, we used a National Geographic website that had an interactive map of one man’s expedition through Africa. With EE, Anthony was able to select different checkpoints on the map and read about that area of Africa. With EE and the Internet, Anthony chooses graphics and pictures to insert in documents or projects. For instance, when studying animal classification, we went to the AltaVista website and Anthony chose pictures of animals for a poster he made.

What have you learned about your son that you would not have known without EagleEyes?
Well I’ve always known Anthony enjoys slapstick humor. He’ll smile or even giggle if someone trips over something or stubs a toe and says…….! He thinks that that’s pretty funny. I can imagine from where he’s sitting or lying as the case may be, it must be! But on EE he can make his own goofs. For instance, when he’s done doing something using his Kid’s Pix, he loves to blow it up (there’s a button that does that) and sometimes I think he does it on purpose even when he’s not quite done. His way of saying that’s enough.

Do you have any stories about your son using EagleEyes?
I think to most unique story or at least the one that really stands out to us is Anthony’s first time using EagleEyes in 2000. It was the first time in 5 years that he was able to do something completely independent. He immediately was able to use the system. He was painting all over the place, blowing up aliens left right and center. I remember thinking as he was doing a shape sorting game and a matching game like concentration “See I told you he was in there.” I never needed any proof that Anthony was still here but it does become very tiresome and frustrating to have to explain this to others. As time has passed I feel less the need for people to “believe” that Anthony is conscious of his environment. In fact, I don’t think I really care anymore. I love and look forward to what Anthony will do today with the help from EagleEyes. EagleEyes is another way Anthony can express who he is.
I was a bit confused when I was given the opportunity to write the BEAT. Why would I be asked to write a newsletter on computer technology for the disabled? I have no background in technology and only limited experience working with the disabled. While I had a background in journalism, I wasn’t sure I had enough expertise to write the BEAT. As time has passed, I no longer question how or why I got placed. I am only grateful for the experience.

Graduate students can often get caught up in passing the next test or wondering where we will work post graduation. It’s easy to forget about what’s really important. EagleEyes has brought me back to reality when I needed it most.

One of my first assignments was to see a student using EagleEyes in the Campus School. When I knocked on the EagleEyes classroom door, I had no idea what I was in for. Maureen Gates, EagleEyes teacher, answered the door and immediately began speaking about the student in the room and what she was working on. I have always been told that I have a lot of energy, but Maureen has me beat by a long shot! She tirelessly jumped up and down encouraging a little girl to pop a balloon in that day’s EagleEyes software. When the student finally popped the balloon after many attempts, I thought Maureen might burst. Maureen was so thrilled, the child couldn’t help but giggle in appreciation. In fact, I couldn’t help but giggle in appreciation.

Maureen has a selfless devotion to the EagleEyes program, and more importantly, the kids. When Maureen talks about Mike Nash’s accomplishments her eyes sparkle—the student’s accomplishments are Maureen’s accomplishments. She is their advocate, their friend, and a selfless companion. Going forward, I hope to emulate her passion for her profession and her empathy for the struggle of others. She has shown me what it means to truly care for others and I will miss our visits.

I also came to understand true love exists on many levels. Sometimes true love comes in the form of a romantic relationship like the one between Laura Mazor and Peter Brandano in the Winter 2004 BEAT. But there are many other forms of love that are less celebrated, although nonetheless important. In the past years I have interviewed numerous parents about their disabled children’s use of EagleEyes. These parents have demonstrated commitment, determination and vigor in pursuing every possible avenue to aid their children. Few recognize the demands of raising a disabled child; parents routinely give up sleep, free time, and resources to see that their child participates fully in the world around them. These parents continue to make these sacrifices without a complaint. I have learned how selfless and courageous love can make one and what it means to be a parent.

Finally, and most importantly, I have learned from the children in the EagleEyes program. There have been days where I thought a B on a test might just be the end of the world. Some of those days I have ended up on EagleEyes assignments, watching students struggling to master “the wires” so they might communicate. I found myself inspired; if these young children have the courage and determination to persevere despite overwhelming obstacles, maybe I could soldier on in that day’s academics. Sometimes children are the teachers.

They say that everything happens for a reason. As I get older, I am increasingly aware that things that appear to be unrelated to your life are actually those that become the most relevant. The EagleEyes program has exposed me to courage, determination and everyday heroes. Without the seemingly nonsensical assignment two years ago, I would never have met some of the most exemplary people in my life. The experiences I have had in the EagleEyes program will continue to inspire me as I move from Boston College to the world beyond.
EagleEyes a window to the mind
Device lets the severely disabled express needs, ideas and more

By Jennifer Toomer-Cook
Deseret Morning News

MIDVALE — A new technology is offering a window into the minds of children with severe disabilities, and Jordan Valley School is the first in the United States to receive it.

The Jordan District school for students with severe, multiple disabilities is one of four in the world to receive donated EagleEyes technology: an eye-controlled computer that basically gives people with severe disabilities a way to express needs, desires, ideas — even draw, play video games or explore foreign languages.

"It's just really neat to see the kids that you never think would be able to communicate at all — or maybe 'yes' with one blink of the eye, 'no,' with two blinks — to be actually able to carry on conversations by using the computer," said Jordan Valley principal John Gardner, whose school demonstrated the technology for parents, therapists, teachers and others Friday.

"It's given us a lot of hope for a lot of our kids."

EagleEyes was developed in a Boston College partnership with the Salt Lake-based Opportunity Foundation of America. Only a handful have been created and donated to Jordan Valley and Craighalbert Centre in Cumbernauld, Scotland. The Boston College Campus School in Chestnut Hills, Mass., and Goodwill Columbus in Columbus, Ohio, also are scheduled to receive them.

The technology was demonstrated Friday by Britt Allen, a Salt Lake Community College student who punches words into a computer to speak.

The technology is about the size of a paperback novel. It reads Allen's head and eye movements through electrodes, then translates them into a cursor's movement across a computer screen.

At first, EagleEyes is used for fun. A cursor might act as a paintbrush, tracing the eye's movements on the screen to artwork that can be printed out and hung on the fridge. Or, it becomes a scope through which to blast space aliens.

After about a month of play, users begin more solid communication. They might be asked to focus in on a box that states "I want" and then select a picture, such as ice...
cream, which they then actually receive as a reward. A long gaze acts like the click of a computer mouse; settings can be adjusted to meet individual needs or capabilities.

From there, students might progress to communicate more complex needs, such as a request to shift in their wheelchairs or to go home. They also can visit Web sites, such as Weekly Reader or National Geographic, explore world languages or even write letters — the first for one student being: "Happy Father's Day, I love you."

An EagleEyes GED test is being developed. Researchers also are examining the possibility of electrode-free, infrared technology.

About half of Jordan Valley's 230 students could benefit from EagleEyes, assistant principal Wendy Bills said. Student Cameron Olivares already is on his way. He has been using the technology a couple of months, and particularly enjoys the space aliens game. "This since has empowered him to know he can make his own choices," foundation board member Ron Williams said.

The foundation hopes to continue donating EagleEyes technology to schools for students with severe disabilities, and later take parents' requests, executive director and founder Debbie Inkley said. "This has the potential of changing the world for so many people," Gardner said. "And not only the children — but their families."