Computer use in an inclusive setting for a pre-school child with cerebral palsy

by Dorothy Laufer

Source: The Catalyst, Spring 2001, Volume 17, #3

Computer specialist Dorothy Laufer has recently had the opportunity to work individually with a young child with cerebral palsy. John (not his real name) has the benefit of both an augmentative speech class and an inclusive pre-school, and he relies heavily on assistive technology. In the following article, Dorothy shares her excitement as John gradually blossoms into one of the most enthusiastic and capable children she has ever taught. The simple activities she suggests could easily be adapted for use with other software, and with other children.

John is four years old. He has cerebral palsy and goes to a school that is located in a rehabilitation center. He gets around in a wheelchair and has limited hand movements. John is able to place his fist on the pictures on his communication board and enjoys using his communication book to tell his news to the adults who work with him. He also has very clear yes / no answers, which he gives by nodding or shaking his head. John's school day is spent in an augmentative speech class in the mornings and a Pre kindergarten class in the afternoons.

John has a head switch, which he uses to operate some toys, a computer and a voice output device (allowing him to take part in activities in his class). John has used the computer with some simple cause-and-effect software that can be operated with a single switch. This year we have decided to explore the idea of using the computer as a learning tool for John: what activities can he do on the computer that would allow him to take part in classroom interactions, assignments...etc.

The software that we are using in this exploration is Broderbund's *KidPix*, regular off-the-shelf software that can be used for many educational and creative activities. *KidPix* is normally used with a mouse or trackball, but we have adapted it using *Discover:Ke:nx*, by Don Johnston. Adaptive
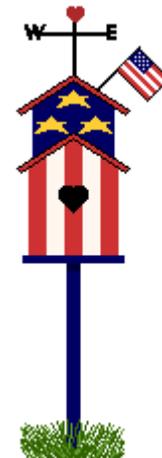
Inside

hardware that can be obtained from Discover lets you prepare "arrays" that allow for alternate access to the computer. This means that software that is normally operated with a keyboard or mouse can be operated using a switch instead. To do this it is necessary to spend a bit of time preparing the alternate access, which we shall refer to as arrays. The instructions that come with *Discover* explain how to prepare these arrays:

We prepared two kinds of arrays for John. I will outline them below and then describe the activities he did with these arrays:

1) *Single Switch*: using a switch you can stop / start the dragging of a pencil or graphic across the screen.

2) *Simple scanning arrays:* Three different ones as shown below:

a) When you click the switch 4+ ARROWS appear on the screen (up, down, right, left). As the scanner (whose speed can be adjusted) touches each of the arrows, a voice speaks the words: UP, DOWN, LEFT, RIGHT. The user simply hits the desired one and controls the movement of the mouse.

b) Same as above, but in addition to the 4 directions we have added 4 colors.

c) A more complicated scanning array that allows you to first scan 4 graphics, letters or symbols; move the one you select up, down, left or right; and finally, stamp it where you wish to leave it. You can quickly change the speed of the scanner. John started at quite a slow speed; now, after less than 3 months, he is comfortable with a faster moving scanner.

Single Switch Array: a counting activity in which the user counts by pressing a switch

I placed a number on the screen and asked John to stamp that number of items on the screen. Prior to this, John has never had the opportunity to count out objects. He was thrilled to be able to do this and demonstrated that he can count numbers less than 5 (he is only 4 years old at this time). This activity gives John the opportunity to practice 1:1 correspondence. We will vary the counting exercise by asking him to watch me stamp a number of objects on the screen and then place the number. To do this he will have to use a scanning array.

Simple Scanning Array: up, down, right, left maze

I prepared the maze, and John's task was to connect the TV to the house, without going into the black areas. When John hit the switch, he saw (and heard) the scanner touch each of the directional arrows. When he pressed the switch, a line was drawn in the direction he chose. Once the line was being drawn, another press on the switch stopped the line. Another switch press brought back the direction cues. In his early attempts he did go into the black

areas, and then had to stop and change direction to get out of it. With each attempt he improved. In the printout you can see that when he went into the black area, he stopped and backed out of it… This activity gives John opportunities to predict, plan, execute, evaluate and correct.

Using a simple scanning array to connect the TV to the house

This activity uses same scanning array as the maze, with the addition of 4 colors. Using the 8-item array John was able to make the line drawn by the pen move around the screen and select a color. This is the first time John has ever controlled a drawing pencil. He enjoyed the activity very much. I noticed that this could be done with 2 switches. The activity done by 2 people has some interesting possibilities, which we will explore.

Using a "drawing pencil" to create a design
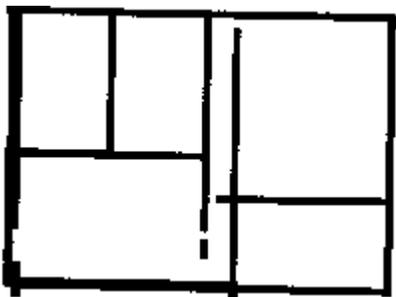
This is another activity made with the above scanning of the 4 directions. I prepared the blocks and asked John to place them. He enjoyed building this tower and he also enjoyed smashing it, after it was saved. One of the eraser tools in *KidPix* is a firecracker (a mouseclick or switch) to erase a picture from the screen.

Using a 4-direction scanning array to build and destroy the tower

Classification, a more complicated scanning array: scan/up/down/left/right/stamp

We prepared a scanning page by drawing 4 boxes at the bottom of the screen. A graphic or letter/symbol is placed in each box. John's task was to scan the boxes to select one of the graphics and then move it to the desired location on the screen and, finally, to stamp it where he wanted it left. One of the classification activities was to select each of the items and place them in the box of items to eat or not to eat. This activity gave John the opportunity to make decisions, practice a more complicated array, and do a normal classification activity.

Classification, using a scanning array with several steps
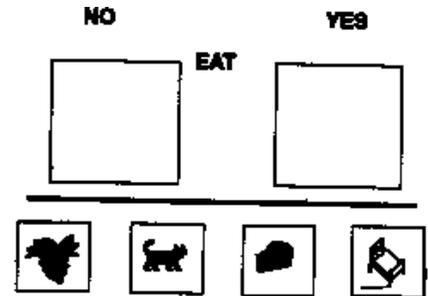
Writing his name

Using the same scanning array as above, I gave John the 4 letters to his name. His task was to first select and then place each letter.

A Picture (lunchroom) using a switch and then a scanning array

A combination of the single switch dragging to make the table and the scanning array used in the name and classification activity. John told me he wanted to make a picture of the lunchroom. He proceeded to make the table top using the pen with the up/down/right/left tool used in the classification exercise and then used the scanning array to place the chairs with the same scanning array that he used for writing his name. He planned to add some people. This activity allowed John to make a picture story. It is an opportunity for creative expression.

Using the single switch and scanning array to create a picture

Snowman

I created the snowman and placed a hat and nose on the screen. John used the 4 direction scanning array to place the hat and carrot nose on the snowman. He added the eyes with the simple single switch. I started it at the left edge of the screen and he waited for the mouse to arrive at the exact spot he wanted the eyes to be. I used another single switch dragging tool for the 2 arms. He started the buttons but did not yet complete them. We are exploring various ways of adding the buttons. One way we are learning is to use the single switch (no scan) counting array and one of the fancy brushes; hitting the switch makes the pen move and the next hit would place a mark at that spot. This activity offers practice with drawing and also allows John to participate in the same activity that all the other children in his class are doing, whether it be on the computer or with drawing materials.

Discussion and Observations

Working on these activities is a learning experience for John and for me. As we work with a piece of software, new ideas for activities erupt in my mind. It is so exciting! As we work with the adaptive arrays that we create, we also see ways of improving

these arrays and developing them into new ones. I think that it is very important that we allow time for explorations of this kind.

In the book *Computers, Education and Special Needs* (by E. Paul Goldenberg et al, Addison Wesley, 1984), the point is made about the value and importance of educational support for students with limitations to their motor ability: "…there may be many reasons for poor mathematical performance by special needs students: difficulty in holding a pencil, drawing a straight line, inability to experience distance…(p. 88), and "...motoric disabilities hampering their mobility or their ability to manipulate objects. They are further isolated from social interaction and from the pleasure and learning that accompanies it. Educational support to remediate lost environmental learning is required " (p. 50). I believe that the activities described above provide that kind of educational support, and the same kinds of activities could be created with other software.

I am amazed at John's ability, at the age of 4, to accomplish the tasks that I gave him. He clearly enjoys these experiences and is beginning to demand more opportunities to do them. It is very exciting to watch John manipulate objects, plan, predict, explore, and, yes, make mistakes! Often children who have poor motor abilities have no chances to be involved in these important learning experiences.

As we continue our exploration, John's skill with the arrays we have prepared for him will allow him to graduate to more complicated arrays, which in turn will give him greater control over the

mouse and keyboard. John's skill at doing these activities has created a lot of interest with other people who work with him. He has demonstrated that he is able to use the computer to do some of the regular class work as well as for creative expression. Our exploration has just begun and we expect lots of exciting things to be happening in John's future use of the computer. In fact, he is the most exciting child I have ever worked with. At the age of 4, he is absolutely amazing, and I predict that someday he will function at grade level so long as he gets the right support!

Dorothy Laufer is a computer specialist, advocate, and consultant, with emphasis on resources for individuals with disabilities. She has taught in the Montreal Public Schools, at McGill University, and in the Czech Republic. She can be reached at 5604 Palmer Avenue, Montreal, Quebec, Canada H4W 2P1. E-mail: D.Laufer@NetAxis.qc.ca §

HalfthePlanet News

The HalfthePlanet web site at http://www.halftheplanet.org has recently launched a new Voter Accessibility Department. Be sure to read a new report from The National Voter Independence Project, "Voters Denied Equal Access at the Polls," which assesses the status of polling place accessibility in the United States based on surveys conducted during the 1998 Presidential election, the 2000 Presidential primary election, and the 2000 Presidential election. The report can be accessed at http://www.halftheplanet.org/departments/vote/intro.html.

The Creative Arts Therapies Hill Day Conference 2001 will be held June 11-12 in Washington, DC. Coordinated with the National Coalition of Arts Therapies Associations (NCATA) organizations, this exciting event will include guest speakers addressing effective advocacy techniques, information on how the government works and tips on how to communicate with members of Congress and their staffs. Additionally, AMTA is pleased to present a Reimbursement Symposium in conjunction with the 2001 Hill Day Conference. Designed for all levels of experience, this 7-hour course on Sunday, June 10, 2001, will address trends in healthcare reimbursement, related terminology, procedures, and specific applications and practice issues. Information and registration forms for both events are available on the AMTA web site at www.musictherapy.org/conference/hillindex.html. Registration has been extended to June 8. Email Hill@musictherapy.org for more information.

AG Bell is thrilled to launch a new volunteer mentoring program, entitled Bell's Kids. Bell's Kids will link youth (ages 8-12) and adults who are deaf and hard of hearing for mentoring relationships. Bell's Kids will be piloted in 3-5 of the following locations: Denver, CO; Southern CA; Northern CA; Minneapolis/St. Paul, MN; Philadelphia, PA/NJ; San Antonio, TX; and the Washington DC metro area. Locations will be chosen based on amount of interested applicants. Deadline for applications: June 15, 2001 (mentors); July 30, 2001 (mentees). Mentors from the selected cities will attend a training program on July 29-30, 2001 in Bethesda, MD. Further information and application materials can be found at http://www.agbell.org/bellskids.html or mduchin@agbell.org.

July 25-27, 2001, Washington, DC- AG Bell will host Leadership Opportunities for Teens (LOFT), a preeminent leadership program for young adults with hearing loss. Would your teen enjoy LOFT? Do you teach an outstanding young adult or work with one in a therapeutic environment? Encourage them to apply! Eligible teens are those between 15 and 19 years of age who use the auditory approach to communicate. To find out more about LOFT: http://www.agbell.org/loftinfo.html or info@agbell.org.

The American Association of People with Disabilities (AAPD) announces the Paul G. Hearne Leadership Awards. Up to ten people with disabilities who are emerging as leaders in their respective fields will each receive $10,000 to help them continue their progress as leaders. They will also have an opportunity to meet national disability leaders whom they can cultivate as mentors at an awards ceremony in Washington, DC on February 27, 2002. U.S. residents with any type of disability are eligible to apply. The deadline for applications is July 26, 2001. For additional information and application instructions go to http://www.halftheplanet.org/departments/new_content/paul_hearne.html or http://www.aapd.com/docs/2001awards.html.

The 10th anniversary for the Allied Services Riverside Rumble 10k International Classic Wheelchair Race will take place on Sunday, September 16, 2001 in Northeastern Pennsylvania. Hundreds of athletes from countries around the world will vie for more than $42,000 in prize money. Divisions for the event include Men's and Women's Open, Junior, Masters and Quad. For more information on participation or sponsorship inquiries please call (570) 348-1347.

The American Association of People with Disabilities (AAPD) and the U.S. Department of Labor encourage students of all ages and public and private employers to join in commemorating National Disability Mentoring Day on October 24, 2001. If you are interested in participating in NDMD 2001, either as a student or as an employer, please contact school guidance counselors, university disability services offices and/or community disability organizations and tell them you want to see your community get involved. If there is sufficient interest and resources, a Local Coordinator will be identified and serve as your

One Hand Typing

Source: One Hand Typing and Keyboarding Enews

principal point of contact. For further information, contact AAPD at (202) 457-0046 or toll free at (800) 840-8844.

Your support is needed too! Your tax-deductible donation—no matter what amount—will substantially enhance our ability to serve literally half the planet's population—people with disabilities, our families, and friends!

Please take a moment to fill out our online contribution form https://www.4agoodcause.com/halftheplanet/donate1.asp?ein11714140 to pay by credit card. If you prefer to pay by check or money order, please forward your check to: HalfthePlanet Foundation, 1875 Eye Street, NW, 12th Floor, Washington, DC 20006. Thank you most sincerely for any support you can provide!

The HalfthePlanet Newsletter and the HalfthePlanet web site (http://www.halftheplanet.org) are programs of the HalfthePlanet Foundation.

HalfthePlanet Foundation is a nonprofit organization that supports the applications of technology to promote the values of the Americans with Disabilities Act: independent living, social inclusion, equality of opportunity, economic self-sufficiency and empowerment.

To subscribe to this newsletter go to http://www.halftheplanet.org and enter your name and email address in the box on the lower-left side of the page.

Thank you for your support!§

1) Mouse Tips!

I have also created a web page with one hand mousing tips! http://www.aboutonehandtyping.com/mice.html Send me your tips, so I can include them!

To save the strain on my wrist, and forearms - yes, after 30 years of being a compulsive and passionate typist for MANY hours every day I do get strain - I use all kinds of keyboard lifts, and pillows. I had a friend make me a big bean bag for my mouse, it looks like a holder for a VERY high heeled shoe. It is 13" from back to front, 6 inches tall in the middle, and 6 inches wide. My wrist rests at the very top, the hand hanging over, laying on top of a Kensington Mouse trackball. I use my left, my less able hand, to Mouse. Most track balls are ONLY for the right hand. Kensington goes for either hand.

http://www.amazon.com/exec/obidos/ASIN/B00000K4LD/waltersspeakerse/107-3939854

http://www.amazon.com/exec/obidos/ASIN/B00004YMY4/waltersspeakerse/107-3939854

FOR THE MAC

http://www.amazon.com/exec/obidos/ASIN/B00000K4L2/waltersspeakerse/107-3939854

http://www.amazon.com/exec/obidos/ASIN/B00004YMY4/waltersspeakerse/107-3939854

If you don't have a way to create your own bean bag, I have seen one product that you might try, Fellowes Easy Glide Wrist Rest and Mouse Pad Amazon Price: $17.94. However, if I was using that one, I would need to add something in the middle, to LIFT the BACK of my track ball UP. I have the least pain when the track ball slants downwards at 45 degrees. Experiment to see what works for you!

2) Free One Hand Typing and Keyboarding Manual downloads!

If anyone needs support on learning to touch type with one hand, ON A STANDARD KEYBOARD, there are free downloads at our website. Go to, http://www.aboutonehandtyping.com/manual.html Scroll down to HOW TO ORDER, the free download links are at the end of the chart. You can download the first 39 pages of the One Hand Typing and Keyboarding Manual, in Microsoft Word (r) document, or as a PDF file.

These free 39 pages will teach you:

* all about where you put your hand,
* how to position the keyboard and screen,
* how to use a mouse with one hand.
* first three lessons (with the drills):
* some of the neat motivational stories are included in the free downloads

These FREE downloads will give anyone wondering about using a standard keyboard with one hand, all they will need to get started.

3) Great Ideas!

Are you a one hand typist at work?

ASK for a telephone headset! You can type away with ease as you talk to customer, if you use a one. They are not expensive, and are a great asset. A rehab therapist called me to order a typing manual. BTW, we seem to be getting tons of orders for the manual in MS Word, rather than the PDF. That was a great idea given to me by an e-book specialist, Wayne Perkins! Thank you :) Anyway, this rehab person said I was one of the few who was telling the world to tilt the front (the long end closest to your stomach) of the keyboard up, so it slops down in the back. He said that is what he had been saying for years! But, he uses those inexpensive rubber door stops! Says they work perfect! Who would have thought? Well, he did, and now you and I can too. I see one at Amazon for $1.69! http://www.amazon.com/exec/obidos/ASIN/B00004YOHN/waltersspeakerse/107-6262436

4) Good Links, books and tools and for one hand typists

See these books for one handed people at Amazon.com. Just kinda fun to see what is related to us out there :)

TOOLS & BOOKS - Help With Life Skills

One-Handed in a Two-Handed World (Second Edition) BOOK http://www.amazon.com/exec/obidos/ASIN/0965280519/waltersspeakerse/104-9531269

How to Conquer the World With One Hand...and an Attitude BOOK http://www.amazon.com/exec/obidos/ASIN/0966837819/waltersspeakerse/104-9531269

Kaiser Bakeware Patisserie One-Handed Flour Sifter - KITCHEN http://www.amazon.com/exec/obidos/ASIN/B00004YW56/waltersspeakerse/104-9531269

HOBBIES With One Hand

One Handed: A Guide to Piano Music for One Hand (Music Reference Collection) http://www.amazon.com/exec/obidos/ASIN/031331179X/waltersspeakerse/104-9531269

Piano Music for One Hand http://www.amazon.com/exec/obidos/ASIN/0253319056/waltersspeakerse/104-9531269

STORIES and PHILOSOPHY

One-Handed Pianist and Other Stories http://www.amazon.com/exec/obidos/ASIN/082631645X/waltersspeakerse/104-9531269

Lilly Walters

Lilly@aboutonehandtyping.com

http://www.aboutonehandtyping.com §

Press Release - BRL, Inc.

APRIL 20, 2001

Two new products help the blind bridge the Digital Divide!

Tiger Advantage

Many blind students and professionals rely on braille to read educational and work-related documents. Braille versions of these documents are produced with a braille embosser attached to a personal computer. The braille embosser was developed at the Massachusetts Institute of Technology in the late 1960's. This vital piece of equipment has changed very little over the past 3 decades. Now, braille enters the new millennium with new equipment. The Tiger Advantage — a new braille and tactile graphics embosser — lets the blind use popular computer software like Microsoft Word and Microsoft Excel to write and immediately emboss documents. Tiger Advantage embosses quality graphics, at 20 dots-per-inch, directly from any Windows application that will print to a Windows printer.

Letter Art

Letter Art allows users to do more distinctive graphical layouts than can be achieved with standard Windows programs alone. For example, until recently, the blind had virtually no access to state maps, college campus maps, and transit maps. Now, Letter Art, a commercial sign layout program, includes a braille feature. Sighted users can draw a sign, a map, and much more, and have Letter Art automatically provide braille labels. Letter Art can print a copy of a map or diagram and then have Tiger Advantage emboss the same information to achieve a document with print and braille.

Call or email for sample braille maps, brochures and prices.

Contact: BRL, Inc.
110 Commerce Drive, Suite 210
Fayetteville, GA 30214
TEL: 770-716-9222
EMAIL: comments@wyfiwyg.com

WEB SITE: www.wyfiwyg.com§

Conferences

D R E A M M S
for kids, Inc.
Assistive Technology Solutions
273 Ringwood Road • Freeville, NY 13068-5606