

Technology Makes Things Possible

By Jordan Jankus
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For people without disabilities, technology can make things easier, but for people with cognitive disabilities, technology makes things possible.

“At some point, Max’s communication by text seemed so different from the past that I called my wife and asked her, ‘Are you coaching Max when he responds to my texts?’ He was responding with full sentences, when in the past it had been mostly ‘yes’ or ‘no’ answers to questions. That’s why I was surprised. But, in fact, my wife wasn’t coaching Max. It’s just that with expert training, he has gotten so much more comfortable with being able to text.”

- Bernard (Bernie) A. Krooks, Esq., Parent

Bernie’s anecdote about his son Max is a simple but moving example of the power of personal technology in transforming everyday life in our community today. It may not sound like a “big deal,” but for a parent of a child with autism or other developmental disabilities, communication through technology is life changing.



From left: Max, Robin and Bernie Krooks practice their texting

We are living in an age when technology offers enormous possibilities for communication – something most of us already take for granted. However, we have only scratched the surface of how these technologies can support people with autism and other developmental disabilities as they work towards personal goals and living more independently in the community.

Unlike many older assistive technologies, the devices at the heart of new technologies – especially smart phones and tablets – are small, portable, and do not mark a person as being “different.” This is a huge plus in protecting the dignity of the people involved, and in meshing seamlessly with the society around them. This is especially true for young people, for whom

peer interaction is so important.

The key in the effective use of personal technology is to first identify the need, establish the personal goal, and then develop tech solutions to help address both.

Max’s developmental disability limits the use of his right hand. His parents and his three siblings wanted to more easily stay in touch with Max and he wanted to master texting, so he could connect with his family and friends.

We began to work on the predictive text capabilities of his MacBook laptop and then used the keyboard and voice-to-text features of his iPhone’s messaging app to develop efficient ways to send texts to his family. Remarkably, the more Max texted, the more his reading skills improved and he began to initiate communications and respond with more than one or two word replies. Now, his father says text exchanges with Max after school are one of the highlights of his day.

The Arc of Westchester is committed to applying these new personal and affordable technologies in creative ways to help people like Max reach their goals. It might mean using scheduling and task apps like *CanPlan* and *First-Then-Visual-Schedule* to help someone get ready for work in the morning or to remember the steps and timing of a job function. There are grocery buying apps, home chores apps, navigation

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Tech Supports for Cognition & Learning

Everyday Applications & Emerging Trends

Friday · May 19 · 2017

8:00 am - 4:30 pm

A Conference For
 Professionals / Students / Family Members
 Individuals with Autism and Other Developmental Disabilities

2nd ANNUAL

► **VENDOR EXHIBITS SHOWCASING CUTTING-EDGE TECHNOLOGY** ► **HANDS ON BREAK-OUT SESSIONS**



Cathy Bodine, Ph.D., teaches in the Department of Bioengineering at the University of Colorado and is an internationally recognized leader in the field of assistive technology. She will discuss ongoing research in adapting industrial work settings to meet the needs of people with cognitive disabilities.



Peter Blanck, Ph.D., J.D., is a professor at Syracuse University and author of *e-Quality: The Struggle for Web Accessibility by People with Cognitive Disabilities* (2014). Commissioned by the Coleman Institute, this exceptional book examines the rights of individuals with cognitive disabilities to equal access to web content protected under law.

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apps, and so much more that can help remove barriers.

Because young people are the ones who are likely to adapt quickly and benefit most from new technologies, Arc of Westchester is creating a Technology Enhanced Simulated Studio (TESS) to open in Mount Kisco, NY this fall. This training site will provide a technology-rich home/work environment for young adults to help them learn to use technology and overcome challenges in their transition to adult life. TESS will also be offering in-person and online technology training for families so that they can further enhance their loved ones' learning.

Since 2014, Arc of Westchester has developed alliances with other organizations to focus on the use of everyday technology to help support the functional needs of people with developmental disabilities. For example, the partnership with Mercy College has led to the two organizations co-hosting the second annual tech conference on May 19th in Dobbs Ferry, NY, "**Tech Supports for Cognition and Learning: Everyday Applications & Emerging Trends.**" Professionals, teachers, and family members, will enjoy a full day of workshops and presentations to learn about affordable



Jordan and Max check out a new app on his smartphone

personal technology solutions that can result in more functional independence and integration into the community. If you are interested in attending, please see our ad in this issue or visit arcwestchester.org/tech-conference2017.

To sample the extensive universe of per-

sonal technology, please visit **The Arc's Tech Toolbox™**, an online database of personal technology options (<https://toolbox.thearc.org>). This is a free web-based tool that offers a simple drop-down menu system to match phone/tablet/computer technology to the needs of individuals. Arc

of Westchester has served as a testing site for this resource, developed through the generous support of Comcast and Google.

In addition, Arc of Westchester has joined nineteen individuals from Arc chapters and other organizations in launching a monthly phone/web forum to share ideas, report successes, and create joint programs to gain funding for technology solutions. If you are interested in learning more, please email me at jjankus@arcwestchester.org.

Jordan Jankus is the father of an adult daughter with developmental disabilities and his interest in finding ways to empower her led to his involvement in assistive technology. He now helps support individuals at Arc of Westchester and other organizations with person-centered technology solutions.

In 2015, he became one of sixteen Technology Navigator Fellows selected by the national organization, The Arc. Jordan has presented on personal technology at state and national meetings of service providers, sharing insights and resources on helping people with I/DD use technology for personal empowerment.

Jordan holds a Master's Degree in Public Health and a Graduate Certificate in Assistive Technology from New York Medical College.

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diagnoses. The educational system in the United States must begin to adopt a more effective means of identifying deficits and remediating the underlying brain process, not merely treating the symptoms. Current research is opening the doors to scientifically-based and scientifically-validated interventions.

Functional activation is the foundation of such interventions. Marcel Just, of Carnegie Mellon University, and Nancy Minshew, director of the Center of Excellence in Autism Research, have identified what they call the under-connectivity hypothesis of Autism. Their hypothesis posits that the neural connections in a brain with autism are poorly connected and/or synchronized making complex tasks, such as spatial reasoning and language comprehension, more difficult for persons with ASD.

Strengthening that connection requires functional activation: cognitive exercises that electrochemically stimulate the brain's ability to send messages to and from the areas required to code the incoming language into mental representations (imagery) and then verbally. By strengthening the conduit, information is more readily transferred, allowing images to be associated with words and vice-versa.

DCT emphasizes the need for both the mental representational and the verbal cortical areas to be stimulated for optimal language comprehension. Nanci Bell's Visualizing and Verbalizing program is another promising intervention because it develops what she calls concept imagery as a basis for comprehension and higher order thinking. Concept imagery improves reading and listening comprehension, memory, oral vocabulary, critical thinking, and writing.

The University of Alabama at Birmingham used the Visualizing and Verbalizing program ([http://lindamoodbell.com/press-releases/uab-study-on-children-with-autism-improved-reading-and-brain-activ-](http://lindamoodbell.com/press-releases/uab-study-on-children-with-autism-improved-reading-and-brain-activ-ity-utilized-lindamood-bell-instruction)

[ity-utilized-lindamood-bell-instruction](http://lindamoodbell.com/press-releases/uab-study-on-children-with-autism-improved-reading-and-brain-activ-ity-utilized-lindamood-bell-instruction)) to conduct a study to assess the legitimacy of DCT and the neurological validity of its premises as applied to ASD students. Here are the findings:

Thirty-one students who had been diagnosed with ASD participated; 16 received instruction; 15 did not. Another 22 typically-developing students also participated as a point of comparison. The 16 students who underwent intensive instruction received four hours of instruction for five days a week for 10 weeks. Each of the students was subject to two functional MRI (fMRI) scans to document their brain function(s), at the beginning of the 10-weeks, and again at the end. The initial scans of students with ASD showed loose connectivity between the imaginal and verbal cortical centers. At the conclusion of the study, the imaginal-verbal connection showed marked improvement in those who had received the Visualizing and Verbalizing program. Those students who did not receive the instruction showed no substantive change in the connection between cortical centers (whether ASD or typically developing). Furthermore, after 10 weeks, the 16 students with ASD who received the intensive instruction showed significant improvement (16.4%) on comprehension tests whereas those who did not receive instruction had little change (2.6%).

Worth the Consideration and Effort

Both parents and educators of children with ASD aim to provide them with the best means to live a fulfilling life with meaningful relationships and the increased ability to grasp what's happening in the world around them. When students fall behind their peers academically and socially by a year or more, rigorous and intense interventions are necessary to close the gap. Weekly appointments for 20-60 minutes simply won't be sufficient. As students make gains in language comprehension,

they become better able to manage their own learning. Students can begin to visualize what they learn and apply it to all subjects, naturally reinforcing the strengthened connection between brain centers.

Identifying brain-processing issues is imperative to remediating language comprehension deficits. To evaluate whether a child has impaired concept imagery, consider the following indicators, taken from Nanci Bell's book, Visualizing and Verbalizing (used with permission):

- Difficulty with critical, logical, abstract thinking and problem solving.
- Difficulty with written language comprehension.
- Difficulty with oral language comprehension.
- Difficulty following directions.
- Difficulty in expressing language orally.
- Difficulty expressing language in writing.
- Difficulty grasping language-based humor.
- Difficulty interpreting social situations.
- Difficulty with cause and effect.
- Difficulty with attention and focus.
- Difficulty responding to a communicating world.
- Difficulty with mental mapping.

While none of these symptoms alone indicates weak conceptual imagery as an underlying cause of language comprehension deficits, they do raise the flag of concern. If multiple factors are present, they give reason for further investigation or referral to a professional for evaluation.

Cause for Optimism

Language comprehension deficits for children with Autism Spectrum Disorder, not to mention children who are not on the Autism spectrum, are not necessarily permanent. They can be improved through stimulating and strengthening the connection between the verbal and imaginal centers of the brain. What's most important is to recognize the brain process that underlies language comprehension and remediate impairment with a scientifically-validated intervention. Language comprehension is foundational to learning—both social and academic—in the educational environment. With a better understanding of subject matter and social relationships, students are poised for greater success in all areas of life.

Paul Worthington is Director of Research and Development for Lindamood-Bell. For nearly 30 years, the company's research-validated instruction has consistently changed the lives of individuals with learning challenges such as dyslexia, ADHD, and autism. In addition to their nearly 100 Learning Centers and Seasonal Learning Clinics nationally and internationally, their efforts include research collaborations with MIT, UAB, and previously with Wake Forest, and Georgetown University. For additional information, please visit www.lindamoodbell.com or call 800-300-1818.

References

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