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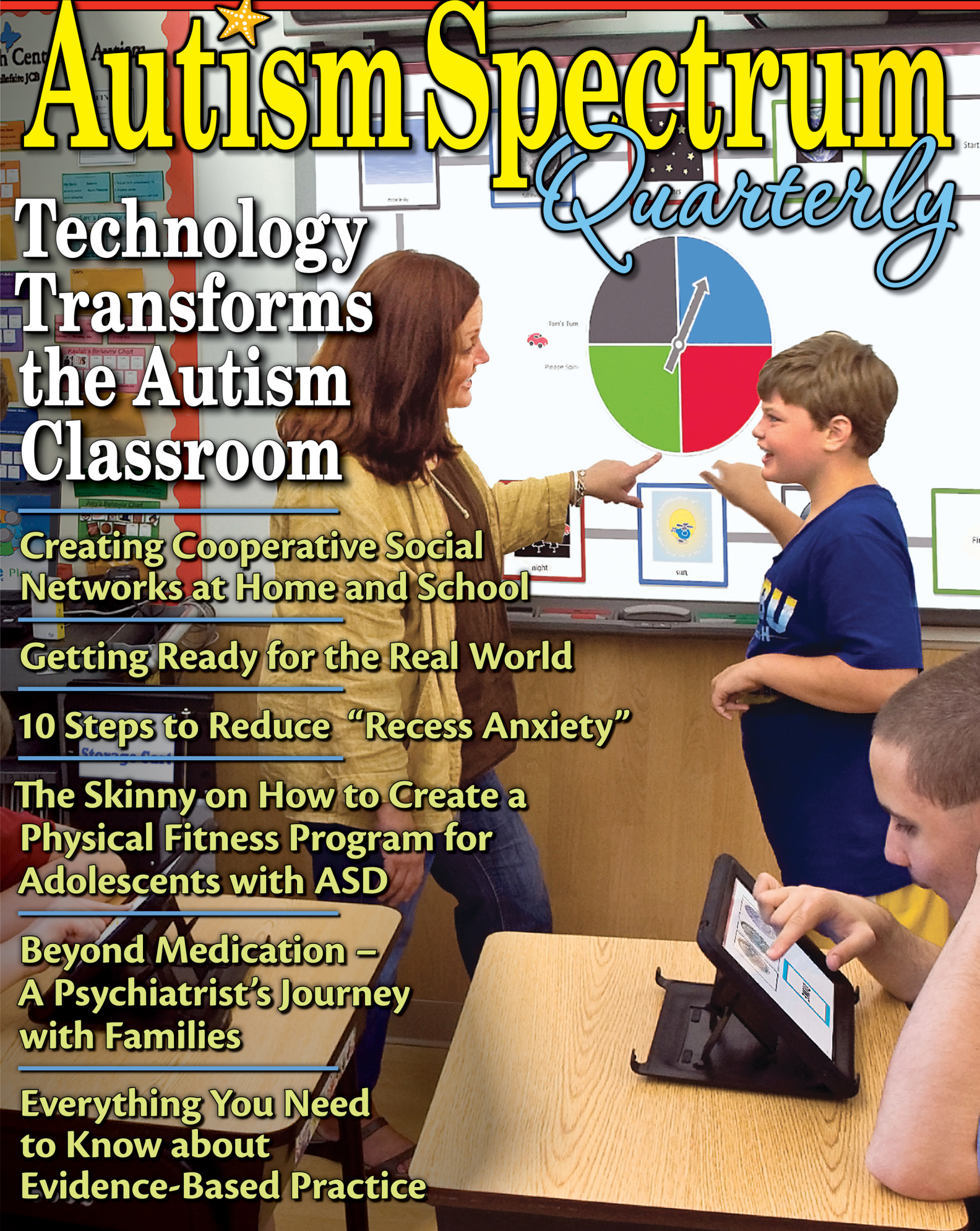

Technology Transforms the Autism Classroom

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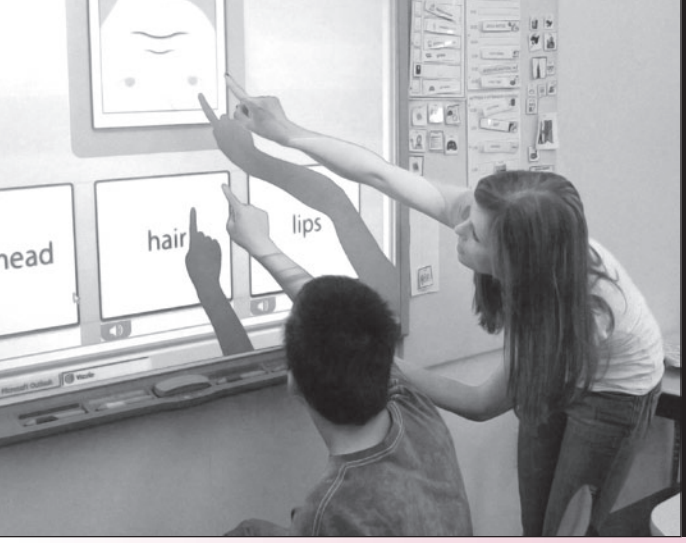
Technology Transforms the Autism Classroom of the Future



—Jeff Richards, MTT

Touch technology, like that found on SMART Boards, adds a kinesthetic element, further enhancing visual and auditory input.

Lauren Stafford, M.Ed.

As the rate of children being diagnosed with autism continues to climb, the challenges inherent in meeting the individual needs of each child become more difficult. Educators find themselves getting squeezed tighter and more painfully between a rock (mandates) and a hard place (dwindling resources). As resources become scarcer, educators find it more and more difficult to meet the needs of individual students with the labor-intensive traditional methods that currently dominate teacher training programs.

A Closer Look at the Rocks and Hard Places

Evidence has shown that engaging the child with ASD in learning requires customizing curricula and subject delivery to their individual learning styles, and providing highly specific, person-centered reinforcement. Yet, class sizes and caseloads get larger each year, leaving educators less and less time to calibrate their practices to the needs of individual students.

Traditional group instruction is particularly problematic for students with ASD owing to their highly variable instructional needs. Even one-to-one instruction is difficult due to issues related to consistency, intensity, and generalization. Add to this the pressure that comes from the data-driven mandates of an IEP process that increasingly takes its lead from No Child Left Behind (NCLB), and you have the "perfect storm" of reasons to go beyond traditional teaching practices to find ways to reach and teach the student with ASD, and at the same time, meet the data-keeping requirements of federal mandates.

The time has clearly come to go beyond tradition. Innovations in technology that have transformed other areas of our lives, like the ways we now communicate with each other and share information, are being successfully adapted and applied to the problems faced in special education in exciting new ways. As overwhelming as the situation may seem, innovative organizations and educators are leveraging technology to meet these challenges, and they are finding—and in some cases, creating—ways to use new advances to effectively customize lessons, generalize learning, and track data. Moreover, they are finding that technology is making possible the efficient sharing of resources, materials, and information.

How One Group of Innovators Has Met the Challenge

In Shaker Heights, Ohio, the Monarch Center for Autism is steadily moving towards making the autism classroom of the future a reality today. The program opened with 12 school-aged students in 2000. It has grown rapidly, and now provides services across the lifespan for more than 115 individuals ranging from age two through adulthood. As such, Monarch provides early home-based intervention, school-based services from preschool through high school, transitional education programming, and residential services and apartments for adults.

Realizing early-on the need for an evidence-based, effective model, Monarch partnered with Dr. Howard Shane and Children's Hospital Boston (CHB) in 2003 to pioneer the Visual Language Program (as documented in Dr. Shane's book *Visual Language in Autism).* The program embraces a holistic approach to visual learning, and uses a wide range of visually-supported materials for communication, instruction, and organization. At Monarch, technology serves as both a vehicle for the delivery of visual materials as well as a motivating learning system. According to Shane, "Ubiquitous use of individualized, meaningful visual supports for organization, expression, and instruction is very effective with this population. Presenting those supports interactively on a computer or electronic white-board makes them even more effective." Taking advantage of touch technology adds a kinesthetic element to the visual and auditory components creating an amazing multisensory

learning environment that plays to the strengths and interests of students with ASD.

The system goes beyond correct and incorrect, to track subtle cues and behaviors that provide a more accurate picture of the student's progress.

changing long-standing limited expectations and expanding the vistas of future possibilities.

State-of-the-Art Technology

As new technology became available, Monarch invested in a variety of state-of-the-art tools, including student response systems that allow instructors to differentiate for each individual within a group and get immediate access to instantly collected data. Table 1 contains a description of Monarch's "technology toolbox."

The school searched for, but couldn't find, multi-media-based educational software that could both efficiently provide customizable content and take advantage of all that the various hardware platforms had to offer. Cobbling together individual programs that weren't designed to necessarily work together proved inefficient. So, "necessity being the mother of invention," school leadership set about the task of creating the software that was needed.

Using seed money raised from angel investors and grants awarded by the United States Department of Education and National Institutes of Health, programmers and developers worked hand-in-hand with the research team from CHB and educators both at Monarch and later in public school special education classrooms, to design and test software specifically designed to meet the needs of the autism classroom of the future.

The result is VizZle® (**www.monarchtt.com**), a Web-based program that can be used on most hardware platforms. The core program provides an extensive collection of audio, video, and images (all approved by, and most specifically designed by specialists in autism education) that can quickly and easily customize pre-existing lessons. If there isn't a pre-existing lesson in the constantly growing, peer-reviewed shared lesson library that meets the needs of a specific student, it is a simple, intuitive process to pick any one of nearly a dozen template types and use it to create whatever is needed—for any age, any ability level, and any subject, using VizZle® media or importing gems found on the Web or in personal files and folders.

The combined hardware and software has enabled seamless integration of efficient technology-based, visually supported communication, instruction, and organizational supports into every aspect of a student's day at Monarch. The result is that now students are succeeding in ways never even considered or thought possible previously. Their success is

The Classroom of the Future in Action Today

Tour Monarch and you can immediately feel the difference. Despite the higher than average level of disability and severity of behavioral issues seen at a school like Monarch, which educates children who can't be safely or effectively educated in their home school districts, students are engaged and excited to learn. The school is buzzing with energy.

A group of students plays interactive games on the SMART Board, completely engaged despite their varied levels of ability—they wait, take turns, some even commenting appropriately to team mates unprompted, all supported using a range of devices that allows them to interact at their individual levels of communication and independence. The kids pay rapt attention to the whiz of the wheel and the reinforcers earned after answering questions, and they are drawn to the screen, the touchability of the board, and the student-specific challenges their teachers and therapists provide for each of them using VizZle®. Students take turns coming to the board while others waiting for their turn use print copies or tablet computers geared to their individual levels.

The assistant teacher then works one-on-one with a child on a laptop, completing a VizZle® playlist to generalize mastered tasks in math. The teacher leads a small group to the SMART Table, where they work together to label parts of the body. The other students follow their schedules and transition to occupational therapy, where they work on a variety of skills, including incorporating words of the week into handwriting activities on the Tap-It®.

Meanwhile, in another building geared towards older students enrolled in the Monarch Transitional Education Program, all the computer stations in the computer lab are full, with students using the VizZle® build-a-book template to create their own stories. They search, drag, and drop in images and video onto the pages to express their creative intent.

—Jeff Richards, MTT

Students use Android compatible tablets for both independent work and to participate in group instruction differentiated to meet their specific instructional needs.

The Technology Toolbox

It takes the right combination of hardware and software to create the efficiencies and effectiveness needed in the autism classroom of the future. Through much trial and error, testing and research, The Monarch Center for Autism chose:

SMART Boards – interactive whiteboards ideal for group presentation **http://smarttech.com/us** or **http://goo.gl/Js0QO**

SMART Tables – multitouch, multiuser interactive learning centers that allow groups of students to work simultaneously on one surface **http://smarttech.com/us** or **http://goo.gl/Kr39X**

Xoom – iPads and other tablets that allow students to work independently on touch screens **http://www.motorola.com** or **http://www.apple.com/ipad/**

Tap-It® – Touch Accessible Platform for Interactive Technology. Assistive learning centers that use innovative 'intended touch' to serve individuals' special needs **http://www.teachsmart.org/tapit/**

SMART Response LE – Special needs-specific student response system with hand-held remotes that allow students to respond to a variety of question types **http://smarttech.com/us** or **http://goo.gl/s88Nb**

VizZle® – Web-based software (originally created by Monarch and now available to the public) that provides media, authoring tools, easy-to-use lesson templates and content ideal for visual learners while tracking data generally or by IEP goals. Compatible with PC or Mac desktop platforms, as well as most of the hardware listed above **www.monarchtt.com**

Table 1

Then they add text, using the text-to-speech to listen critically to the words they have set down, perhaps editing the text once they have heard it before recording themselves reading it.

Sharing content across environments requires complex tracking and attention to detail—both strengths of technology. The Monarch Center relies heavily on data tracking for progress monitoring, and uses that information to make changes to programming and decisions about student learning. Here, too, they've gone beyond traditional "correct / incorrect" data collection, finding that it left much to be desired. So, after years of testing and research, the school has created a data collection and monitoring system called *PAIRS* (*Participation, Accuracy, and Independence Rating Scale*) to monitor student progress. The system goes beyond correct and incorrect, to track subtle cues and behaviors that provide a more accurate picture of the student's progress. Monarch is currently in the process of integrating PAIRS into VizZle® and adapting it for use on hand-held devices like the iPad or iPod to better track student responses and to help teams make data-driven decisions.

Sharing in the Lessons Learned

Thanks to the proliferation of hardware technology, the scalability of systems like VizZle®, and the broadening reach of the Internet into our public schools, the efficient technology that has proven itself in "innovation incubators" like Monarch is available to help public school districts escape from between the rock and the hard place where they now find themselves. Three of the country's four largest school districts, who by their sheer numbers are hardest hit by both the autism crisis and the cuts in available resources, have already begun their transformations. New York City, Los Angeles Unified School District, and Miami-Dade County have all put VizZle® through extensive trials in the past year, and are officially implementing it in many of their classrooms in the 2011-2012 school year.

From the District of Philadelphia to the Philippines, educators in districts large and small across the country and around the world are adopting VizZle® and other advances in technology to help meet the spiraling needs of their constituencies. As their students click it, touch it, Tap-It®, or share it, they can now show us just how much more they know than they were able to demonstrate previously. Clearly, our kids can and will express themselves in ways never before thought possible as technology transforms autism classrooms of the 21st century.

Reference

Shane, H.C. & Weiss-Kapp, S. (2007). *Visual Language in Autism*. San Diego, CA: Plural Publishing.

Bio

Lauren Stafford, M.Ed. is a former Intervention Specialist with over ten years of experience in the field of Autism. She has worked with students in both public and private school settings in Virginia and Ohio. Ms. Stafford previously worked as an Intervention Specialist at the Monarch School (now the Monarch Center for Autism) where she also served as an Academic Supervisor for four years, and acted as Entry Year Coordinator, LPDC Chairperson, Data Coordinator, and collaborator with Curriculum Design with Children's Hospital Boston. Ms. Stafford currently serves as Vice President, Visual Learning Solutions for Monarch Teaching Technologies where she works with Dr. Howard Shane, Monarch staff, and programmers to continue development of innovative Web-based technology driven by visual language.