



Finding a

VOICE

Inexpensive mobile technology is helping students with autism spectrum disorder to communicate and learn.

BY SHANNON STUART

SCHOOLS HAVE STRUGGLED for decades to provide expensive augmentative and alternative communication (AAC) resources for autistic students with communication challenges. Clunky voice output devices, often included in students' individualized education plans, cost about \$8,000, a difficult expense to cover in hard times. However, mobile technology is bringing AAC strategies in reach for many more students, allowing them to find a voice.

Autism spectrum disorder (ASD) has become the fastest growing disability in the United States, with prevalence rates estimated at as many as 1 in 110 children. Students affected by ASD have difficulty with communication, learning, and social skills. Communication challenges that a student with ASD might face include:

- No or limited purposeful verbal speech;
- Difficulty expressing needs and wants;
- Echolalia (repeating a word or phrase that has been previously heard);
- Loss of words that the child was previously able to say;
- Inability to identify objects (poor vocabulary development);
- Difficulty answering questions;
- Limited attention to people and objects in the environment; and
- Poor response to verbal instructions.

Students with ASD often process language more slowly than typically developing students, which can cause confusion and anxiety. AAC strategies help by supporting students in expressing thoughts, needs, wants, and ideas. Students with communication challenges can use AAC to supplement their existing speech or replace speech that is not functional. Examples of common AAC strategies include sign language, picture communication boards, and voice-output communication devices. Many AAC strategies use picture symbols, letters,

There's an for That

With a few simple clicks, educators can find cost-effective AAC apps. The array of choices and ease of accessibility means a greater chance of determining strategies that fit your students' strengths and needs.



Proloquo2Go provides the student who has difficulty communicating verbally with full-featured AAC software. It contains text-to-speech voices, more than 8,000 up-to-date symbols, automatic conjugations, and a default vocabulary. Applications are available for iPhone and iPad for less than \$200.



Grace may help individuals to communicate more effectively by building sentences from relevant images. A teacher or other adult can customize this application by using pictures and a photo vocabulary of his or her choice. The application works in real time and allows the student to select his or her preferences, and then rotate the device to present a full-sized sentence. The student can read it and respond to the request. One of the features of this application is that it ensures the interaction of the user with the listener, and may therefore increase communication opportunities and build understanding of the user's needs. The application sells for less than \$50.



iCommunicate for iPad allows the user or an adult to create pictures, flashcards, storyboards, routines, and visual schedules, as well as record custom audio in any language. It comes with more than 100 pictures (five have audio) to help the user get started. Adults can add pictures with a camera or through a Google image search. The application sells for \$30.



MyTalk Mobile is designed to enable individuals with communication difficulties to express their needs and desires to those around them through a variety of images, pictures, symbols, and audio files including human voice. The application costs less than \$50.



TapToTalk allows an individual with communication difficulties to tap a picture and TapToTalk speaks. Each picture can lead to another screen of pictures. A teacher or parent can use the application to create personalized augmentative AAC albums to meet the specific needs of the user. Currently, TapToTalk includes a library of more than 2,000 pictures. You can add your own pictures, photos, and sounds. The application is free.



iComm provides content for basic fundamental communication such as yes, no, more, and finished. Users can load their own pictures along with audio clips of their own spoken words. This is a free application specifically designed for children with cerebral palsy or autism who have trouble communicating.

words, and phrases to represent the messages needed to talk about objects, people, and places. Students with ASD tend to prefer interacting with inanimate, but engaging, objects such as mobile tablets, perhaps because what happens on a tablet's screen is predictable. People, particularly those making cryptic sounds and faces, are not.

Many Options

The availability of inexpensive mobile technology has rapidly and considerably changed services for students with complex communication needs. From touch screen phones to tablet devices, mobile computing power and user-friendly interfaces are inexpensive and readily available. For example, in April 2010, Apple released the iPad, priced in the \$500 range. People with disabilities, including students with ASD, are readily adopting mobile technologies.

Educators who serve students with ASD have many options to support increased communication. For example, students often use speech-generating devices for face-to-face interactions, to develop presentations, and to participate using mainstream software. Medical insurance companies fund bulky, expensive AAC devices under the direction of a licensed speech-language pathologist, and AAC devices are often listed as supplemental services in students' individual education plans. Medicare and private insurance companies do not cover mobile devices yet.

Mobile touch screen devices such as iPads or tablets not only cost much less than these earlier AAC devices, but also provide a "cool factor" for students that clunky voice output devices never had. Not only have the mobile devices themselves become smaller and multi-functional, but also the number of communication applica-

tions and tablet platforms are increasing more rapidly than AAC hardware or software ever did. Students with ASD are using many popular communication applications for mobile devices (see There's an App for That).

Drawbacks

Mobile devices are not a perfect fit for all students with ASD. While mobile devices allow students to have direct control over the interface, some students with ASD lack the manual dexterity needed to use a keyboard. As with any technologic device, inexplicable software glitches could crash a system, and the built-in batteries do not last forever. Most problematic, however, might be durability of a mobile device in the face of physical tantrums. Protection for the device is therefore very important. Several companies make protective carrying cases, skins, and foam frames to protect mobile devices. Insurance

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The majority of milk companies across the U.S. have reformulated flavored milk in order to lower total calories and decrease added sugars and fat, while preserving its nutritional value and good taste. [Nearly all school flavored milk now has fewer than 150 calories and 10 grams of added sugar per 8-ounce serving.](#) That is only 31 calories more than the white milk served in most schools.¹

IF FLAVORED MILK LEAVES, ESSENTIAL NUTRIENTS LEAVE WITH IT

Research suggests that removing flavored milk from the lunchroom results in dramatic decreases in milk consumption that do not recover over time. When flavored milk was removed from the cafeteria in a school district in Connecticut, milk consumption decreased 37% to 63% in all grades.² [A larger study involving 7 districts throughout the country revealed that when schools removed or limited flavored milk, milk consumption dropped 35% on average. This drop in consumption equates to a substantial loss in nutrients that can't be replaced with other beverages, but rather required three to four food items to match milk's nutrient contribution.](#) And milk consumption did not recover over time when only white milk was offered.³

Visit www.milkdelivers.org to find more research that demonstrates how flavored milk helps contribute to a student's nutrition.

MILK: A NUTRIENT POWERHOUSE

There is a nutrient gap in America, because many families are filling up on empty calories instead of essential nutrients. In fact, more than nine out of ten Americans aren't getting the essential nutrients they need. [The nine essential nutrients in milk, white or flavored, can help fill that gap.](#) Milk is the number one food source of calcium, vitamin D and potassium, which are already identified by the Dietary Guidelines for Americans as limited in children's diets.⁴ And if milk is not consumed with the noon meal, it's nearly impossible for children to meet their needs for these important nutrients.

EXPERTS, INCLUDING MOMS, SUPPORT FLAVORED MILK

The nation's leading health and nutrition organizations, including the American Academy of Pediatrics and American Dietetic Association, acknowledge the valuable role that milk, including flavored milk, can play in meeting daily nutrient needs. [They recognize that the small amount of added sugars in flavored milk is an acceptable trade-off for the nutrients provided.](#) And most moms agree. In interviews conducted with 1,000 mothers of children in grades K through 12, the majority of moms believe that the nutrient intake from chocolate milk outweighs the added sugar.⁵

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¹ 2011-2012 Projected School Milk Product Profile, MilkPEP School Channel Survey, conducted by Prime Consulting Group, July, 2011. The MilkPEP Annual School Channel Survey is a joint project of the Milk Processor Education Program (MilkPEP), the National Dairy Council and the School Nutrition Association (SNA). ² Patterson J, Saidel M. The removal of flavored milk in schools results in a reduction in total milk purchases in all grades, K-12. *Journal of the American Dietetic Association*. 2009; 109(9): A97. ³ 2009 Study "The Impact on Student Milk Consumption and Nutrient Intakes from Eliminating Flavored Milk in Schools," funded by MilkPEP and presented at the SNA Annual National Conference 2010. ⁴ Fulgoni VL, Keast DR, Quann EE, et al. Food sources of calcium, phosphorus, vitamin D, and potassium in the U.S. *FASEB Journal*. 2010;24: 325.1. ⁵ Conducted by KRC Research in July, 2011, using an online national opt-in panel.

is also advised. For example, Worth Ave Group offers a policy that covers liquid damage, water submersion, theft, fire, breakage, and accidental damage, with a \$50 deductible, for less than \$40 a year.

Compelling Benefits

The benefits of using mobile devices to increase communication for students with ASD are compelling. The mobility and hipness of these devices

appeal to students with ASD, their peers, and their teachers. Historically, many of the electronic options for communication and learning support for students with ASD cost thousands of dollars. Compared to that, a few hundred dollars for a mobile device may seem like an inexpensive option. In addition, the rapidly growing selection of applications that are available for mobile devices is tempting. Apps range from tools that support personal organization such as visual schedules and calendar options to those that teach specific academic skills, structure social stories, and create opportunities for entertainment.

While some applications have a hefty price tag, others are free or very inexpensive. This creates a bit of a challenge because applications may be useful for one child but not another. However, it is easy to research particular applications before purchase. Parents and teachers are excited

about the impact that mobile devices may have for students with ASD. It is important for parents, teachers, and principals to keep up with the most up-to-date AAC research and features in order to match them with students' individual needs.

Being unable to communicate thoughts and needs would be frustrating for anyone. Mobile technology devices are not cures for ASD, and there are students whose abilities simply will not allow them to use these devices. However, they are worth researching to determine if one is the appropriate choice for a particular student. For those students who are a match for mobile technology devices, their frustrations likely will ease as they find their voice. 

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Principal ONLINE

Access the following Web Resources by visiting *Principal* magazine online:

www.naesp.org/MarApr12

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