

*Assistive Technology Resources for Children and Adults with Disabilities*

# Closing The Gap

*Solutions*

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## STAFF

Dolores Hagen ..... PUBLISHER

Connie Kneip .....  
VICE PRESIDENT /  
GENERAL MANAGER

Megan Turek .....  
MANAGING EDITOR /  
SALES MANAGER

Jan Latzke ..... SUBSCRIPTIONS

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## CONTACT INFORMATION

Please address all correspondence  
to Closing The Gap, P.O. Box 68,  
Henderson, MN 56044. Telephone  
507-248-3294; Fax 507-248-3810.  
Email <info@closingthegap.com>;  
Website <www.closingthegap.com>.

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# Part 1: The Total Story of Total Talk

## A Behind the Scenes Look at the Creation of an Innovative New Speech Generating App

Why create another speech generating app? Well, here are five reasons.

**As a person whose career began in advertising,** I believe “everything communicates.” It’s not just your words; it’s how you say them. Your key message is always significantly influenced by the many visual cues others see around you. Every one of us has our own brand! And so I hoped to develop a communication system that did all it could to surround powerful language with the many other ways we inform others of our meaning and spirit. In other words, I wanted to bring social capital to this field and to people who use speech generating devices (SGDs) and speech generating apps (SGA’s).

**As a person who has been involved with technology for decades,** I’m keenly aware of the user experience: the manner in which a person interacts with a piece of technology. In fact, the manner with which everyone interacts with it. That’s not just a nice thing to consider. User experience is often the biggest factor to success; it can support or stand in the way of adoption and sustained use. And so, I wanted to develop a system that



made the user experience more enjoyable, more thoughtful and seamless.

**As a parent who’s watched teachers and parents struggle to support kids,** I wanted to help make things easier for the many folks who support people who use AT. I wanted to develop an editing and customization process that people actu-

Thomas back in 2004. There’s room .... But not always the right supports.

ally looked forward to. I wanted to offer an efficient and empowering process,



**RICHARD ELLENSON** Prior to introducing Total Talk, Richard was founder and CEO of two assistive technology companies (Panther and Blink Twice) that helped transform and reimagine the field of assistive technology for people with disabilities.

Richard is also the father of an 18-year-old son, Thomas, who has cerebral palsy. He has worked tirelessly to create awareness about people with disabilities and to share stories about their vibrant lives. He and his son have been featured as ABC World News People of the Year, on CNBC’s Squawk Box, in a New York Times Sunday Magazine cover story and as a feature on ESPN’s E:60.

instead of the slog usually thought of as “creating pages.” I also wanted to really leverage the new features of iOS to create helpful innovations we hadn’t seen before.

**As the creator of a previous AAC device**, the Tango!, I’ve been fortunate to work with some of the best thinkers in the field of AAC: from Caroline Musselwhite to Pati-King DeBaun and so many others. I was able to collaborate with these fantastic folks to merge an understanding of social language (which one gains in advertising) with the more formal knowledge surrounding literacy. They were amazing times and some of the language insights developed have become part of how we all look at language organization today. And so, I wanted to give us all a chance to bring that perspective to a new speech app.

**Finally, and perhaps most importantly, as the father of a son with cerebral palsy**, my central focus has always been to help create a path for others to more easily understand my son and individuals who share his challenges. The Tango! got its name because “It takes two to tango.” Communication is not only about what one says, it’s about what others hear. It’s not just about building sentences; it’s also about building relationships.

In the last decade, technology has progressed ... well, it feels like a hundred year’s worth. And the iPad has become an incredible delivery system with so much already built in: gorgeous design, better voices and a wildly efficient and powerful software platform. So how could one not want to take advantage of all these things?

I hope you enjoy what follows: my best attempt to approach this complex vision with answers borne out of my personal and professional experiences in all the above areas. I’ll do this by first defining, one-by-one, the 10 basic social needs we are trying to address – and, only then,

discussing the features Total Talk offers to address them.

In this way, readers can learn about the innovations in Total Talk, but also get the perspective of a parent and mass-market-trained communicator in how we can approach the issues in general. My hope is that these thoughts will benefit not only the folks who are beginning to adopt Total Talk, but also all people who use speech apps or devices - and also the many of us in this world who do all we can to support success, inclusion, independence and fun!

And with that, thanks for reading these ....

## TOP TEN NEEDS ADDRESSED WITH TOTAL TALK

### 1. People only have one chance to make a first impression.

We spend a lot of time thinking about how a person can build communication. But we don’t always think about how a person builds interest - those initial things we react to: their look, their energy, the many visual cues. But those are, in fact, the things that make our

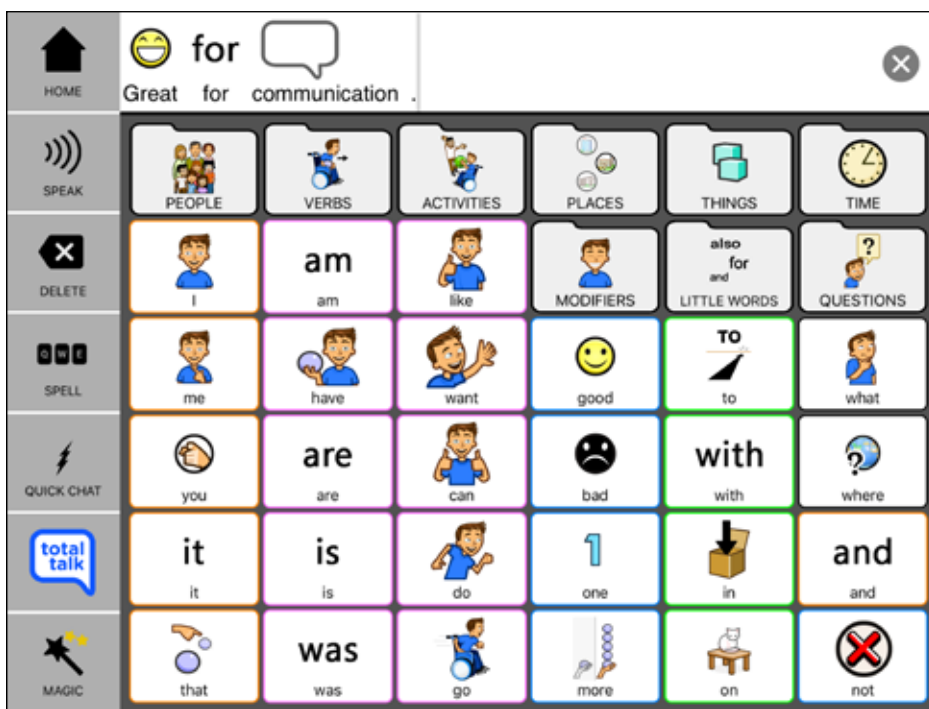
antennae wiggle when we first meet someone.

As parents, teachers or professionals, we take the time to get to know a child; but, to be honest, that’s because a person is born into our world - or enters our professional world. However, that isn’t the case with daily life. We all meet many people, but only take the time to befriend those who interest us.

Total Talk was developed to specifically address that issue. First, we chose Persona PCS Symbols, which were developed not only to clearly communicate complex emotions and actions, but also personality and joy. As I said above, everything communicates. Persona PCS symbols feel emotional, energetic and engaging. And anyone with a design



Persona PCS Symbols. Available in male, female, child, teen, adult and more.



Total Talk Home Page.

background will tell you that a compelling design sensibility will also inform perceptions of the person its associated with it.

It's critical to remember that almost everyone has a lot to say. But until we've decided someone has made a good first impression, we're not always interested in hearing it! So we've done all we could to support that first impression

**2. In different communication moments, we all need different communication approaches.**

We all use different types of communication at different moments.

When learning new subjects – in school or life – we often search a bit harder for “the right word.” When something novel happens, we look for the right way to say it.

But in interviews, we're slow and thoughtful, usually repeating things we've said many times before. On first dates, we're more causal, but we also probably repeat things we've said before. Same thing is usually true when telling friends or spouses about our work.

No one would argue that about typical communication. However, it often gets lost in augmentative communication. And these different communication approaches are actually more important here – as the demands are greater. And even when we understand these issues, many apps and devices don't fully embrace the notion to the point of developing a platform that facilitates different approaches clearly, intuitively and powerfully.

We have. We think it was a big need. And we hope you love it!

**3. We need to model language for students. But, for real success, we also need to model independence.**

It's not easy to teach kids to use a speech app – or speech device. And there are so many approaches that we take. But so many of them involve looking over a child's shoulder or sitting to the side, but always a bit closer than we'd like. It's because we need to see what a child is



A broad variety of communication modes, all easily accessible and intuitive.



Tele-Prompt. A revolutionary new approach to support students from across the room.

trying to hit or figure out a way to guide them.

That causes a few issues. The obvious one is that the child can often begin to feel dependent on an adult. Instead of looking for the answer, it's too easy to look for help. The less obvious issue is that having an adult always present creates a physical barrier with other children. How many times have you seen a child in an inclusive class – with an SLP or paraprofessional right next to them. Sort of a barrier to a kid building easy friendships, isn't it?

Total Talk has taken that issue on with an innovation completely unique

to the field and based on the amazing capabilities of Apple's current iOS. Our free companion app, Orbit, features Tele-Prompt, which allows you to see the iPad screen mirrored on your iPhone. As a child looks at a page, you see it on your iPhone (or iPad.) If they change pages, it changes for you too. But what's most powerful is that you can draw on your iPhone and it appears on the student's iPad, just like the Telestrator works on network football. This means you can support a student without violating their space. And that means you're not only adding to their communications growth, but their personal growth, as well.



**4. People need to communicate in noisy places. Even people who use speech apps.**

One of the challenges of speech apps is that, often, when we think of what we want to do ... we think of an ideal world. But, well, that's not the world we live in.

So often, the spaces we're in make speech devices and apps very hard to use. Either it's too loud to hear them or we need to crank up the volume so loud that – because synthetic speech sounds different than typical speech – it's just a bit awkward for all.

Total Talk takes on the world as it really is – in all its difficulty. So for the moments when a speech app is going to be tricky, we just came up with a different approach. Tele-Text is another part of our free companion app, Orbit. It let's you establish a direct connection via Bluetooth to a nearby iPhone and send your messages via text. But it's not like texting ... because it works within Total Talk. Use whatever communication approach you like – then just hit text instead of speak. In fact, if you're in a group, your messages will go out to everyone in the group with an iPhone

**5. Conversations often begin more effectively when you find shared interests.**

If you don't agree with this, look at the Q&A for a dating app! Watch a Yankee fan high five someone he doesn't know – and hiss at someone in a Red Sox hat. Watch people walking dogs stop and talk.

The more quickly you can share interests, the more quickly you can find a bond. And because people who use AAC so often communicate much more slowly, those interests oftentimes just don't get discovered.

It's always important to put interests front and center on a device. And it's perhaps wise to make sure they're stored in full sentences – so that a person can share these things quickly.

With Total Talk, we've gone even further. We have a My Stuff Section: a well-designed area that allows you to



PIX 8. Tele-Text. An innovative approach to speaking above the noise!



PIX 9. My Stuff: A place to go where you can find yourself!

put favorite lists, phrases to tell favorite stories, discuss hobbies or whatever. Of course, these are items that should be part of any communication system. But by organizing them in their own area, we reinforce not only the motor and cognitive patterns that lead to their retrieval ... but we also reinforce their importance in the life of a person.

That idea is at the heart of Total Talk: not simply creating a structure to provide smart, efficient and powerful language

... but one that provides a structure for empowerment of self.

Note: In the next issue of Solutions, we'll feature Part Two of "The Total Picture," which will cover the final five tips - and an update on Richard's son, Thomas.

To see a short news piece of Thomas Ellenson and Total Talk, check <http://cbsloc.al/1VD0D0H>



# In the Q - A Closer Look at goQ Software

**ESTEEM. ACCEPTANCE. CONFIDENCE. ACHIEVEMENT. BELONGING. WORTHINESS. HAPPINESS. SUCCESS.**

These are not words that students often associate with writing. They are intangible, not something to be touched, tasted or marked, like spelling and grammar. However, they are some of the true benefits and rewards for being able to communicate effectively through writing.

Before proceeding any further, we wish to be clear that we have no intention of producing a product that automatically fixes someone's writing or writes for them.

Students must still do their own work. They have the final say. Our intention is to assist students such that written content truly reflects their own thoughts and what they know.

Many believers of Artificial Intelligence might think that future technology will write entirely for us like cars will drive themselves. We believe that it is only writing under an individual's control that leads to the rewards mentioned above.

## ARE GOQ SOFTWARE ASSISTIVE TECHNOLOGY?

We are often asked, "Are your products (WordQ, SpeakQ, iWordQ, ThoughtQ) special needs or AT?" Certainly, many perceive our products as just compensatory tools for writing.



Several years ago, one of the authors, then a teacher, first saw the power of what WordQ could do for his IEP students. An "aha" moment came when he gave WordQ to everyone in his class, and he saw how everyone benefitted. It was his first glimpse into how our software was beneficial for all students and not just in the world of AT.

Evidence has shown that almost all students struggle with writing, composing, editing or both. Left unaddressed, the struggle continues into adulthood. Now let's consider a typical school population. Special education consists of approximately 13-15% of a school district population. Usually, 35% of those students have multiple disabilities. Most students who fit into this smaller population may require other multi-layered supports beyond a tool



**FRASER SHEIN**, PhD, PEng is President and Founder of Quillsoft Ltd. He has 35 years of experience in research and development of communication and assistive technology software.



**JOHN DELUCA** is the President of Strategic Transitions Inc. and has over 17 years of teaching experience in grades K-8, Special Education and Assistive Technology. He has worked with the implementation of WordQ+SpeakQ and Inspiration for 10 years.



**GEORGE NICHOLLS**, BMath, BEd is responsible for Systems, Design and Development at Strategic Transitions. He has 30 years of experience in the education environment with an interest in creating a global renaissance for learning and literacy.



**VIVIAN TSANG**, PhD is responsible for linguistic R&D at Quillsoft. Her interests are in creative writing, second language learning, and computational linguistics.

that supports writing. We understand and agree wholeheartedly.

The other 85-87% percent of the student population generally doesn't need multi-layered software or all-in-one solutions to aid in their learning, but they can still benefit from focused tools that may be derived from AT. Depending upon the specific locale, a large percentage may include second language learners. Realistically and unfortunately, this large group of students, and often the parents and teachers as well, reject using "special needs" software if described as such.

Now consider a ubiquitous life-long tool, such as glasses. Glasses do not read for us; they enable our brains to perceive, interpret and react to the world around us. It is in the same sense that we develop goQ software – as general tools to help individuals focus on what they see or hear as words, phrases or sentences, such that these can be better understood, interpreted and then expressed for others to appreciate.

To answer the question above, while our beginnings related to accessibility, goQ products are universal literacy tools for all students, while being inclusive of AT needs. The end goal is to help individuals achieve what is in the Q.

## EFFECTIVE USAGE

Arguing over which product has the best word prediction, the best voice or the most features is quite meaningless because it comes down to effective usage. A salesman can always highlight how their product appears to work better than a competitor in certain situations, but what does that really tell us? Walking in the shoes of a struggling writer, we also see little value in feature lists because they give no indication whether a feature is effective and usable. All products comparable to goQ software include state-of-the art technologies, yet none can read your mind or write for you. Like a pair of glasses, one cannot see the benefit (or the lack thereof, in the case of wrong prescription) until one wears them

to see – a product provides benefit only if it is regularly and effectively used.

The goQ approach is to encourage regular and effective use by focusing on simple-to-use interface design associated with a small set of key technologies aligned with functional strategies.

## GOQ SOFTWARE

goQ software are available on a variety of platforms – PC, Mac, iPad and Chrome. Each platform has its constraints that limit what the software can do but also offers opportunities for doing things differently. The following briefly describes each software.

WordQ for PC and Mac desktops is our original product designed to work with whatever application is used to write. It provides writing/reading support with word prediction and speech feedback. Some applications do constrain WordQ by blocking this type of technology.

SpeakQ is an add-on to WordQ for PC desktops, providing speech recognition for one purpose only – voice typing. It was designed for persons who cannot directly articulate in well-composed phrases and sentences, such as doctors and lawyers.

iWordQ App for the iPad shares the same word prediction and text-to-speech technologies as WordQ for desktops. Restrictions within iOS led us to develop iWordQ with its own simple writing space but without constraints by other applications. We took this opportunity to add a novel reading space.

WordQ for Chrome is similar to iWordQ with its own simple writing space and embedded word prediction, speech feedback and speech recognition, but without a separate reading space (yet). It is designed primarily for Chromebooks in schools where hi-speed Internet is inconsistent. It enhances Google speech recognition with some SpeakQ functionality. As a Chrome Packaged App, it has the advantage of also operating on a PC or Mac.

ThoughtQ for Chrome suggests words and phrases ("thought triggers" or topic words) often not considered when searching. These words are linked to an embedded Google™ Custom Search to discover information for essays and reports with less effort and in less time, while gaining greater knowledge. Topic words can be exported/copied for use in any of the various WordQ products.

## GOQ STRATEGIES

Writing is one of many forms of communication. Many who struggle to write may not struggle the same way in conversation. goQ strategies are mostly designed to take advantage of a person's ability to listen and to speak, thereby bridging the gap to some reading and writing proficiency. We emphasize the importance of getting one's ideas down prior to fussing over spelling, grammar and even the flow of ideas. After all, one needs some raw material to begin. (You need something, and not nothing, to bake a cake.) With some content on paper, even imperfect, it can be improved over time via our proofreading strategy.

## WORD PREDICTION

An early writer may suffer from the fear of the blank page the same way as seasoned writers. An early writer may have additional issues, such as spelling. Regardless, word prediction allows one to quickly put words on screen. One may begin typing any letter to see suggested words and randomly select a word. Because we analyze lots of real human data, the prediction is semi-contextual and semi-grammatical. By continually alternating between typing and selecting predictions, a student can quickly write something. A friend who has been on a regular price is not only one of my favorite color. A parent or a teacher can step in, "Come again? Who is this friend?" The kid bursts into laughter. Over the years, we have observed many kids getting over their fear of writing when they see they can write. Even if it's



something that makes little sense, it is workable raw material.

## **SPEECH FEEDBACK**

Speech feedback lets you listen to the words on screen so that you can determine if they make sense. It is available across goQ software. In WordQ, speech feedback comes in several flavors, at the letter, word, phrase or sentence level. Emergent writers may also listen to each letter typed. For others, hearing the words is sufficient to learn the visual and auditory shape of each word, especially when reviewing suggested words. Advanced writers may want to listen for the flow of phrases or sentences, which leads to our proofreading strategy.

Proofreading is an onerous task, even for experienced writers. Many don't proofread at all or do a haphazard job at it. The difficulty lies in the load imposed by reading for content and, simultaneously, for mistakes. WordQ delegates the visual load of proofreading to listening, as follows: focus on a sentence; hear the whole sentence spoken out loud – do words, their order, and flow make sense; manually step through the sentence, word-by-word, to identify specific mistakes; edit if necessary; listen to the sentence again; repeat; and then focus attention on the whole sentence again to be satisfied before moving on. The same strategy is used/taught by many for writing without any technology or editorial support.

## **IWORDQ READING SPACE**

The reading space in iWordQ is designed to complement proofreading. Besides proofreading, one may also read for content and for pleasure. How text is displayed on screen becomes important, especially for those learning to read or those who are burdened by too much information. Text is displayed with typographical enhancements designed to improve readability. A novel option automatically highlights text in manageable phrases to enhance comprehen-

sion. Highlighting with speech feedback on the iPad's touch surface helps one engage with the text. When speech is turned off, the automatic highlighting can be used as a teleprompter, for learning to read aloud or for practicing a speech.

## **SPEECH RECOGNITION**

SpeakQ's speech training module incorporates a key strategy. It presents a short sentence fragment and speaks it out loud while highlighting each word. You then repeat speaking after it. When you speak, each recognized word is transcribed and spoken below. Thus, the speech trainer also functions as a conversational partner, where the connection between speech and text is reinforced twice. This benefits second language learners, as well as those who have difficulty speaking or who speak in "street language."

In addition to conventional inline voice typing, SpeakQ offers a speak-and-select mode where recognized words are shown in the word prediction list to be reviewed with speech feedback. This is ideal for new users or those with poor speech by reinforcing slower and more clearly articulated speech. This is also a stop-and-go strategy, allowing quick edits in between utterances to help lessen the burden of correcting undesired text being entered. In both modes, the recognition is spoken when entered, so that the user knows what has been recognized. Immediate corrective action can be taken if necessary. Recognizing that even expert users rarely edit by speech, SpeakQ has no speech editing commands. In fact, there are no speech commands at all.

## **TOPIC WORDS**

We began with writing words in word prediction and now we have come full circle; ThoughtQ is designed to pull out words and phrases from reading material. In the old days, students were sent to the library in search of raw material

for their assignments. Students learn skimming strategies, thereby pulling out key concepts from text, for example, "acid rain" and "fossil fuel" from an article on pollution. It may not be realistic to expect the same of students nowadays. However, that is not to say reading strategies are no longer important.

Similar to WordQ, ThoughtQ presents a list of suggestions when the user enters a query. The suggestions are topical words and phrases "outside-of-the-language-box" for students, allowing them to move beyond basic topical words for their search. It is much like a skimming process for a proficient reader. The difference is a student often lacks the actual reading/skimming skills. These topical words become pointers for opening up new varieties of reading material via Google search, which is a departure from the kneejerk behavior of stopping at the first article encountered.

More proficient writers can also benefit from ThoughtQ. Some topic words can be used for brainstorming, or better, as dots waiting to be connected. And connecting the dots is what we offer, not just for the user. When ideas are better communicated, people are better connected and better results can be achieved.

## **FOR MORE INFORMATION**

Contact Quillsoft Ltd.,  
Strategic Transitions Inc.  
P.O. Box 646  
Morrison, CO 80465  
1-877-674-7687  
[www.goQsoftware.com](http://www.goQsoftware.com) ■



# Assistive Technology in Special Education, Rehabilitation and Everyday Living

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Conference - Wednesday, Thursday, Friday, October 19-21, 2016 Includes Preview of Exhibits – Tuesday Evening, October 18				
Registration Received	On or Before June 30	July 1 - September 8	September 9 - October 6	October 7 - Onsite
<b>Standard Rate</b>	<b>\$440</b>	<b>\$490</b>	<b>\$515</b>	<b>\$540</b>
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<i>All group registrations must be received at the same time.</i>	Groups 20+ Deduct \$70	Groups 20+ Deduct \$70	Groups 20+ Deduct \$70	Groups 20+ Deduct \$70
<b>Parent Rate</b> (A letter describing your child's disability must accompany registration)				<b>\$275</b>
<b>Full-time Student Rate</b> (Proof of full-time student status must accompany registration)				<b>\$300</b>
<b>Presenter Rate</b>	<b>\$350</b>		<b>\$400</b>	
<b>Exhibitor Rate</b>	<b>\$350</b>		<b>\$400</b>	
Single-Day and Exhibit Hall Only Registration				Price
<b>Thursday Only - October 20</b>				<b>\$275</b>
<b>Friday Only - October 21</b>				<b>\$125</b>
<b>Exhibit Hall Only - Tuesday evening through Friday, October 18-21</b>				<b>\$150</b>
Preconference Workshops - Monday and Tuesday, October 17-18, 2016				Price
<i>Includes Preview of Exhibits – Tuesday Evening, October 18</i>				
<b>Monday, October 17</b> (Some preconference workshops carry an additional fee for materials)				<b>\$275</b>
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## 17 PRECONFERENCE WORKSHOPS

Monday and Tuesday, October 17-18, 2016 *Workshop registration includes Preview of Exhibits – Tuesday, October 18, 5:00 pm - 7:30 pm*



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**PC-2** Personalizing Learning for All with Emerging Technologies

**PC-3** Emergent Writing and Students with Significant Disabilities: Moving Beyond “Scribble” (Apps Included!)

**PC-4** Creating Solutions in Minutes: Using Ordinary Items in Extraordinary Ways - A Make-and-Take Workshop

**PC-5** Somewhere Lost in the Middle: Serving Students who Struggle with Executive Skills, Processing, Working Memory and Retention

**PC-6** Beyond 90/90/90: Developing and using seating and mobility systems to support task engagement and functional use of

AT systems for students with the most complex bodies

**PC-7** iTech Boot Camp: Using iTechnology as Evidence-Based Practice to Meet the Learning and Behavioral Needs of Students with Autism Spectrum Disorder

**PC-8** A Roadmap for AAC Instruction in the Classroom: Supporting Conversation, Literacy and Language

**PC-9** Back to Basics: Building Language Skills for Children Who Use AAC and Teaching Educators and Parents to Provide AAC Supports

**PC-10** Comprehension Instruction for Students with Significant Disabilities: Beyond “Wh” Questions

**PC-11** Access to Print, Supports for Writing and Video as an Alternative Means of Expression

**PC-12** “Help! I’m an AT Specialist and I Can’t Get Up!” Creating Manageable School-Based AT Services

**PC-13** The Importance of “Mousing” Around! (and other access issues for using the Internet, especially for students with complex bodies)

**PC-14** The Behavior Puzzle: Putting It All Together!

**PC-15** Teaching the Art of Scanning

**PC-16** AEM for Student Success!

**PC-17** The Power of Core: The Nuts, Bolts and Tools to Build Language and Communication Skills for Our AAC Users

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# Chrome as Assistive Technology

Technology is all around us and one thing we should realize by now: technology moves fast and we need to keep up! The latest trend in educational technology is Chrome and the use of Chromebooks. According to Future Source Consulting, Chromebooks accounted for 56% of education device shipments during the fourth quarter of 2015. This new wave of technology integration in the classroom has provided AT professionals with a unique opportunity to seamlessly integrate assistive technology supports across the curriculum.

## WHAT IS THE CLOUD?

Everyone has heard the term “the Cloud.” What does that mean? And, more importantly, why is that a good thing for students with disabilities? When using Chrome, our information lives on-line. We log into a profile in order to access our materials, settings and apps/

extensions. While this can be seen as a convenience for many people - for the students with disabilities that we work with - it is a game changer. Think about it, as recent as two years ago, our students would use specialized software in order to complete tasks in the classroom. It wasn't uncommon for this software to live on “that” computer. We all know “that” computer - it is the one computer that had the special software installed. It typically lived in the back of the classroom, most times facing the wall! Our students would need to leave their desk to use “that” computer to complete a task. No wonder we get pushback from students. Would you want to draw attention to yourself by always having to go to another work area to complete a task?

Fast forward to the classroom of today. Chromebooks are becoming the norm and with this shift, the whole idea of “that” computer has changed. Chrome-

books run the Chrome browser as their operating system and, with that, rely on the Cloud. We log into a Chromebook and all our settings, files and apps/extensions flood into that device. Think about this scenario for our students: all your specialized software (now in the form of Chrome apps and extensions) comes to you! Gone are the days of going to a specific computer to access your supports. We have become device independent. Our students can go to ANY computer with Chrome and complete their work. I have seen this shift first hand with middle and high school students who were not using their assistive technology because they didn't want to look different. Now there is no looking different, everyone is using the same computer and this includes students with disabilities.



**MIKE MAROTTA**, ATP is a RESNA Certified Assistive Technology Professional and President of Inclusive Technology Solutions, LLC. Mike provides AT services to individuals with all types of disabilities and professional development opportunities nationally and internationally. Visit Mike's website at [mmatp.com](http://mmatp.com) or follow him on Twitter [@mmatp](https://twitter.com/mmatp). Want to build your network and talk about all types of assistive technology? Make sure to join us Wednesday nights at 8 pm Eastern on Twitter for #ATchat

## LET'S TALK HARDWARE: THE CHROMEBOOK

Now that we have explored the idea of the Cloud, let's tackle the hardware. For the uninitiated, Chromebooks are mysterious. But they don't need to be. Chromebooks are laptops just like a PC and a Mac. They look the same - screen attached to a keyboard with a trackpad. The difference is on the inside, specifically the operating system. Instead of running Windows (PC) or OS X (Mac), the Chromebook uses the Chrome browser as its operating system. One myth about Chromebooks is that they must be connected to the Internet to be useful. That is false - in fact, many Chrome apps and extensions will work in an offline mode. This allows the individual to continue working and their work will sync up to their profile once the device is reconnected to the Internet.

### SOME OF THE OTHER HIGHLIGHTS OF CHROMEBOOKS AS A HARDWARE PLATFORM INCLUDE:

- Starts fast: The device will boot up in under 10 seconds and be ready to go. Compare that to some of our PCs that take minutes (which feel like hours!) just to start up.
- Runs forever on a charge: OK, maybe not forever, but a Chromebook will run anywhere from 4 to 10 hours on a single charge. Gone are the days of running from classroom to classroom searching along the wall for an empty outlet to keep your laptop running.
- Updates automatically: The Chrome operating system updates automatically. When a new update is pushed out from Google, the Chromebook will automatically apply the update the next time it restarts.

Just like other laptops, Chromebooks come in a wide range of styles and sizes. Most major hardware manufacturers produce Chromebooks (Samsung, Toshiba, Asus, Acer). Screen size can vary from a 10-inch to a 15-inch screen - including touch screen devices and

convertible (changes from a laptop to tablet). One huge selling point about Chromebooks, and some would say the reason they are so popular, is price. Chromebooks are less expensive than PC or Mac laptops - with an average cost around \$250.

What does the future of Chromebooks look like? Perhaps it is the Chromebit (Image 1) from Asus. This device looks like an oversized USB thumb drive, but there is a computer on that drive. Simply plug one end of this device into an HDMI display (like your TV), connect a keyboard and mouse (either through Bluetooth, Wireless or by using the USB port on the device), connect it to your WIFI - and you have a Chromebook. All this for \$85! Think about the possibilities - turn that classroom TV into another computer. What about computer access for an individual with a visual impairment? Now, we can use large TV displays to provide access for computer tasks. No need to magnify the screen, which could lead to difficulties scrolling back and forth on the screen to see all the information.

## ALTERNATIVE ACCESS: BUILT-IN FEATURES AND AT HARDWARE

When looking at the Chromebook as an assistive technology tool, our first thought is: how can I adapt the device for access? Whether that alternative access is



Image 1: Chromebit is a Chrome computer on a USB-style drive that will change any HDMI display into a computer.

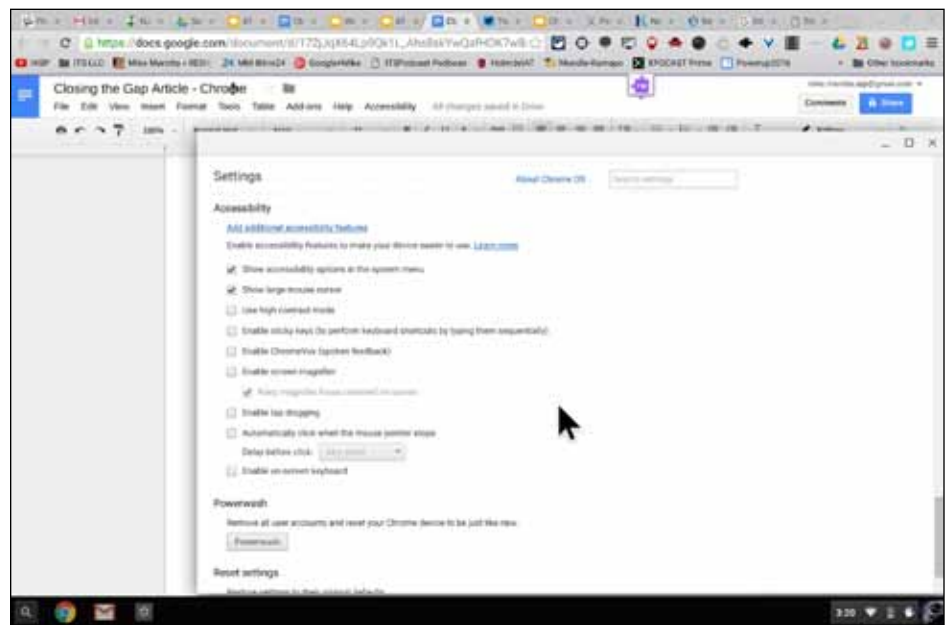


Image 2: Chrome OS Accessibility Caption: The Accessibility Settings in Chrome OS.

## CHROMEBOOK TIPS AND TRICKS

While the Chromebook mostly works like a “regular” laptop, there are a couple tricks that are specific to Chromebooks that you need to know to use the device effectively.

### WHERE IS THE CAPS LOCK KEY?

One of the first differences people notice on the Chromebook keyboard is the absence of the Caps Lock key. On the Chromebook keyboard, the Caps Lock key has been replaced by a Search key. Since the Chromebook operating system is browser-based and it is primarily used for Internet-based functions, this button replacement makes sense. But there are still times we need the Caps Lock key, so what do we do? To turn on Caps Lock, hit the Alt + Search Key. This will turn on Caps Lock to complete the typing task. Simply hit those two keys again to turn that function off. When the Caps Lock is on, you will see a small Up Arrow in the system tray at the bottom of the screen, next to the time display.

## WHAT ARE ALL THE KEYBOARD COMMANDS?

It is sometimes difficult for students to remember all the keyboard shortcuts available on the computer. Did you ever wish there was an easy way to see the commands? Well, on the Chromebook you have all the keyboard commands right at your fingertips.

Hit Ctrl + Alt + ? and you will get an on-screen keyboard overlay. Now just hit the each modifier key combination (Ctrl, Ctrl+Alt, Shift, etc.) and the overlay will change to show you which keys produce each keyboard command. Every time you hold a different modifier key down, the keyboard background changes color and changes to the available keyboard shortcuts available. Once you are finished, hit the Escape key and the keyboard goes away.



Image 3: To see the available keyboard shortcuts, hit Ctrl + Alt + ? and an on-screen keyboard will display on screen.

in the form of hardware modifications or built-in accessibility settings - we need flexibility!

Just like Windows and Mac OS X, the Chrome OS has a set of built-in accessibility features that we can use to customize the experience for individuals with disabilities.

Some of the built-in settings will customize the visual display of information, including (image 2):

- Screen magnification: Enlarge the screen image, but be mindful that increased magnification means the person will have to scroll left/right and up/down to view the entire screen.
  - High Contrast Mode: This mode will change the screen view - everything white will become black, and black will become white. Think photo negative!
  - Large Mouse Cursor: Increase the size of the mouse cursor on the screen to assist with visually tracking movement and location on the screen.
- Another powerful accessibility feature is the screen reader function called Chromevox. This full function screen reader will announce all items on the screen. In addition, there are extensive keyboard shortcuts available to enable the individual to navigate the screen

without using the trackpad. While screen readers are typically used with individuals who are blind or visually impaired, remember to focus on the function this provides. I have used this built-in screen reader successfully with many young adults with cognitive impairments who are non-readers. Since they are unable to read any of the items on the screen, turning on Chromevox allows them to hear the items on the screen and access the Chromebook independently.

For a list of Chromevox commands, visit: [http://www.chromevox.com/keyboard\\_shortcuts.html](http://www.chromevox.com/keyboard_shortcuts.html)

The other built-in accessibility features provide additional support for physical tasks related to the keyboard.

- On-screen Keyboard: For the individual that will be typing using a mouse (or mouse alternative), the on-screen keyboard will place a keyboard layout on the screen that can be accessed with the cursor.
- Sticky Keys: For individuals who are unable to complete simultaneous keystrokes, activate Sticky Keys. Now, simply type those simultaneous keys in a series. The computer will automatically “hold down” the keys to complete the series of keystrokes.
- Tap Dragging: For anyone who has difficulty holding down the trackpad and moving the cursor simultaneously, this function will electronically “hold down” the trackpad so the user can simply move the cursor across the screen.
- Automatically click: Turning this function on will automatically click the mouse button once the cursor stops moving for the designated amount of time. By turning this on, a user does not have to perform both tasks to select an item. This helps when the clicking function causes the individual to move the cursor, causing them to miss the item they want to click on. Also, for individuals that are using a head mouse, now they don’t need to activate a click switch to select items.

While built-in accessibility settings can help with customization and increase access, what about alternative access tools on the Chromebooks? Well, good news, many of these tools will work also. Whether you are looking to use an adapted mouse or alternative keyboard, as long as the device does not require a software driver installation (Read: Plug and Play!), you should be able to use this on the Chromebook.

In addition, there are some specialty access tools that also work well on the Chromebooks. Need a head mouse? No problem, use the TrackerPro from AbleNet, Inc. (see image 4) This device will connect directly into the Chromebook and provide mouse access via head movement. For mouse clicks, pair this device with a switch or use the Automatic Click function from built-in accessibility and simply dwell on an item for the Chromebook to select it automatically.

Speaking of switches, you can use switches with a Chromebook. Try the Don Johnston, Inc. ([www.donjohnston.com](http://www.donjohnston.com)) Switch Interface Pro to connect up to five switches to the Chromebook. One important factor with switch control - you are not controlling the Chromebook with switches. Instead, you are using switches to control websites and/or apps. Want to try switch access on the Chromebook? Here are some switch resources:

- Shiny Learning - <http://www.shinylearning.co.uk/freegames/index.shtml>
- HelpKidzLearn - <http://www.helpkidzlearn.com/>
- Sensory App House - <http://www.sensoryapphouse.com/>



Image 4: Chromebook Head Control Caption: Use Plug and Play hardware adaptations to provide flexibility.

## GAFE, APPS AND EXTENSIONS

Now that we have discussed the Chrome operating system and the Chromebook hardware, let’s talk about the ways to customize the user experience. As part of each Chrome user profile, a suite of productivity tools is available. These tools are similar in function to the products of the Microsoft Office suite of tools. The following chart shows the Microsoft Office tool and its Google equivalent.

While these tools are very similar in function, there are some key differences with Google products. Since the tools are Cloud-based, all your files are available to access on ANY device (including mobile devices). The hallmark of Google apps is the ability to collaborate in real time with

Function	Microsoft Office	Google
Cloud Based File Storage	OneDrive	Drive
Word Processor	Word	Docs
Presentation software	Powerpoint	Slides
Spreadsheet	Excel	Sheets
Email	Outlook	Gmail

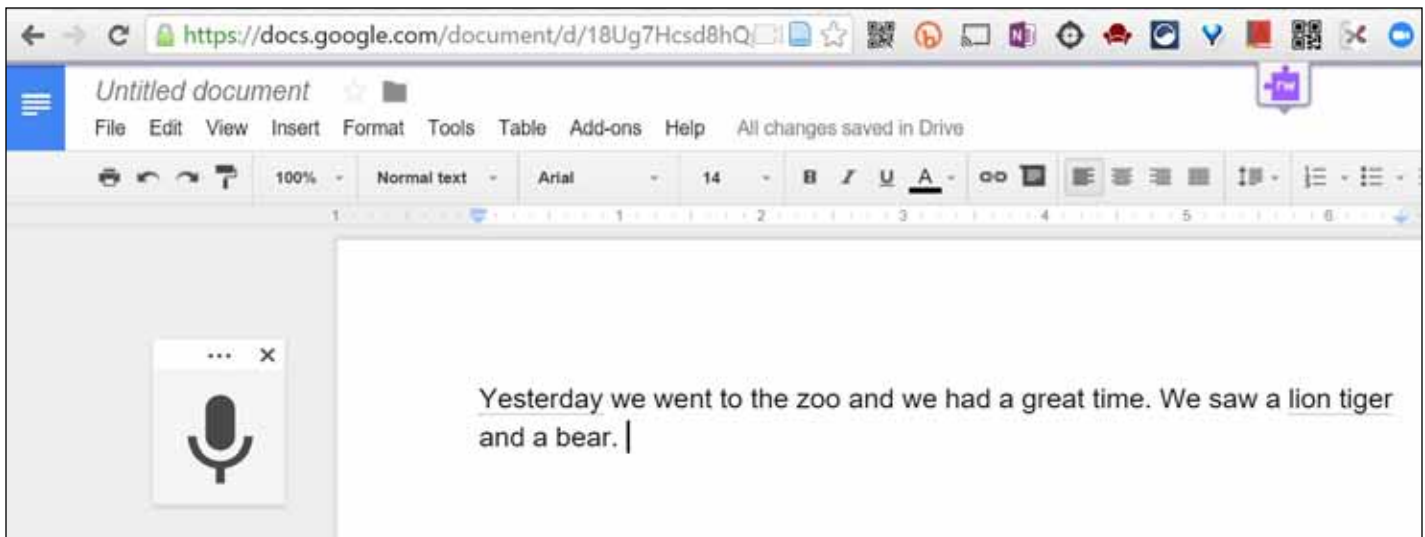


Image 5: Voice Typing Caption: Within Google Docs, speech recognition is available using Voice Typing.

other users. For users that struggle with writing, Google Docs now has built-in Voice Typing! Click on the Tools menu and select Voice Typing.

Users have had great success using the built-in microphone of the Chromebook for dictation. There is no voice training required for Voice Typing, but remember to position the individual directly in the front of the computer and make sure there isn't too much background noise that will affect recognition.

The real power of the Chromebook platform comes from installing apps and extensions into the user profile. These tools extend the functionality of the system and provide different levels of support to individuals. Remember, since the Chromebook uses a Cloud-based user profile, any apps or extensions will follow the user from one device to another.

It is important to point out - Chrome is available on any system (Windows, Mac, Chromebook). On any device, open the Chrome browser and access the Chrome Web Store at [chrome.google.com/webstore](http://chrome.google.com/webstore). Users can simply search through categories for available tools. While many tools in the Chrome Web Store are free, there are some that have a cost. The introduction of the Chrome OS has changed the way software tools are purchased. Instead of a one time

fee, many Chrome apps and extensions are purchased on a yearly subscription basis. This change is difficult for some school administrators and they report not wanting to purchase subscriptions. Subscription purchases can actually save money over time because at the end of the year, the team can reevaluate the necessity for the tool. Whether the individual's needs change or a different tool is available, this subscription model provides AT teams with more flexibility when providing services.

There are so many apps and extensions available in the Chrome Web Store. As with the other app stores, we must make sure to focus on the individual's needs and match these needs to the features of these apps and extensions. To go through all the available apps and extensions, we would be reading a 50-page article! A few powerful apps/extensions are highlighted below.

- Snap and Read Universal - From Don Johnston, this extension provides text-to-speech support for both accessible and inaccessible text - read aloud websites, PDFs, Bookshare books and even Kindle books! Other features include a Dynamic Text Leveling tool to automatically adjust the reading level of any material. Translation will provide access to

over 90 languages. There is also an outlining tool to collect information from multiple sources to start the writing process.

- Read and Write for Google - From TextHelp, this extension provides text-to-speech support throughout the Chrome environment. Toolbars provide access to websites, PDFs, Google Docs, ePub and even KESI files that were created in Kurzweil. Screenshot Reader will provide access to inaccessible text. For writing support in Google Docs, the toolbar also has features that include a Dictionary, Picture Dictionary and Word Prediction support.
- Co:Writer Universal - From Don Johnston, this Chrome version of their popular word prediction tool provides writing support in any Chrome browser tab. In addition to Topic Dictionaries, this tool now has speech recognition built in to provide writing support in any browser tab.
- Beeline Reader - This free extension provides support while reading in Chrome. When this extension is activated, the lines of text are colored in gradients in order to facilitate eye tracking from line to line.
- Kami PDF Viewer - Both an app and extension, this tool is a PDF viewer for



Google Drive. A powerful feature of this tool is the ability to annotate the PDF with text, drawing and highlights. The finished product can be downloaded or shared directly through Google Drive.

- Copyfish - An OCR (optical character recognition) extension that will translate inaccessible text into text that can be read via text-to-speech tools.
- MicNote - Have you used the Livescribe Pen or Audio Note app? Then this Chrome app is for you. The individual can audio record while typing notes. These typed notes are

then synced to the audio recording for review later.

For a detailed list of tools that can be used as assistive technology, check out [mmatp.com/chromeAT](http://mmatp.com/chromeAT)

With Chromebooks continuing to rise in popularity, AT professionals need to continue to find ways to ensure that this technology is accessible to individuals with disabilities. The Chrome platform provides opportunities for flexibility, usability and accessibility that is a powerful solution for individuals of all abilities. To learn more about Chromebooks and Chrome supports, check out

these two exciting resources from Mike, available from NPR, Inc. ([www.nprinc.com](http://www.nprinc.com)): Chromebooks in the Classroom (six-page laminated guide) and Chromebooks for All Learners: A Teacher's Checklist. ■

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- IACET CEUs

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- IACET CEUs
- Graduate level academic credit

# Moving Beyond a Common Roadblock to Successful AAC Implementation

As a school-based augmentative and alternative communication consultant working in a large county in Pennsylvania, I see the challenges and triumphs related to augmentative and alternative communication (AAC) implementation on a daily basis. When stopping to reflect on the common roadblocks to successful use of AAC systems in our students, there is one in particular that is glaring and ever-present. This recurring roadblock is the inability of teams to foster consistent and effective AAC system use. Many students are not seeing their AAC systems as their voice, they are not learning language beyond

simple requests, they are not motivated to use their systems to communicate and they are often prompt dependent. These problems do not discriminate; they occur across ages, AAC system-types, socio-economic groups and settings. Similarly, the challenges I see in my practice go far beyond the scope of my local area. These challenges are seen globally. Therapists, teachers, paraprofessionals and families supporting AAC users across the globe echo these very same challenges when they post to AAC-related social media groups seeking support and guidance. The good news is that the vast majority of team members (professionals, support

staff and families) are truly invested in doing what they can to support language development and effective communication skills using AAC. They simply need some targeted intervention to learn how to teach the language of AAC.

Though there are various factors that lead to failures in teaching someone to become an effective augmented communicator, I see one factor, as the guiltiest culprit. That culprit is lack of modeling. In AAC, modeling system use has a number of different names, but is most often referred to as Aided Language Stimulation (Goosens', Crane, and Elder, 1992) or Aided Language Input. Aided



**LAUREN S. ENDERS**, MA, CCC-SLP is a speech-language pathologist currently serving as a full-time Augmentative Communication Consultant and Assistive Technology Consultant for Bucks County Intermediate Unit in Bucks County, Pennsylvania. Lauren has had a career-long passion for using assistive technology (including all types of augmentative and alternative communication-AAC) to support students with complex communication needs, mobility impairments, cognitive impairments, autism and other disabilities. In recent years, Lauren has capitalized on the power of social media to share her passion and expertise for AAC, assistive technology and the power of iOS technologies. Lauren created and manages a large Pinterest site ([www.pinterest.com/lasenders](http://www.pinterest.com/lasenders)) dedicated to special education, assistive technology, augmentative communication and instructional technology. To contact Lauren, use the following: [lenders@bucksiu.org](mailto:lenders@bucksiu.org); [www.facebook.com/LaurenSEndersMaCccSlp](http://www.facebook.com/LaurenSEndersMaCccSlp); [www.pinterest.com/lasenders](http://www.pinterest.com/lasenders); Twitter: @lasenders

Language Stimulation may be defined as “a language stimulation approach in which the facilitator points out picture symbols on the child’s communication display in conjunction with all ongoing language stimulation. Through the modeling process, the concept of using the pictorial symbols interactively is demonstrated for the individual.” (Goosens, Crane, and Elder, 1992) Regardless of what we call language modeling in AAC, in its absence, AAC very often fails.

Sadly, when an implementation failure occurs in AAC, people may mistakenly assume that the failure occurred because the individual using the AAC system was in some way incapable of learning the system. In my experience, however, the inability of the user to learn and use the system is rarely the cause of the breakdown. Most often, the breakdown occurs because, though well meaning, teams implementing AAC systems with their students/clients did not receive enough training themselves and thus cannot provide sufficient modeling and instruction to foster true language development and system use. Furthermore, for many, gaining access to professionals with adequate skill in implementing AAC can be a real challenge. Those who do have access often report that though they have access to an AAC consultant or knowledgeable SLP, they do not have enough access and still feel unsure about how to proceed. Lack of modeling is certainly not the only factor in stalling AAC learning and use, but in my experience, it’s the most significant factor.

So, why is it so hard to model AAC and why is this breakdown occurring so often? In many cases, to successfully teach language, we must understand how language development really plays out in typically-developing communicators. When we consider how natural speakers learn language, it’s almost all learned through modeling by those around us. As infants and toddlers, we receive hours and hours of modeling with no expectation that we will produce language in return. Every day, all day, we hear the language we are expected to learn spoken to us and spoken around us. Without direct instruction and practice on how to model symbol use as we speak, we (as natural speakers) typically don’t think to model the language we are expecting our students to use ... the language of AAC! We have a tendency to place the system in front of the AAC user, ask a question verbally and admit defeat when the communicator fails to respond or respond correctly using their system. Additionally, when we do model, we tend to have the expectation that we will receive an immediate and grammatically correct augmented response. When that doesn’t happen, we can quickly become disillusioned. In an effort to combat feelings of defeat related to the pitfalls and time-consuming nature of AAC implementation, let’s consider an eye-opening quote from Jane Korsten.



“It is critical for an individual to not only have symbols, but also to have experience with those symbols in a symbol-rich environment / print-rich environment. The typically-developing child will have been exposed to oral language for approximately 4,380 waking hours by the time he begins speaking at about 18 months of age.

If someone is using a different symbol set and only has exposure to it two times a week, for 20–30 minutes each, it will take the alternate symbol user 84 years to have the same experience with his symbols that the typically developing child has with the spoken word in 18 months!!!

The typically-developing child will demonstrate language competency around 9–12 years of age, having been immersed in and practicing oral language for approximately 36,500 waking hours. For 9–12 years, that child has been using and receiving corrective feedback while practicing with the spoken word.

At twice a week, 20–30 minutes each time, it will take the alternate symbol user 701 years to have the same experience.”

*- Jane Korsten (2011) QIAT Listserv April 4, 2011*



Sharing this quote is not meant to cause additional stress or frustration to those supporting AAC users, but rather to illustrate the importance of speaking to AAC users using their system and that learning language takes time. We must provide language input in the same form that we expect the individual to provide as output. If only spoken language is provided for the communicator, how can we expect augmented, symbol-based language to come out? (Sennott, S., Burkhart, L., Musselwhite, C. R., & Cafiero, J. January, 2010). Gail Van Tatenhove further explains the importance of AAC modeling when she says, “The SLP and other communication partners need to ‘practice what

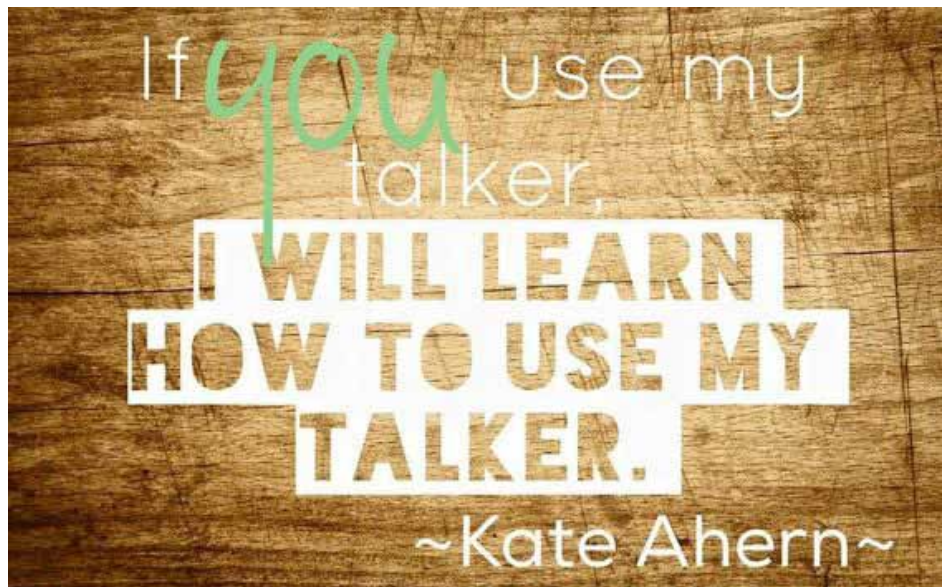
they preach.' The SLP (or other communication partner) doesn't need to be able to say everything with the device; however, SLP needs to communicate with the device at the level expected of the student using the device." (Van Tatenhove, 2009)

Folks who are finding it stressful to speak to students using their systems often express that they simply cannot represent every word they speak with a corresponding symbol. They don't know the system well enough to touch/say every word. I always explain that AAC users need to see us communicate with symbols along with our natural speech, but they do not need to see us represent every single spoken word! Selecting and modeling one or two words in your sentence as you speak your sentence will work just fine. What's important is that the person using AAC sees you communicate with AAC, sees you model language structures and has their system validated as a true method of communication (because you're using it too!)

### **HERE ARE SOME HELPFUL HINTS FROM MASTER CLINICIAN, GAIL VAN TATENHOVE (2009)**

Steps for implementing ALgS in the classroom using the student's own device or communication board are:

1. Ensure the student is attending. It does no good to model if the student is not watching which pictures, codes or navigational sequences are being selected.
2. Provide visual input at a pace that allows the student to see what symbol(s) you are pointing to and process that information. The point of this step is not to "show off" your proficiency and speed with the device, but to model vocabulary, vocabulary codes/navigations and word order to the student.
3. Vary the amount of visual model provided based on the proficiency of the student. It may be neces-



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sary for some students with limited proficiency with their device to model only one or two targeted core words. A general rule of thumb is to model at least one word beyond the student's current mean length of utterance in morphemes and/or words.

4. Pair the visual model with verbal input, filling in the gaps to ensure the student hears a complete sentence.

We have admired the problem, but how can we truly become more comfortable using the technique of Aided Language Stimulation? Like any other instructional strategy, this technique takes some practice and, not surprisingly, is best learned if an experienced "modeler" can model Aided Language Stimulation for you! If you don't have access to an experienced SLP or consultant, there are many wonderful resources on the Internet, including the excellent AAC blog PrAACticalaac.org, AAC-related Facebook groups, YouTube channels with uploaded videos of talented clinicians, teachers and family members, and, of course, local and national training opportunities.

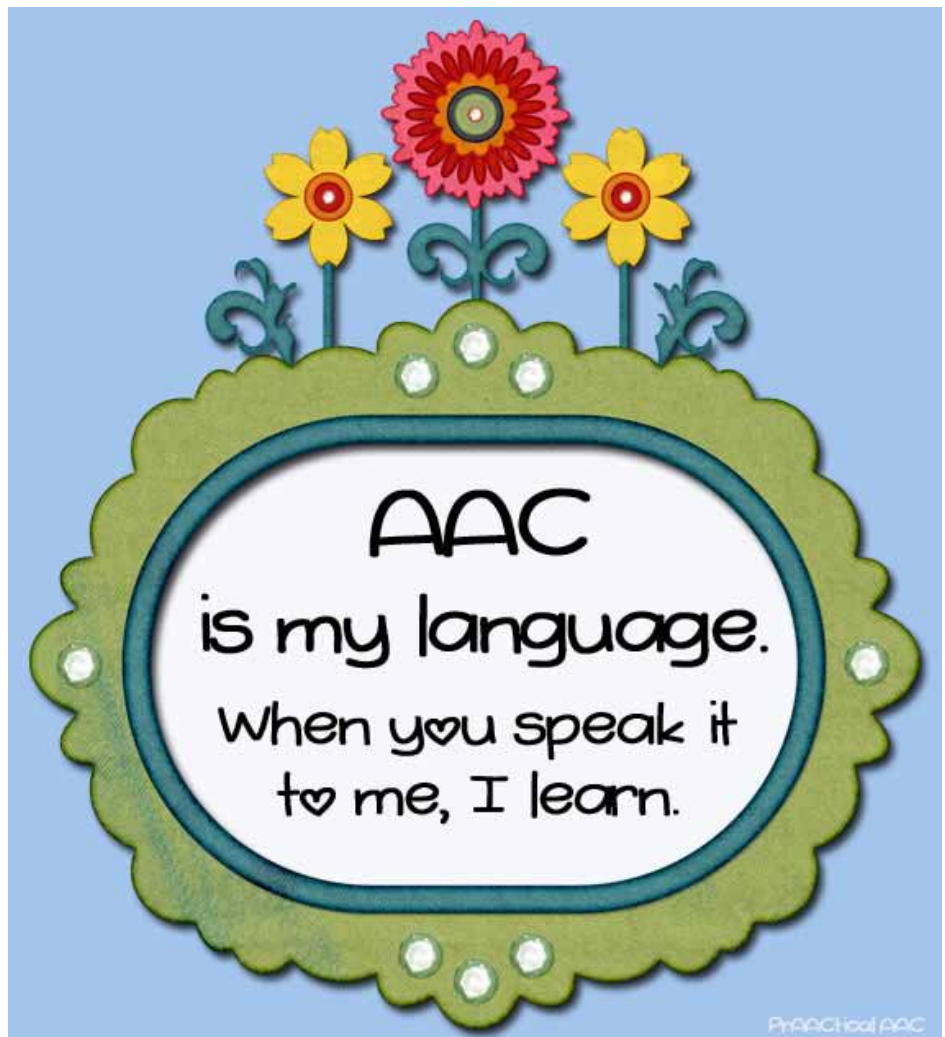
### **HERE ARE SOME COMFORTING THOUGHTS RELATING TO GETTING STARTED WITH AIDED LANGUAGE STIMULATION SHARED BY PRACTICALAAC.ORG (FEBRUARY 25, 2012).**

1. It takes time to get good at this. We're speaking pidgin AAC until we get fluent, so just keep at it. Give yourself permission to be halting at first. Keep at it and the fluency will come.
2. It helps to start small. If the communication aid, SGD or app is complex, don't try to tackle everything at once. Get comfortable with modeling using the main pages or screens first, then move onto other places where vocabulary is stored.
3. Along those lines, it helps to start off by modeling only core words in the sentence. Those words are already highly familiar to you and they are generally words that are easy to read. That makes it a bit easier to develop a smooth motor pattern for saying those words so that you can move from hunt-and-peck to slide-and-glide."

It's important to remember that it's perfectly acceptable for AAC users to see you flounder as you look for words when you begin speaking to them on their system. Use those errors as an opportunity to talk through the process of finding words. Then you can review the path and procedures you used to find the word. They'll need to learn and employ those same skills! Additionally, when beginning to support someone with a high-tech dynamic display system and navigation of the system is a bit overwhelming, take some screen shots. Get to know where the vocabulary is on just those pages and speak to your student/client using the paper versions. You can always progress to modeling on their system later.

Another important consideration when beginning to model use of AAC is that communication is not developed solely through responses to questions. We have a tendency to try to teach language through a series of questions that require answers, in essence testing rather than engaging learners in naturalistic communication exchanges. We don't teach infants and toddlers by only asking questions and requiring responses and can therefore not expect augmented communicators to learn language in that manner. Tell the student something about yourself, what you like or what you did (while modeling on their system) and then pose a question that flows naturally in the context of the conversation!

While this article cannot teach therapists, teachers, paraprofessionals and parents how to model AAC when speaking to AAC users, I'm hopeful that it encourages readers to seek out information about how to begin to employ this essential technique of modeling AAC. Read blogs! Watch videos! Attend workshops! If we presume competence and provide extensive models of how to speak using AAC systems by doing it ourselves, we are sure to see the development of successful augmented communicators.



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# Matching Assistive Technology to the Student: An Evidence-Based Assessment Process

Assistive technology (AT) devices have been shown to be effective in helping students with disabilities master their educational goals (Watson et al. 2010, Zapf, 2012) in the school setting. These technologies include AT devices to assist students with academics, such as reading and math, augmentative and alternative communication (AAC) to assist students in communication, cognitive technologies to help students with intellectual impairments, to various technologies to support access to educational materials, positioning in the classroom, sensory needs, self-help skills and mobility. There are many types of AT devices available on the market today to meet the needs of students with disabilities; however, there continues to be a consistent abandonment rate of general AT devices that ranges around 30% (Scherer, 2014). While

evidence supports students' success through the use of AT and the rehabilitation technology market continues to produce AT devices, why has the abandonment rate remained consistent for the past 30 years? Zapf and colleagues (2016) suggest that effective use of technology results when a student-centered assistive technology assessment is conducted that includes a thorough evaluation of the student's skills and needs matched to technology features and an assistive technology service plan is implemented.

The Matching Assistive Technology to Child - Augmentative Communication Evaluations Simplified (MATCH-ACES) Assessment is an evidence-based assessment process developed by Dr. Susan A. Zapf, Debbie McBride and Dr. Marcia Scherer. The MATCH-ACES model has

three crucial areas of focus that represent the primary components found to most influence successful use of assistive technologies. They are (1) the characteristics of the child, parent and teacher who will be the users of the technology, (2) the milieu or environment(s) in which the users will interact with the technology, and (3) the technology features. The MATCH-ACES assessment was found to have good psychometric properties (Zapf et al, 2016) and effective in matching students to technology based on AT outcome scores (Zapf et al., 2012).

The MATCH-ACES model is a continuous process that aims to match the student and AT based on personal and contextual factors that can impact the person's use of AT, based on the framework developed by Dr. Marcia Scherer (1998), Matching Person and Technology



**SUSAN A. ZAPF**, Ph.D., OTR, BCP, ATP, is an Occupational Therapist and Assistive Technology Professional with 20 years of experience working with the pediatric population in both private practice and the school-based settings. Dr. Zapf's research emphasis is on Assistive Technology assessment and outcome effectiveness. She is Board Certified in Pediatrics through AOTA, certified in the Sensory Integration Praxis Test, and certified through RESNA as an Assistive Technology (AT) Professional. She is the primary author of the MATCH-ACES Assistive Technology Assessment and The Service Animal Adaptive Intervention Assessment.

Model (MPT), and adapted in Ireland by Scherer and Craddock (2002). The MPT and MATCH-ACES model is designed as a rotating wheel (Figure 1) in keeping with the idea of a continuous and dynamic assessment model. The center of the wheel, the target, is the proposed goal of matching person/child to AT. Within the first ring of influence within this framework is the student or consumer of AT and personal factors that can contribute or affect the student's use of AT, such as lifestyle and routines, history of using technology and psychosocial factors (motivation and interest in technology). The next ring of influence is the milieu and environmental factors that can impact a person's use of AT. This is an area often overlooked but plays a critical role in the use of AT. If the environment does not support the AT, it is likely that the AT will not be used. Factors identified in the environmental/milieu include the attitudes of others, environmental structure, the culture, economics and political laws and policies that affect the service and delivery of the AT. The third ring is the technology that is being considered for the student. This layer includes specific device features, usability factors of the device, performance, appearance, availability and cost, all of which can impact the selection of AT and realization of benefit from use. The outer layer of the MPT and MATCH-ACES process is the continuous process of evaluating, selecting the device, accommodating needs and potential changes with service follow-up and use of AT. When all three rings of influence are assessed properly, there is a better chance of meeting the goal of matching the student and technology.

Zapf (2012) field-tested the MATCH-ACES Assessment process in five different school districts across the United States. Assistive technology evaluators were trained on the MATCH-ACES assessment process and evaluated 35 students that were referred for assistive technology assessments. The assistive technology

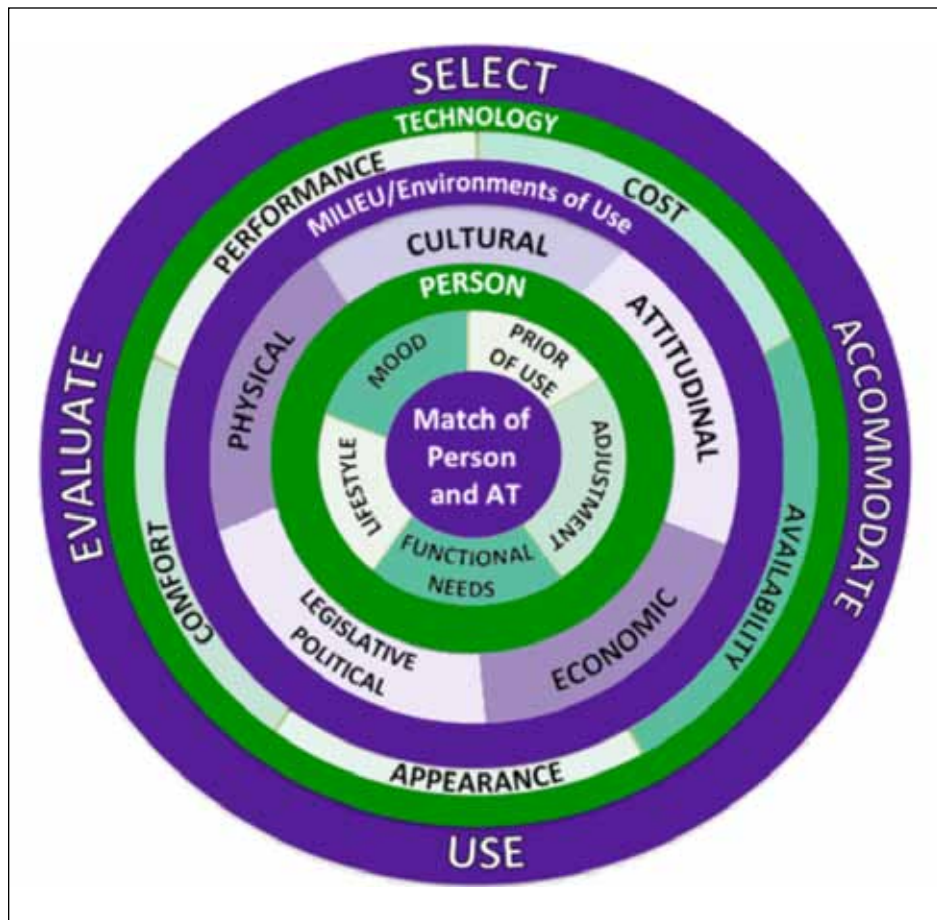


Figure 1: MPT and MATCH-ACES Wheel

evaluators reported that the MATCH-ACES assessment had good clinical utility in the areas of measuring the student's need for AT, aligning with the students' individualized education plan (IEP), identifying critical factors that contribute to successful AT use, useful in making AT decisions and the assessment process was student-centered (see Figure 2). More importantly, the MATCH-ACES assessment was useful in matching students to technology that impacts the students' functional participation in educational setting, as students in the study significantly improved in mastery of their educational goals using the technology that was recommended through the MATCH-ACES Assessment process.

Zapf and Scherer (2014) identified five critical steps in student-centered AT assessments:

1. Identify the student's goals/needs for AT (How is AT needed in order for the student to progress on their educational plan?)
2. Determine the student's AT readiness (Look at personal predisposition factors, previous technology use, desire and willingness to use technology, environmental factors that can impact the student's ability to use AT.)
3. Determine the AT match (Do the student's skills/abilities meet the requirements of the device features? Trial possible solutions to assure success.)
4. Implement an AT intervention plan (Should include training, responsibilities of device maintenance and

customization of the device for student use.)

5. Follow up on AT use/success (Follow-up should occur within the first three months of use to assure AT success and opportunity to make changes if needed. This is a critical component for AT use and success.)

### CASE STUDY EXCERPT FROM THE MATCH-ACES MANUAL

Below is a case study example of how the MATCH-ACES Assessment was used effectively in matching the student's needs to technology features and addressing the training needs of the student's educational team to assure effective follow-through of using the technology within the educational setting.

**Background History:** Student C attends the local junior high school and is in the 8th grade. He meets eligibility for special education services as a student with a learning disability in reading. Student C is in regular education classrooms and receives inclusion support as needed through special education support services. He also receives speech and language therapy consultation services. He was referred for an assistive technology evaluation to address the need for a text reader requested by the parent and IEP team, as currently the student relies on support staff, instead of technology, when he is unable to read or comprehend the assigned reading in his language arts class. Student C's IEP goal is that he will read 8th grade material and score 70% on comprehension exams.

**Needs Analysis:** The MATCH-ACES Needs Analysis assesses 17 critical areas of functional performance in the academic school setting. Student C is independent with his mobility, positioning, sensory (vision and hearing) self-help skills and behavioral transitions. He does well with academics in the areas of math, science and social studies. He does have a pragmatic language impair-

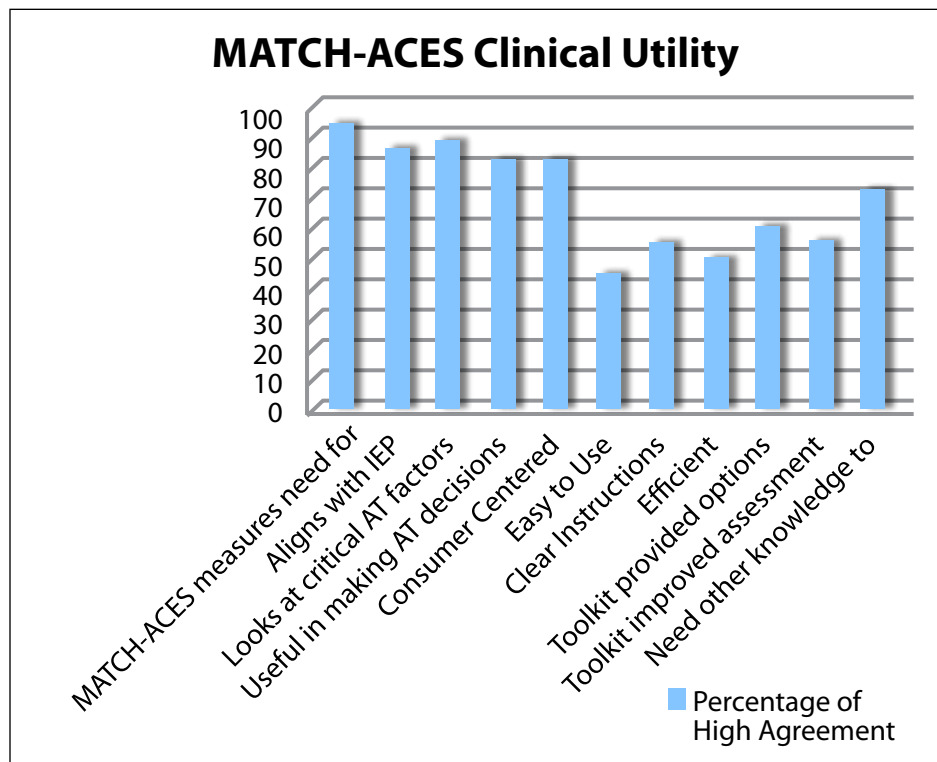


Figure 2: MATCH-ACES Clinical Utility

ment that affects his expressive communication and social interactions, but the IEP team did not determine a need for AT in this area. He has difficulty with reading, specifically in the area of fluency, phonemic awareness and vocabulary. The Protocol for Accommodations in Reading (PAR) developed by DeCoste and Wilson (2012) was completed on Student C prior to the request for assessment. The findings from the PAR indicated that Student C had increased comprehension when using a text reader (80% with text reader and 40% self-read) and decreased mistakes in reading the text. The results from the Needs Analysis indicate that Student C has difficulties with reading and could benefit from AT.

**Predisposition to AT Form:** Student C completed the Predisposition to AT Form Sections 1 and 2 to assess his readiness for AT. On the Student Experience with Technology scale, Student C scored a 5 on all attributes, indicating that he had a positive experience with technology, felt comfort with technology and was willing

to use technology, with a mean score 5.0 (see Figure 3). Student C's scores did not reflect negative attributes related to technology experience. On the Child's Behavior and Personality Scale, Student C's scores reflected positive attributes in the areas of mood, flexible, cooperative, motivated and interested in learning things. There were no scores that reflected negative attributes that could have influenced AT use in this section of the assessment (Student C's mean score was 4.4). Student C's special education teacher completed the Teacher Reactions to Technology Scale. Student C's teacher expressed interest in willingness to learn and use AT with student, has experience with technology and can attend technology trainings. Student C's teacher scored neutral in comfort with technology and prefers to use technology in the classroom. These scores indicate that Student C's teacher may need some additional support to help her feel comfortable when setting up



# MATCH-ACES Predisposition to AT Form: Part II

Directions: Answer all the questions below by checking the box that most accurately describes the child (Child may complete if capable). If you are uncertain about a response, check the Neutral Score.

Form Completed by:  Parent  Teacher  Child

## 1. OVERALL, WHAT IS THE CHILD'S EXPERIENCES WITH ASSISTIVE TECHNOLOGIES?

	Generally Find	4	Not Sure Neutral	3	2	Generally Find	1
Technologies are satisfying	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Technologies are frustrating	<input type="checkbox"/>
Technologies help with play and discovery	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Technologies interfere with play and discovery	<input type="checkbox"/>
Technologies are encouraging	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Technologies are discouraging	<input type="checkbox"/>
Technologies bring the child together with peers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Technologies separate the child from peers	<input type="checkbox"/>
The Child wants to use technology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The Child does not prefer technology	<input type="checkbox"/>
Child seems comfortable with technology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Child seems anxious around technology	<input type="checkbox"/>
Child approaches technology with purpose	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Child approaches technology aimlessly	<input type="checkbox"/>
Technologies help the child become more independent	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Technologies make the child become more dependent	<input type="checkbox"/>

Figure 3: Case Study Student C Predisposition Scores

Student C's technology within the classroom (Teacher's mean score 3.6).

**Technology Utilization Form:** The student had prior experience with using his iPad with Read2Go app at home with success when reading for leisure. Student C did not use the iPad with Read2Go at school. At school, the para-professional or special education teacher would read his tests or books to him, thus impacting his independence in the classroom. Student C's parents have expressed a concern that Student C needs to use other methods for reading to promote independence at school and requested an AT assessment.

**Student Skills and Device Feature Match:** Student C's positive skills include: he is independent with his fine and gross motor skills, and has the ability to access and use the iPad with text reader for his reading and LA books. He wears glasses for vision and his hearing is intact. Student C will need to use technology

during specified language arts and in various classrooms that require lengthy reading. The technology needs to be portable and accessible in these classes. The AT Evaluators rated his AT device at the Transition Level, as he knows how to use the technology, but the technology needs to be fully integrated into the classroom setting.

The AT Evaluators and Student C completed the AT Device Features Form. Overall, Student C rated positive scores on device features in the areas of effective performance of the device, ease and use of the device, and Student C felt he could use the device independently. Student C also liked the appearance of the device and felt he could use it in all classrooms, as long as he had access (see figure 4). The AT Evaluators and Special Education Teacher noted that the device met requirements of other technology devices in the school and did not feel device would have issues with compat-

ibility. The AT Evaluators and Student C completed the Device Tool Comparison Form and rated the device a score 59/65. The positive features of the device included: the child liked the device, the device helped the student meet his IEP goal, the device was compatible, the student was able to use the device in all environments and the student had the skills and stamina to use the device. One concern related to the use of the AT device in the school was to assure access of the device for the student in the classroom. The IEP team documented a training plan that included a plan for access of the device into the IEP plan. Overall, the device was considered an effective match for the student (a score of 4.8 on the MATCH-ACES Score Form was obtained, indicating a good match in all eight categories of device selection and use). The IEP team recommended the device for the student and the device was implemented into the student's IEP.

# MATCH-ACES Assessment: The AT Device: Features to Consider

Directions: Listed below are specific AT device characteristics that should be examine when choosing a device for a child.

Put a + on the square if the AT device being considered meets the criteria and a 0 in the square if the device does not meet the specific criteria.

Dependent on the AT device being considered, not all sections may need to be completed.

Device(s) being considered: 1. Text Reader with Bookshare 2. \_\_\_\_\_

**Performance:**

- Effective and Efficient
- Easy to use/learn Student has iPad-knows how to use
- Compatible with other devices Mac district compatible
- Flexible
- Child's uses independently or
- Child's needs assistance to use

**Ergonomics:**

- Fits child's physically
- Easy to use in environment
- Portable in environment
- Are more devices needed in each environment
- Is device physically accessible Need to set up plan for classroom use

**Device Aesthetics:**

- Child likes the look
- Device fits child's life style
- Device accepted by peers
- Device minimizes child's difference
- Device is current technology

**Device Set-up:**

- Skill to turn on/off and operate
- Skill needed to program device
- Accessible in classroom-Need to set up plan for classroom
- Requirements (is set-up supported)
- Is other equipment required for operation

Figure 4: Student C Device Feature Considerations

**Implementation and Follow-Up:** The AT Evaluators developed a training plan that included training and set-up of the device for the student. Training needs that were to be addressed included training teachers on the device, meeting with student and parent to assure the device is being used across settings, setting up account access for books on Teacher's Language Arts Bookshelf stored on the Bookshare Account and follow-up plan for access. On the three-month follow-up plan, the AT Evaluators rated the student as successful (rating of 8) in using AT to meet his IEP goal.

Successful AT technology use begins with an effective assistive technology evaluation to match the student's skills and need to the device's features. An implementation and follow-up plan are equally important. The MATCH-ACES Assessment includes the essential components of an AT evaluation to help

guide the AT evaluator in conducting a thorough AT assessment. The MATCH-ACES Assessment is available for purchase through Children's Journey To Shine, Inc. (CJSI).

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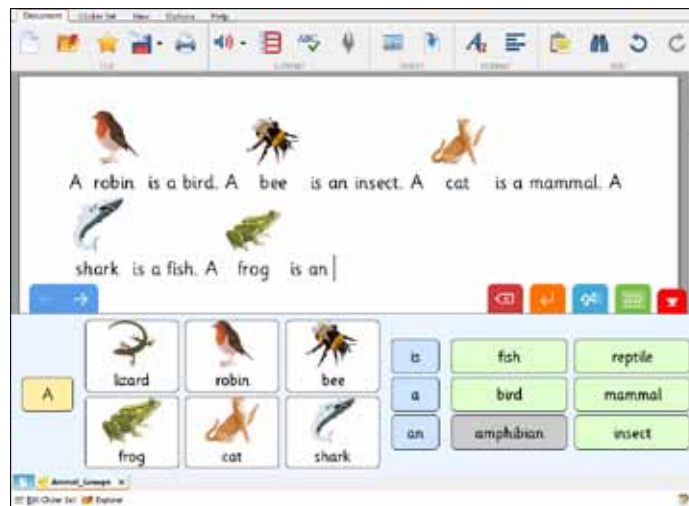


# DISKoveries

## SUPPORTED WRITING AND READING

By Joan Tanenhaus

**Clicker 7** ([www.cricksoft.com](http://www.cricksoft.com)) This new, outstanding version of Clicker has been designed for children to enhance their beginning writing experiences with easier and new features for planning and writing, both for assisted and independent writing. Clicker 7 has a talking word processor that can say the letters as they are entered, the words when the space bar is pressed and reads the full sentence when the end punctuation is entered. Word prediction and spell checker are always available, are context-sensitive and are speech supported. Hundreds of Clicker sets and grids are available to enable beginning and more experienced learners to write with whole words, phrases and pictures. Some of the new features include improvements in the word prediction (in-word prediction, next word prediction that looks back two to three words instead of just one and phonetic prediction).



Clicker 7 and Clicker Sets: Clicker Sets ([www.cricksoft.com](http://www.cricksoft.com))

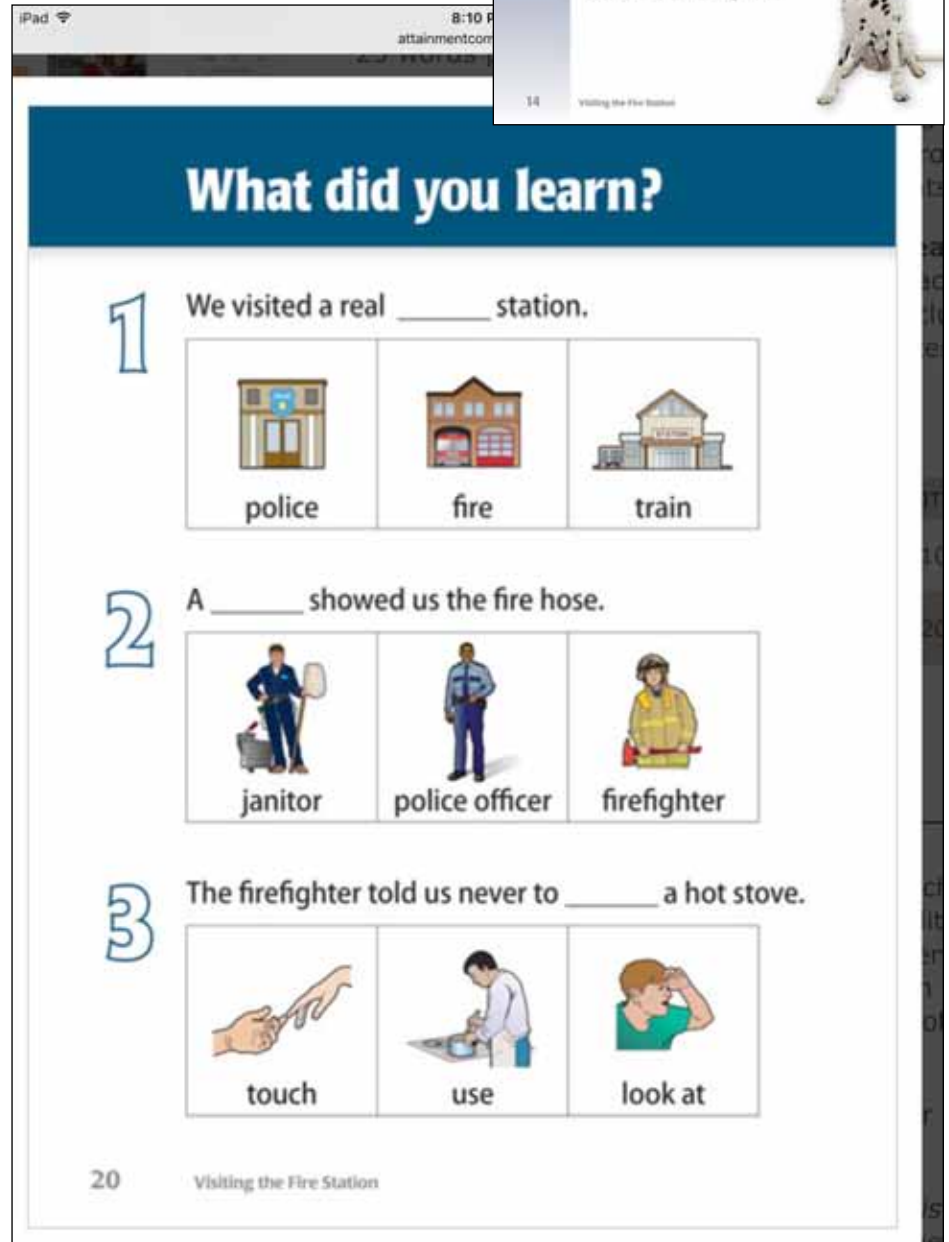
There are two new children's voices, with excellent inflection that varies, depending on the punctuation that follows the words (i.e., Really? Really!). There

is permanent access to an on-screen keyboard; a new font, called Dyslexie, specifically designed to help those with dyslexia; and Word Pool for targeted spelling intervention. Voice Notes let the teacher or learner record a sentence or an idea and then write it with support from the grid, word processor and word prediction. It can also be used to provide instruction to new writers, as well as with other writing activities (i.e. cueing for sequencing tasks). With up to six voice notes in any one document, it is excellent for individuals who have problems with working memory. The voice note can be repeated at any time, as many times as needed, with just a click. Clicker Sets provide point-and-click access to whole words, phrases and pictures for supported writing. It includes Sentence Sets (for support in writing sentences with modeling, pictures and words, even guided order if

you want), Connect Sets (whole word support with multiple steps for multiple sentences on topic), and Word Banks with words only for more advanced writers. Clicker Board is the new built-in graphic organizer that integrates the organizer with voice notes and multi-page boards and converts from graphic organizer to word bank, using either words or pictures. New accessibility features now include integration with SuperKeys (assistive keyboard that groups and enlarges keys when selected) and access with Eye Gaze, along with single- and two-switch access. Free, readymade grids are available, and you can adapt them and also create your own. These are compatible with Clicker Apps so you can use them on the iPad, as well. (See app review below.) There are many more new features and enhancements - visit the website and view some of the videos and PDF documents that make it easy to understand and to use these and other features. Clicker 7, for Windows and Macintosh, is available as a single license, 5-, 10- and 40-user, one-school license and all-district license. The all-district license allows teachers and students to install and use at home.

**Everyday Reading Curriculum** (Attainment Company: [www.attainmentcompany.com](http://www.attainmentcompany.com)) Everyday Readers Curriculum is a new two-book collection of 36 original stories with pictures and text, one for each week of the year. They coordinate with common monthly classroom themes, incorporate educational concepts (such as counting, language skills, health, social skills) and are interesting and fun for young students. There are stories about Rules, about Holidays (Halloween, Thanksgiving, Valentine's Day, St. Patrick's Day, etc.), about Health (Dentist, My Amazing Body), about seasons, family, community and much more. Each story is illustrated with professional photographs

that highlight the characters in the stories, as well as other important vocabulary and concepts. Stories are designed to be read aloud and range from 6-10 pages each, with about 25 words per page. Since the curriculum also comes with a PDF of all the stories, they can also be used on the SmartBoard as a class or small group reading or language activity. Teachers can use the stories to explain basic and related concepts, as a context



Everyday Reading Curriculum ([www.attainmentcompany.com](http://www.attainmentcompany.com))

to target reading and writing skills, to work on language skills, to learn to understand humor, for sequencing, narrative skills and so much more. At the end of each story is an assessment quiz. The text, like all the text in the books, is in large print. Each question has three answer choices, accompanied by symbols/pictures that provide students with a visual aid. There is a comprehensive Teacher's Guide that includes a detailed lesson plan for each story, including a prescript, objectives, differentiated instruction (additional activities) and postscript. This is a very motivating and well-done collection of materials for your young students.

**Daily Reading Comprehension Semester 1 and Semester 2** (Attainment: 800-327-4269, [www.AttainmentCompany.com](http://www.AttainmentCompany.com)) For your older students, this software program presents high interest, low-readability, non-fiction stories that are read aloud and followed by reading comprehension tests and crossword puzzles. Each story tells of a particular event (some well-known and others lesser known) that happened on that date. Reading levels are at third to fourth grade level. Reading comprehension tests focus on reading for details, locating information, finding facts and improving vocabulary. Teachers can create a reading list for students, or they can search by categories or content type for stories of interest. Stories are displayed as an open book. Each page includes audio narration with text highlighted. The narration can be stopped by clicking anywhere on the text. You can set the narration to read automatically and to turn the pages automatically. Test options allow you to enable/disable the use of crossword puzzles; to allow users to return to the story pages after starting a test; and to provide hints. Great program to use with students of all ages who need

supported reading or who are working to improve reading comprehension.

**Compass2** (Twelve South ([www.twelvesouth.com](http://www.twelvesouth.com)) The Compass2 is a multi-use stand that works with any iPad Air, iPad mini or iPad Pro. It serves as a stable easel that can hold the iPad in either portrait or landscape mode. It is made from heavy gauge steel and has three legs that open, easel style. The back leg locks in and prevents tipping. All legs are silicone coated to protect the table and iPad surfaces. At the same time, these silicone pads also help prevent the iPad from slipping or shifting when placed upon Compass. The Compass2 also elevates the iPad to provide better positioning and, at the same time, provides space to plug in your charging cable as you are using the iPad in any position. When you are interested in using the Compass for typing on the iPad's on-screen keyboard, fold up the full-sized back leg and release the fold-away secondary leg that creates a comfortable typing stand. When not in use, the Compass folds up into a pocket-friendly, 7x1-inch package and slips into an included padded travel sleeve.



Compass2 upright position and for typing ([www.twelvesouth.com](http://www.twelvesouth.com))

# NEW AND NOTEWORTHY APPS

Brief Review-- Check on iTunes, developer's website and YouTube for more details, pictures and videos

\* - lite or free version is available

A - Android version is also available

## Judy Lynn Software ([www.judylynn.com](http://www.judylynn.com))

This company has created a whole series of excellent sequencing apps, as well as two Windows Sequencing software programs, that use basic video modeling to demonstrate the sequence, followed by a review sequence, and then a follow-up interactive sequencing activity. These are well-done and extremely powerful learning programs - visit the website for full descriptive information, screen shots and free trials.

Sequencing Tasks: Toileting Female Adult;		There are three apps in this series. They present extremely well done, tasteful, sensitive and yet detailed video sequences that demonstrate up to 10 steps for each app - from closing the door to washing hands after. The initial video breaks down the task into 10 individual steps, including pulling down pants, positioning, going, detailed wiping, pulling up underwear/ pants, flushing, etc. There are three similar but different apps: a female adult, female child and male version. The video uses a lifelike, animated individual viewed from the side, so that no explicit part of the body is exposed. The male version has four different sequences - sitting on the toilet bowl for bowel movement, sitting on the toilet bowl for urinating, standing at the urinal and standing at the toilet bowl for urinating. After the video, there is a review activity that shows, step-by-step, with pictures. You can select 4-10 steps for the review. This allows you to customize the sequence to meet the individual needs of the learner by controlling the level of detail. The review sequence is then followed by the interactive sequencing activity, which can be presented in different ways: 4-10 steps with 1, 2, or 3 pictures at a time. Using 1 picture at a time, the sequencing activity become errorless. You can talk about each picture as long as you want. You can also print all the pictures for off-computer home and school use. You can print the individual pictures, a chart or create your own sequencing activity. There is a built-in step-scanning option for switch access. For other sequencing apps by Judy Lynn, see the Sequencing Tasks: Life Skills series.
Sequencing Tasks: Toileting Female Child;		
Sequencing Tasks: Toileting Male		
Turn Taking- Switch and Touch Accessible Bundles	*	This app is designed to teach two students to take turns to complete an errorless, on-screen picture. It can be used with touch or with a single switch. There are options to control the turns per activity from 2-8. When the screen is touched or the switch pressed, one section of the picture is revealed along with some music. When the picture is completed, there is music and a video reward related to the picture (i.e., when the jet plane is chosen, there is a video of an airplane flying and landing). A nice feature is the ability to add a personal prompt for each user. You can add the students' pictures to the activity so that their picture is highlighted if it is their turn. The apps contain 12 activities (pictures) each and you can find a list in the App Store. There are three Turn-Taking bundles, plus a Lite version with one activity (picture). For switch access, you need one of the following: AbleNet Blue2 Bluetooth Switch, Pretorian Technologies interfaces or a Bluetooth wireless keyboard.

## Virtual Speech Center ([www.virtualspeechcenter.com](http://www.virtualspeechcenter.com))

This company has published a large group of excellent, well-designed and motivating apps for speech-language pathology and special education, for children and adults and for home and school use. All have many built-in options, such as use with single or multiple students, data collection, ability to email, audio recording features and more. See website for additional information and for videos of each of the apps.

Seasonal Directions		This app targets auditory comprehension of increasingly longer one-step and multi-step unrelated directions with activity vocabulary related to seasons. There are hundreds of pre-recorded directions with 1-3 step with 1-2 elements, with size concepts, color, prepositions, number concepts, verbs, pronouns, negative statements and comparatives. You can also add different types and volumes of background noise, add reward games, vary game length and choose your favorite season to play in.
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Memory Exercises	Designed to help improve and maintain short term memory, attention and working memory in older learners, this app includes activities for visual recall of scenes with follow-up questions, visual recall of objects (5 objects, what's missing), recall of written words and sentences (related and unrelated words, simple and complex sentences,) and recall of orally presented words and sentences, and recall of paragraph details. There are questions about personal information and recent information, auditory recall of words, sentences and paragraph details. There are matching memory games that can be played with pictures, words or numbers. You can vary the display time of the stimulus, as well as the amount of time for the delay after viewing the picture.
Social Skills with Billy	This app was designed to let children with autism practice social skills and pragmatic language skills using pictures of real-life type situations and to also practice identifying feelings. There are over 100 situational pictures, such as birthday parties, school, home, restaurant, stores, library, doctor's office, etc. Children are presented with photos and short scenarios. The questions and multiple choice responses are highlighted and read aloud. The tasks include identifying right vs. wrong responses in dialogues (scenario's script followed by "Did he say the right thing?"), identifying correct responses in dialogue (scenario's script followed by multiple choice responses); stating correct responses in dialogues (scenario's script followed by "What should he say?"); identifying feelings by following directions (point to pictures showing stated feeling); identifying feelings in multiple choice format (see picture and select which of three stated feelings it shows); identify how one feels based on short scenario (listen to description of situation and select one of three feelings - all read aloud); and stating how one feels based on short case scenarios (scenario read aloud, state the feeling without any suggestions). Audio can be turned off if you want to use reading instead.
Sounds at Home	For children 2-6, this app helps young children become aware of sounds in their environment and sounds in words, as well as following directions. All activities are shown within the context of a house using familiar vocabulary. Children identify the source of sounds they hear, find rhyming words, identify initial and final sounds and follow four levels of following directions. As with others, you can enter multiple students, track and email results.
Factory of Categories	Created for children aged 3 and up to practice classifying and naming categories. There are four different activities: Where does it belong? Name this category. Which one does not belong? and Add one more item to the category. Each has three levels - easy, moderate and difficult.
Talking Together	This app was designed to encourage students to hold and maintain a conversation with their peers. 2-4 students can participate in the conversation. Students sit around a table, placing the iPad in the center of the table. There are over 100 topics divided into the following categories: About Me, Social Questions, School, Recreation, Favorites, Hypothetical Questions and Would You Rather Questions. Goals are chosen from groups of goals, such as Basic Conversation (9 goals), Tone and Body Language (8 goals), Turn Taking (4 goals) and Topic Maintenance (4 goals). The question is then generated and spoken aloud. When student is ready to answer, he/she presses the Go button. The teacher checks the right or wrong button for scoring and tracking.
TheraApp	Virtual Speech Center has released a new app called TheraApp, which includes 30 of their apps. It is sold as a subscription to individual therapists and to school districts, with volume discounts. Contact them for more information.

<p><b>Smarty Ears</b> (<a href="http://www.smartyearsapps.com">www.smartyearsapps.com</a>)</p> <p>This company has been a leader in creating high quality and a large variety of apps for Speech-Language Pathologists. Excellent video tutorials on all apps. All apps have Report Cards for each session, full data collection and easy report writing and progress monitoring. Well done and very comprehensive apps.</p>		
iScreen Aphasia		<p>This app is a screening tool that guides the evaluator through a complete receptive, expressive language and oral motor screening process, assists with diagnosis, and provides percentages of accuracy for each area screened, including the corresponding G code modifier. It can also be used as a reassessment tool to monitor progress. Following the entry of user information, there are tests for yes/no questions, body part identification, simple and complex object identification, following 1-, 2- and 3-step directions, oral motor assessment, listening comprehension, automatic naming task, evaluation of gesture use, naming, phrase and sentence completion, repetition, reading, reading comprehension, spelling and simple writing. Results are presented and a report is generated. Thorough and well-done app that will help you assess and then develop a plan of care.</p>
GoSequencing		<p>This app has 43 sequences organized into five categories (playing, mealtime, grooming, hygiene, nature, chores and miscellaneous). There are 13 skill levels starting with identifying the first or last step from a choice of two pictures. The levels progress from 3-step to 6-step sequences with image and audio, with or without text. You can also sequence with text only. Instructional audio can be turned off and there is also the option to play entire sequence before and/or after. You can also add your own step sequences by entering photos, audio and text. App can be played in English, Spanish or Portuguese.</p>
<p><b>Hamaguchi Apps for Speech, Language &amp; Auditory Development</b> (<a href="http://www.hamaguchiapps.com">www.hamaguchiapps.com</a>)</p> <p>This company produces an impressive collection of well-designed and comprehensive apps created specifically to provide additional practice in areas of speech, language, auditory development and listening skills. They produce lite versions of most of their apps so you can try them. Also, video demonstrations are available on their website and on YouTube.</p>		
Listening Power Grades K-3 HD	*	<p>Designed to practice listening skills at the K-3rd grade level, this third app in the series has 5 activities with 3 levels and the ability to select 2-4 choices at each level. The activities are Listening for Descriptions, Listening for Meaning, Listening for Grammar, Listening for Word Memory and Listening for Stories. The voice is paced so that it is at a fairly slow rate, with pauses and emphasis on key words. As the difficulty level increases, the emphasis is removed and the narration is speeded up to a more typical level. Users have the option to automatically or manually advance to the next activity after a correct choice. Each page has a "Hear Again" button. When the users touch it, their score is not changed but it is noted in the Session Report and sometimes it will signal the app to drop the level down. There is also an option to use the "text on" feature, making the app appropriate to use for reading practice. To use for expressive language practice, select option to manually Display Choices. Then, after each question is asked, ask the child to tell you what the answer will be before revealing the choices. Practice re-telling the stories too! There are 2 built-in reward games that can be chosen, with control over how often they are presented. Progress can be tracked. You can print and email copies of the stories and questions. The app contains an excellent detailed "manual" of instructions and suggestions.</p>
Listening Power Preschool HD	*	<p>The first app in this series was designed to practice listening skills for preschoolers, with activities that are on 3 levels and with 2-4 picture choices, with 50 questions per level, 150 for each activity. Activities include Listening for Descriptions (colors, size concepts, states [ie. dirty/clean, wet/dry], emotions, and descriptors); Directions (spatial concepts, classroom directions, directions at home, linguistic concepts); Grammar and Meaning (plural forms, verb tenses, pronouns, negation, wh concepts and prepositions - 50 items on each level); Stories with Pictures; and Stories without Pictures. Data is kept and scores are reported for each activity. Missed items can be repeated during the next session. Nice feature is the "Manually Show Choices" that lets the child guess what the correct response may be, before showing options. Auto advance increases level after a given number of correct responses.</p>



Listening Power Grades 4-8+	*	The second app in the Listening Power series is appropriate for grades 4 and up, and age appropriate for older students and adults with developmental disabilities. There are 5 activities, each with 3 levels and options for 2,3,or 4 choices. App addresses language processing (meaning and content) and auditory processing (way content is presented acoustically). There are 5 activities: Listening for Grammar (identify sentence that is grammatically correct); Listening for Fast Sentences (which spoken sentence matches the sentence spoken fast); Listening for Meaning (sentence with target vocabulary is spoken and student identifies a sentence that verifies auditory comprehension); Listening for Missing Sounds (student listens to sentence that is missing sounds and identifies what was said); and Listening for Stories (story followed by questions - can introduce background noise and/or visual distractions). Suggestions are provided on using this app for reading comprehension, expressive language, notetaking and writing practice. Data and progress tracking is available. Well done and very comprehensive app with a wide range of activities that will enhance listening skills, language and literacy for ages 8 and older.
<b>SocialCue</b> (Codejib.Inc) ( <a href="http://www.socialcuetheapp.com">www.socialcuetheapp.com</a> )		
SocialCue		This is a comprehensive video modeling app that includes a collection of HD videos presenting unique social, behavioral and functional scenarios for students of all ages with special needs. The videos are simple, clear and focused to target developmental areas. It includes both appropriate and inappropriate videos with quiz modules with 3 different levels of questions. Level 1 targets basic vocabulary and simple yes/no questions. Level 2 targets wh questions. Level 3 targets nonliteral language and higher level language skills with more than one possible answer. Question can be turned off, if preferred, or you can create your own set. You are also able to dis-engage all interactive functions and video player controls to eliminate interference during the presentation. New videos are added regularly. There are currently over 90 videos in categories such as Communication, Daily Living Skills, Emotions, Greetings, Hygiene, In Public, Manners, Personal Space, Playing, Public, Safety, Schedule Change and School. Most are between 10 and 30 seconds. Options include the ability to enable pauses, show questions, disabling touch. Go to the website to see many examples of the included videos. Excellent app!
<b>Lingraphica</b> ( <a href="http://www.aphasia.com">www.aphasia.com</a> )		
Lingraphica TalkPath Therapy	free	This is Lingraphica's new integrated language and cognitive training program that is accessible online or on the iPad. It contains 8 areas: News, Speaking, Reading, Writing, Listening, Memory, Reasoning and Daily Living, with more than 11,500 tasks. It integrates the older programs, which were available individually. It can be used by individuals with Aphasia or with other language disorders working on their own or with a speech pathologist guiding the learning. There are tracking capabilities and activity reports. Therapists can create customized therapy plans, assign homework and monitor activities. This app is comprehensive and free! Older apps (also free) that were stand-alone are still available if you prefer working on individual areas (Small Talk Phonemes, Oral Motor Exercises, Daily Activities, Conversational Phrases, Common Phrases, Letter-Numbers, Consonant Blends, Dysphagia, Days-Months-Dates, Pain Scale and Intensive Care)
Lingraphica TalkPath News	free	This free app is Lingraphica's news source for individuals who need help reading, listening to or understanding the daily news. You can access national, world, business, education, entertainment and many other articles from the app or from <a href="http://www.talkpathnews.com">www.talkpathnews.com</a> . New articles are added daily Monday through Friday. Articles are read aloud and highlighted and at the end of every article, there is a series of questions that test reading comprehension with immediate feedback. This app requires an Internet connection.
<b>Crick Software</b> ( <a href="http://www.cricksoft.com">www.cricksoft.com</a> ) Excellent products that all work together to enhance reading, spelling, vocabulary, writing skills! Apps for iPad, software for computer. See above for review of Clicker 7 for Windows and Macintosh.		

Clicker Sentences		Create sentence building activities - enter sentence to produce a grid with all the words - students tap each word to create the sentence in their document. Full speech support. Can also display the completed sentence as a model on screen or as a pop-up. Picture can be added to sentence. Set up sequence of sentences to make a paragraph on topic. Great for young students just learning or for older who can benefit from using scrambled sentences to work on linguistic and word order skills. Print out, use free LearningGrids sentence sets.
Clicker Docs		Elementary school word processor with lower case on-screen keyboard and built-in word processor. Word Banks easily created and can be available to provide reading and vocabulary support. Choose font, voice, speed of speech, speak letters, words and/or sentences, number of words to display on word processor, Spell checker, high-contrast color schemes, Word Bank grid. Access Learning Grids to see Word Banks created by Crick - new resources added frequently. Clicker Docs and Clicker 6 are able to "talk" to each other so work from one is available on the other.
<b>Panther Technology</b> ( <a href="http://www.totaltalkeraac.com">www.totaltalkeraac.com</a> )		
Total Talk		This new AAC app, created in collaboration with Caroline Musselwhite, Pati King-DeBaun and Mark Surabian, has many new and outstanding features to support different kinds of communication, and with a variety of emotions (i.e., whisper, excited, bored and even weird.) Support for early learners includes EZ Phrases (for quick interjections) and a Jokes section; and for more advanced users, there are three levels of conjunction support, pop-ups, word prediction options (6-12-18 choices with words, with or without symbols) and full-page editing with cursor control. For all, there are features like built-in narrative photo albums, a Storytelling Mode, Emo Voice (adds emotions to speech output), My Stuff (to store special content) and advanced editing features (one-touch setting interface, instant modifications of grid sizes and styles, and back-ups to Dropbox, Google or through email). Included also are PCS Persona symbols from Dynavox and voices from Acapela. Other features include Quick Chat, spell mode, Flex Folders (organization in intuitive folders and consistent whichever grid size is used) and Turn Side Talk (to hold two conversations at once.) Total Talk lets you email, text and tweet right within the app. There are a variety of setting for different motor needs, and the ability to instantly switch the dock from left to right.
Total Talk Orbit	free	This free app is a companion app to Total Talk. It allows the user's iPad to connect to nearby iPhones or iPads via Bluetooth. There are two modes - in Tele-Prompt, teacher or parents can see what's on the screen of the user and make suggestions. The other mode, Tele-Text, lets the user send messages to a nearby iPhone - good for communication in noisy settings and also good to send a private messages.
Joan Tanenhaus, M.A., CCC, Speech-Language Pathologist/Assistive Technology Specialist, is Founder and Executive Director of Technology for Language and Learning, Inc., a non-profit organization dedicated to advancing the use of computers and technology with children and adults with Special Needs. (e-mail: <a href="mailto:ForTLL@aol.com">ForTLL@aol.com</a> ) ■		

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# product spotlight

## Orcam Launches Unique Wearable Device With Cutting Edge Technology To Assist People Who Are Blind Or Visually Impaired



**A smart camera mounted on glasses receives visual information and speaks to the wearer, reading, recognizing products, and identifying faces. OrCam gives independence.**

Orcam Technologies has officially announced its United States launch of a unique low-vision wearable device developed to assist people who are blind or visually impaired. The OrCam device harnesses the power of cutting edge artificial vision technology to interpret visual information through the use of an intuitive smart camera mounted on the frames of the wearer's eyeglasses connected to a pocket-sized computer. OrCam recognizes text, products and faces and relays information discreetly in the wearer's ear through a personal earpiece.

The company stated that it was proud to deliver cutting edge technology tailored to people in need of assistance. OrCam has developed proprietary advanced face recognition technology specifically for the OrCam device which assists users in recognizing people around them.

Each OrCam device is hand-delivered by a certified OrCam Trainer who teaches each new user how to use the device. Typically it takes a new user about two weeks to fully incorporate this new technology into daily life.

Using OrCam for the first time is often an emotional experience for those who struggle to get through each day with limited sight. No longer restricted by their inability to read the words around them, a new world is opened up in which reading, eating out, shopping, and recognizing approaching family and friends are now easily possible.

The OrCam device is currently available for purchase in select locations across the United States and the company plans to continue to expand its coverage in the US and worldwide.

[LEARN MORE](#)

## A REAL SOLUTION

For far too many children, especially those who are young, pre-literate or have more severe cognitive issues, using assistive apps and devices that



require hunting and pecking through grids and folders (i.e.: those originally designed for adults) is far from ideal, not just because the words are hard to find for their still developing brains, but because, quite often, many children don't even know what they are looking for!

Our response was to create a modern alternative designed FOR CHILDREN, taking into account their needs and abilities and the first to really take full advantage of the features of the iPad.

Aacorn is a re-imagining of what assisted communication and AAC apps for children can be, based on a deep understanding of the challenges non-verbal and developmentally delayed children face, and making the best use of today's advanced technology to make a real difference.

It is the first AAC app with an artificial intelligence that learns and adapts to each user's individual needs, enabling children of all ages and abilities to build and speak clear-flowing sentences – at or near the speed of most other children.

## LEARNS TO PREDICT WHAT YOUR CHILD WANTS TO SAY.

Aacorn is so much more than another AAC app with buttons that speak when pressed!

Aacorn replaces the grid of folders and subfolders layout used by last generation apps and devices (that too often means children can't find the words they need) and, instead, introduces a radically improved design for children that is much easier to navigate.

Aacorn introduces a clean and clear system of branching pathways we call the "Word Tree." Your child makes a choice and new branches with suggestions for new words present themselves automatically as your child needs them.

No more "hunting and pecking" for words hidden in grids or folders! No requirement to be able to read or spell! No need to have an exceptional memory to find words, and no more hard-to-identify stick-figure word pictures or robotic voices. Truly the next generation!

Together, all of the innovative features unique to aacorn result in a very significant improvement in the accuracy and speed with which many children can express themselves!

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## Help For Loved Ones Who May Wander!



We help reunite those who might become lost, disoriented or unable to

self-advocate with their families, loved ones and caregivers, using new and existing technologies in ways that are practical, easy to access and affordable.

### WHAT DOES IF I NEED HELP DO?

- 100% free caregiver controlled profile, with picture, contact and emergency info. This information is editable in real time as life happens.
- Emergency Q&A – This information can contain everything a first responder would need, such as picture, height, weight, can they swim, are they verbal, do they have a diagnosis, medications taken, special accommodations, etc., freeing the caregiver from having to remember all the important details during the pressure of a crisis.
- Emergency email that can send the user profile with picture and emergency Q&A to first responders in the need of a search or other critical situation.
- Wide assortment of wearable iD products and other safety products often utilizing QR technologies, with text linked to a unique user profile. The wide variety of products are designed so there will be an appropriate iD product for everyone, no matter their sensory needs.

### HOW DOES IF I NEED HELP WORK?

- When a wearable iD's code is scanned or manually entered on our website, the member's profile can be accessed by a finder, and the person in need can be helped and returned home.
- During a search or other event, by logging into our website and pressing the "emergency email," the members profile and extensive Emergency Q&A form will be emailed to whoever the user needs to send it to.

### PATCHES, SHOE TAGS, ID CARDS, WINDOW CLINGS, BUMPER STICKERS, DOG TAGS, PINS, CLIPS AND MORE!!

Put patches, pins, clips onto your clothes, backpack or device! Sew on yourself or take to the cleaners or Grandma's and have it done for you. Put your new shoe tag on your favorite shoe with tieless laces. Wear your dog tag. Have your iD card in your wallet. Find out more about these exciting products in our shopping section

### WHO DOES IF I NEED HELP SERVE?

We offer free memberships to people who might become lost, disoriented or unable to self-advocate when alone or away from their caregivers. Our members are generally people with autism, down syndrome, brain injuries, diabetes, seizures, Alzheimer's, dementia, intellectual and/or developmental disabilities and other similar issues.

### WHERE DOES IF I NEED HELP WORK?

This works everywhere there is Internet access, both domestically and internationally.

### WHY IS IF I NEED HELP IMPORTANT?

Identification and information are extremely important for a person who is lost or unable to communicate. It can help save a life. Wandering is the only cause of death due to autism. For people with Alzheimer's, 60% of them wander. A person having a seizure or other physical condition often can't tell anyone who they are or how to help.

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