Assistive Technology Resources for Children and Adults with Disabilities

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Projection and Reflection: Projecting iPad Screens to Interactive White Boards and More!

MONDAY, DECEMBER 3, 2012

1:00 PM - 2:30 PM Central Standard Time

Learn how to utilize and integrate the mix of interactive whiteboards (IWBs), iPads and Web 2.0 programs in the classroom for teaching and student learning. Presenter will demonstrate strategies for using hardware, software and apps to broadcast information, such as student work, data and ongoing experiments, wirelessly, from multiple iDevices to projectors and IWBs for capturing, discussion, annotating, adding to and repackaging for review and relflection as eBooks, webasts, posting for use in a Flipped Classroom model and more. Demonstrated will be a variety of applications from Promethean, Smart and Mimio, as well as free applications, with a a focus on sharing, collaborating and integrating broadcast from a variety of sources.

PRESENTER: DAN HERLIHY

Working with the Cloud: Saving, Moving and Accessing Files with Your iPad

MONDAY, DECEMBER 17, 2012

3:00 PM - 4:30 PM Central Standard Time

Using a variety of devices in the classroom (and home!), such as iPads and Android devices, learn how you can move files from one device to another, from a computer to all the iPads in your class, from an iPad to your computer, and everything in between. This session will cover a variety of solutions and examples on how to manage files, images, data, video, etc. within the classroom environment or for student access later from other portable devices or computers.

PRESENTER: DAN HERLIHY

Apps to Support Literacy for Struggling Readers

THURSDAY, DECEMBER 20, 2012

10:00 AM - 11:30 AM Central Standard Time

The iPad is a powerful tool that can support and promote literacy amongst struggling readers. There are literally thousands of apps on the app store that can support literacy. This session will help sort out the key features to look for when selecting apps for students. We will also look at various apps that support phonemic awareness, phonics, fluency, vocabulary, comprehension, and writing. Motivation to read can also be a huge issue especially amongst older students. We will discuss various ways and methods to help motivate and engage the struggling reader. There are also many apps that allow you to create your own support materials. This session will also explore accessibility features built into the iOS devices that can support the struggling reader as well as other resources that are available for use on the device.

PRESENTER: MARK COPPIN

Creating Content for the Diverse Learner

THURSDAY, JANUARY 10, 2012

12:30 PM - 2:00 PM Central Standard Time

The iPad is an excellent tool for creating content for the diverse learner. Content can be created to meet the unique learning needs and styles of the diverse learners in our classrooms. The iPad can be used to modify and differentiate classroom materials for each student in order to maximize learning. There are many apps that can be used to easily create content for students. In this workshop, participants will learn how to use various apps for creating content. We will cover several categories including eBooks, videos, audio, and communication. Participants will be given ideas on how to create their own eBooks, shoot and edit videos, create their own music, create visual schedule, adapt tests and classroom materials, and create communication support for the classroom. Participants will learn how to identify what key features to look for when selecting apps for content creation. We will also discuss implementation strategies as well as best practices.

PRESENTER: MARK COPPIN

WEBINAR PRESENTERS:

MARK COPPIN, B.S., is an Apple Distinguished Educator and the Director of Assistive Technology, Anne Carlsen Center for Children, Jamestown, ND.

DAN HERLIHY is an Assistive Technology/Technology Resource Specialist, Connective Technology Solutions, Inc., Hoosick, NY.

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Inside Text-to-Speech: The making of children's voices

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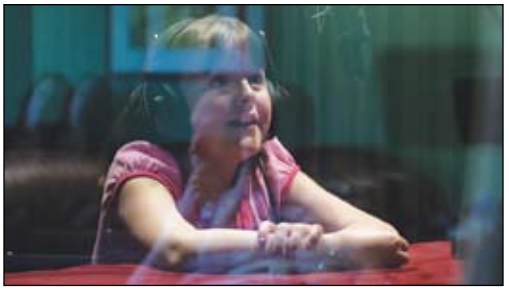


Today, text-to-speech (TTS) is a pervasive technology used in public announcement systems, automated voice response systems, navigation devices and on smartphones through software such as Apple's Siri.

However, despite the fact that children make up an estimated 60 percent of high-tech augmentative and alternative communication (AAC) users, there was still one frontier to be crossed when it came to assistive technology: there were no realistic children's voices available. In this article, we will explain how TTS works, how TTS voices are made and provide an inside look into the challenges we faced in creating the first genuine children's TTS voices.

INTRODUCTION

In the US, an estimated 2 percent of children ages 6 to 14 experience difficulty having their speech understood. Of these 735,000 children, 145,000 experience severe communication problems. If we assume incident rates for younger children are of a similar nature (though likely higher), another 260,000 children ages 3 to 5 have problems being understood, and another 50,000 experience severe problems. So potentially anywhere between 200,000 and one million American children could benefit from a TTS voice that actually sounds like a child. It is, thus, not surprising that whenever we showcased the speech output of our products, teachers, therapists and parents in the room would ask about the availability of children's voices. Hearing an 8-year-old boy speak with the voice of a grown man or a 6-year-old girl speaking with a pitch-transformed adult female voice can be disconcerting. For years, our reply had been that the technology was not quite ready for making children's voices and that in most countries it wasn't legally or even physically feasible for a child to be stuck in a sound booth for weeks to record their voice.

Little did we know, that in early 2011, we would actually embark upon a one-and-a-half year effort to build the first genuine children's text-to-speech voices based on recordings of real children.

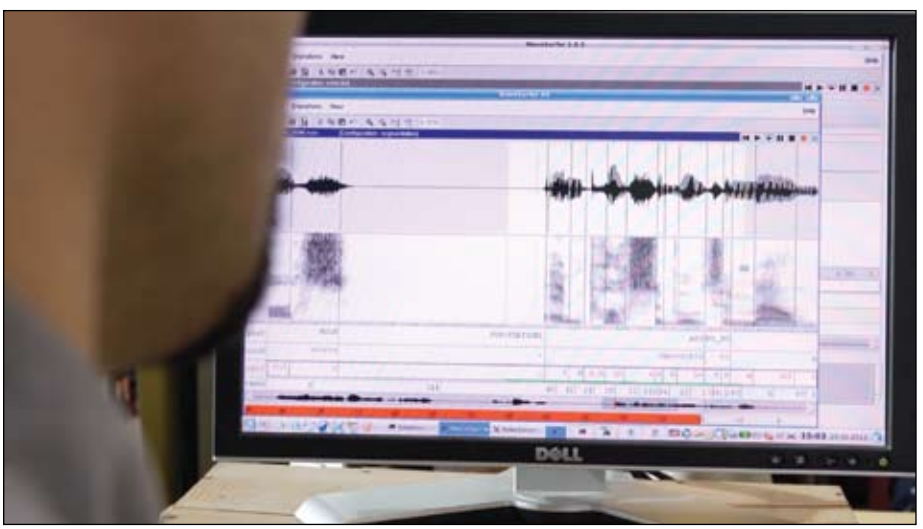
Up to that point, some companies had dabbled in making younger voices, either through pitch-transformation or by recording actors imitating a child, but no one had actually created high quality voices based on the recordings of real children.

We knew it would be a gamble and that it might well turn into a huge waste of time and resources, but we felt the combined experience of Acapela Group, with its long history of making text-to-speech voices, and AssistiveWare's experience with augmentative and alternative communication and the needs of children, gave us a fighting chance. So we were confident that it would all work out.

HOW TEXT-TO-SPEECH WORKS

Before getting into the details of making the new children's voices, it is useful to provide some background information on how text-to-speech works. There are several different TTS technologies, but when it comes to the highest possible quality, the technique typically used is that of "unit selection." For this technique, a script is created containing text that covers all the different sound combinations in a particular language. A voice talent then reads the script aloud in a recording studio. The recordings are then analyzed by a computer that breaks up the recorded audio into individual sound combinations. This process is called automatic segmentation. Manual segmentation is subsequently used for problem areas and to fix errors in the automatic segmentation. This work is done by a linguist specialized in the recorded language. The output of this process is a database that links phonetic sounds and sound combinations to audio units from the original recordings.

The speech synthesizer is an algorithm that combines a language model with the database of recordings. Creating the language model is a highly specialized activity, but only needs to be done once for each language. Making a new voice in a language for which the model has already been created is a lot less time consuming than making a voice in a language for which a language model is lacking. During the synthesis process, the text is analyzed using the language model and decomposed into phonetic codes. The synthesizer tries to find chunks of audio matching sequences of phonetic codes. The longer the sequences found in the database, the more natural the output will sound. However, as it is impossible to record each and every possible sequence of sounds, most words will typically be synthesized by "stitching" together two or more audio chunks.



For example, for the British voice, Harry, the word "impressive" is synthesized by taking "imp" from a recording of the word "impossible", "pres" from the word "president" and "ive" from the word "detective." When glued together, this generates "impressive." See the video "How text-to-speech works" at http://www.assistiveware.com/text-speech-how-does-it-work.

THE CHALLENGES OF CREATING CHILDREN'S VOICES

There were quite a few challenges we faced when it came to creating the children's voices.

First, we needed to create a new recording script that would be easy enough for an 8-10 year old to read and still allow us to maintain a good coverage of all the sounds and sound combinations of the English language. This meant removing some of the tongue twisters typical of the scripts used for adults. We also wanted the script to have good coverage of the kind of things children need to say on a day-to-day basis because this would reduce the number of chunks necessary to synthesize those words. Examples are carrier phrases, such as "I don't like …" or "Please help me …" that are common on AAC devices.

As we wanted the voices to be optimized for AAC use, we also decided to record a number of expressions and sounds that speaking children commonly use so that AAC users would also have access to them. Examples are phrases, such as "My turn!", "It's not fair!" and "Shut up!" that get their point across more clearly when recorded with emphasis than when generated with plain synthesized speech. We then asked the children to record sounds, such as a barking dog or a revving car, as speaking kids often make such sounds while playing or reading picture books with their parents.

Our next step was identifying voice talents. This turned out to be really challenging as it was difficult to find children in the age group we were looking for who were skilled readers and speakers, capable of delivering a consistent voice across multi-day recording sessions. We reviewed dozens of samples, often of children doing radio or TV commercials. After a pre-selection of all those samples, we asked a number of children to record a more standard test script to make our final pick. To help us make the right choice, we asked a small panel of professionals and parents to help us identify which voice talent sounded most pleasant and appropriate for AAC.

Recording sessions had to be planned during holidays and weekends so as not to disrupt schoolwork. With the boys, we had an additional challenge, as those that were old enough to read and speak consistently were also close to having their voices break. In fact, the first American boy we recorded provided excellent samples a few weeks before the recording sessions, but his voice started to break during the sessions and we had to throw away the resulting TTS voice for lack of consistency and start over. Another challenge was that children still produce certain sounds that adults no longer do and in other cases have not yet fully developed all the sounds adults make.

One of the most fun parts of the process was giving the new voices a name. For this purpose, we looked at the statistics of baby names from about 10 years ago and asked our panel of professionals and parents for input, as well as our own staff. This lead to a shortlist on which we all voted.

The recording sessions were fun but very challenging for the children. The script contains many weird and wonderful sentences in order to capture as many sound variations as possible in a text of manageable length. They needed to concentrate for hours at a time and, as can be seen in the videos we created of the work in the studio (http://www.assistiveware.com/making-new-american-childrens-voices-josh-and-ella and http://www.assistiveware.com/making-new-childrens-voices-harry-and-rosie), this was not always easy. However, they were excited to be able to help other children and provide a voice for those who cannot speak. An Acapela Group linguist and recording engineer traveled to the UK and USA to oversee the recording process and provide guidance on phrasing and pronun-

ciation. During the first session in the UK, there was also an official present from the Child Protection Agency to ensure that all laws related to child labor were respected and no children were hurt in the process!

Once the recordings were done and the segmentation process had been completed, we entered a months-long process of iterative improvements where AssistiveWare staff had the voices proof-read large amounts of text to identify pronunciation issues, and Acapela Group linguists addressed those issues by adjusting segmentation and defining pronunciation exceptions. We also started field-testing the voices by integrating them into Proloquo2Go and providing early access to a number of professionals and families. See videos at http://www.assistiveware.com/giving-children-voice-their-own and http://www.assistiveware.com/introducing-childrens-voices-proloquo2go.

All in all, we worked for a year and a half on two British voices, Harry and Rosie, and two American voices, Josh and Ella. The more progress we made on the project, the more excited we became. While we had to throw away the first American voice we made, the other voices turned out well. Still, as is typical of research and development projects, we had to keep quiet about what we were working on. That part was really tough, so we were extremely happy and proud when we were able to release the first voices in June as part of Proloquo2Go 2.0.

WHAT NEXT?

Although the child voices were co-developed by Acapela Group and AssistiveWare, they are not going to be kept exclusive. Children should be able to have access to these voices, irrespective of the device or app they want to use. Starting in January 2013, Acapela Group will thus offer the children's voices for licensing to any company interested in including these voices in their products. Many AAC vendors license Acapela Group voices, so Harry, Rosie, Josh and Ella will likely appear soon in an app or device near you. In the mean time, they are available as a free download in Proloquo2Go (US$190) and Pictello ($19) and can be purchased for use with any Mac OS X app for $30 in the Infovox iVox voice manager. Now, on to children's voices in other languages…

REFERENCE

US Census Bureau (2012) "Americans With Disabilities: 2010", US Census Bureau, July 2012, Table A-4. ■

“Starting in January 2013, Acapela Group will thus offer the children's voices for licensing to any company interested in including these voices in their products. Many AAC vendors license Acapela Group voices, so Harry, Rosie, Josh and Ella will likely appear soon in an app or device near you. In the mean time, they are available as a free download in Proloquo2Go (US$190) and Pictello ($19) and can be purchased for use with any Mac OS X app for $30 in the Infovox iVox voice manager.”

PAT CRISSEY has worked as a special education teacher and autism specialist for over 20 years. She is the author of numerous special education and autism related educational materials, including two books of picture directions: Picture Directions: Building Independence Step by Step and Science Step by Step. Pat may be contacted at crissey55@yahoo.com.

But Does She *Understand?*

Choosing the Right Visual Symbols

The use of visual symbols has greatly improved the ability of many individuals to understand and communicate with the world around them, from understanding what will happen next, to making choices and communicating wants and needs. Visual systems are valuable tools that are being used more and more in classrooms and the community.

There are a number of factors that need to be considered when setting up a communication system. This is true whether you are setting up the first system for a child, or looking to upgrade or make changes to an existing system. The first consideration is the individual's current abilities in both expressive and receptive communication, as well as any sensory or perceptual limitations that might impact the individual's ability to see and understand visual symbols. Motor skills also need to be considered to determine what type of visual system the individual could best access. Can he point to symbols, operate a switch, pick up a picture card, use a keyboard, etc.?

Next, each of the individual's daily environments needs to be studied to determine what communication opportunities exist in each setting. What would others like to be able to communicate to the individual and what would she like to communicate to them?

The third consideration is what type of symbol will be used. Choosing the right type of symbol is as important as other considerations, but is sometimes not given adequate attention. Too often, the decision to use a visual system is simply interpreted to mean using small cards with generic line drawings on them, without first determining if the individual understands what those drawings mean. The aim is to select symbols that are readily understood, not ones you think the individual is capable of learning. Of course, there are going to symbols within any symbol system that will not be immediately recognized and will need to be taught, such as symbols representing concepts or new locations and experiences. But beginning with recognizable symbols that represent actual objects is the best way to avoid frustration and ensure that the individual will see the value of using a visual system.

> “Choosing the right type of symbols is only the beginning, but it is a crucial step to ensure success.”

LEVELS OF REPRESENTATION

There are many different types of symbols, some more readily understood than others. It's necessary to assess, and not just guess, the individual's level of understanding. It may seem that he is recognizing a certain type of symbol, when in reality, he is reading other clues in the environment, or has a routine memorized. Before you begin an assessment, however, it's important to understand what the choices are when it comes to symbols. Below is a description of the different types of symbols, from the most concrete to the most abstract, as described in Teaching Communication Skills to Children with Autism (Crissey, 2009).

Objects

- Actual object used - such as the cup the child uses to drink juice.
- Identical objects - items that are identical to the actual item used. These may be presented glued to a card or in a clear container, such as fish crackers in a clear plastic container (see image 1).
- Similar object - a cup that is similar to the actual cup used.
- Part of an object - such as a part of a toy (see image 2).
- Miniature object - such as a doll cup. Caution is necessary when using miniature objects because recognizing the relationship between a miniature object and the full-sized version requires relatively advanced cognitive skills. For most individuals who use object symbols, the miniature and real object need to be fairly similar in structure and size. A child may not see any relationship between a toy school bus he holds in his hand and the actual school bus.
- Associated object - an item that is placed so it will be identified with a specific activity, such as a foam ball attached to the door of the sensory room. An identical foam ball would be used to indicate that it is time to go to the sensory room (see image 3).

Realistic Two-dimensional

- Actual part of packaging or a picture from a container (see image 4).
- Photo of actual object - photos need to be a close-up shot of the item with a neutral background (see image 5). Photos of similar objects – if an individual is able to understand these, he can usually understand line drawings as well.

Line Drawings, Picture Communication Symbols

- Such as Boardmaker™ or PECS™ symbols.

Words - written and verbal

Image 1 - Identical objects.

Image 2 - Part of an object.

Image 3 - Associated object.

Image 4 - Part of packaging.

Image 5 - Photo of actual object.

he focus?

Close-up with neutr background

ADDITIONAL CONSIDERATIONS

Whatever type of symbol is used, it should focus on what is meaningful to the individual. What does she see or touch when engaging in the activity that the symbol represents? For example, a seatbelt buckle could be a symbol representing riding on a bus or in a car since the individual is likely seeing or touching it each time she goes for a ride. When using a two-dimensional symbol, focus on what the person is seeing, and use a close-up picture (see image 6).

When first starting to use a visual system, it's best to begin with easily recognizable objects or pictures that represent actual objects and activities (such as a cup to represent drinking juice). However, at some point you will want to use symbols to represent concepts, locations or activities that don't involve a specific type of object. In these cases, it's necessary to build an association between a symbol and what it represents by repeatedly pairing the two, such as the example above of the two foam balls. An association is built by having the individual look at and touch the foam ball on the door immediately before beginning sensory activities.

Once it has been determined that the individual is ready for two-dimensional symbols, it's also important to include, as part of the assessment, the size and number of symbols presented. Though an individual may not have any type of visual impairment, he may still have difficulty focusing on or understanding a photo or line drawing that is too small. During the assessment, a quick check can determine the optimal symbol size to begin with.

Individuals may also become confused if too many symbols are presented at one time. Symbols can be presented one at a time, and it may be necessary to start this way, but this is a very limited type of communication system. It's best to present multiple symbols in one display as soon as possible. This will enable the communicator to make choices, express his wants and needs and to understand sequencing of events. How many symbols to start with can also be quickly determined during the symbol assessment.

INFORMAL SYMBOL ASSESSMENT

A simple symbol assessment can be used to determine the best type of symbols to use. The following is a summary of a symbol assessment described in detail in Teaching Communication Skills to Children with Autism (Crissey, 2009).

Image 6 - Focus on what the person is seeing.

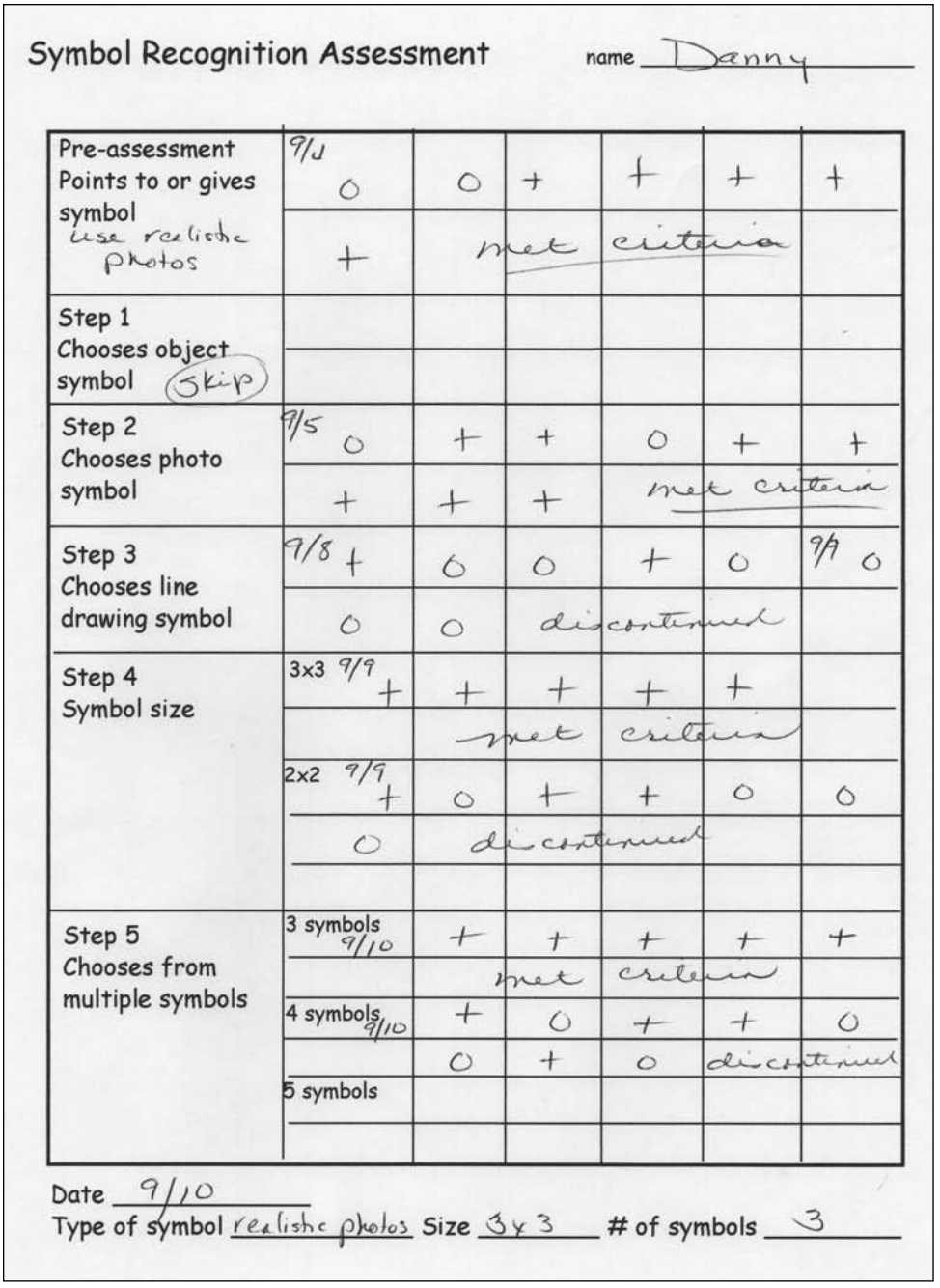


Image 7 - Example of an assessment form. Reprinted by permission from Teaching Communication Skills to Children with Autism. See references.

Before You Begin

Gather together the items you will need for the assessment (objects, photos and picture symbols). If the individual seems to recognize photos or pictures from books or on TV, begin the assessment using realistic photos. If unsure, begin with objects. An example of an assessment form is shown in image 7.

If you will be doing assessments on a regular basis, it can by handy to put together a symbol assessment kit with the necessary items. This can save a great deal of time. See an example of what could go into a symbol assessment kit, image 8.

Pre-assessment Training

Begin with teaching the individual to hand you a symbol (object or photo) in order to gain a desired item. Have the desired item where the individual can see it, but not grab it. Present one symbol representing the item (such as crackers in a clear plastic case), directly in front of the person and prompt him (physically prompting if needed) to point to or hand you the symbol, then immediately give him the desired object (goldfish crackers). Repeat using different symbols and items until the individual independently points to or hands you the symbol. At this point, you are only concerned that the individual understands that pointing to or handing a symbol will get them the goodies.

Step One

To assess the individual's ability to use object symbols, have a desired item in clear view, but out of reach. This time you will present a symbol representing that item (i.e. the plastic case with goldfish crackers) and one distractor (for example, a plastic case with a blank card in it). Repeat with different symbols and distractors.

Step Two

Repeat the process in Step One using a photo of the desired item and one distractor photo.

Step Three

Repeat the process using line drawing symbols, beginning with symbols sized 3"x3". If the individual is unsuccessful, try using larger symbols. If the individual is repeatedly successful with 3"x 3"symbols, try 2" x 2" symbols.

Step Four

Once you have determined the type of two-dimensional symbol best for the individual (photos, 3" x 3" line drawings, or 2" x 2" line drawings) present that symbol for a desired object along with two distractor symbols. Repeat, alternating the positions of the picture symbols, so the correct symbol is not always on top or to the right, etc. If the individual is able to consistently choose the right symbol, repeat the process using three distractors, then four, then five, etc. If the individual is able to consistently find the correct symbol from a display of six or seven symbols, he is probably ready for a beginning communication board or device.

OBJECT SYMBOLS

Actual items:	Ojbect symbol for desired items:
1. crackers	1. cassette box with crackers
2. juice carton	2. empty juice carton attached to backing
3. play dough	3. small piece of play dough attached to backing
4. candies	4. candies taped on card stock
5. Slinky	5. Slinky attached to backing
6. inflated balloon	6. slightly inflated balloon attached to backing

Realistic photos of:	Line drawing symbol of:
1. crackers	1. crackers
2. juice carton	2. juice carton
3. play dough	3. play dough
4. candy	4. candy
5. Slinky	5. Slinky
6. inflated balloon	6. inflated balloon

DISTRACTOR ITEMS

Actual item:	Object symbol for distractor:
1. piece of card stock	1. cassette box with piece of card stock in it
2. Styrofoam tray	2. piece of Styrofoam tray glued on backing
3. celery	3. piece of celery taped on card stock
4. sock	4. small sock in clear plastic container
5. small box	5. small box attached to backing
6. pocker chip	6. cassette box with poker chip in it

Realistic photos of:	Line drawing symbols of:
1. piece of card stock	1. piece of card stock
2. Styrofoam tray	2. Styrofoam tray
3. celery	3. celery
4. sock	4. sock
5. small box	5. small box
6. poker chip	6. poker chip

Image 8 - The above is an example of the type of items that could make up a symbol assessment kit. Six items in each category would be the minimum number needed. Having more items would allow for greater choice.

JUST THE BEGINNING

Once you have determined what type of symbols will work best, and how many should be displayed at one time, you're off to a great start, but there is still a lot to consider. What is the best way to present these symbols and how will the individual use them to communicate? How will you determine if the system is working and when it needs to be updated or expanded? Choosing the right type of symbols is only the beginning, but it is a crucial step to ensure success. A mismatch between symbols and communicator will be frustrating for the individual and for everyone who wishes to communicate with him. Starting with symbols that are easily recognized will enable the communicator to see the power and joy of communication and will lay a foundation for better, more meaningful communication to come.

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Red switch blue switch old switch new switch

The popularity of the iPad is undeniable, and there are lots of switch users who could benefit from the portability of the device with appropriate hardware and software. This article will explain the basics of switch access on the iPad, iPhone or iPod touch. From now on, we'll refer to them all as iPads.

MARK LARSON
is the founder and owner of Marblesoft, LLC, a developer of assistive software since 1983.

As you're aware, switch access allows users to make choices on the computer, in this case the iPad, by pressing one or more switches. The software is specifically designed to function with that number of switches. Let's see how it all comes together.

You're most likely familiar with the enormous choice of switches used in assistive technology. A variety of designs let you place them on the table or the floor, mount them on a wheelchair or body part, squeeze them in a hand, and mark them with legends. What they all have in common is that they are literally a switch, just like the switch that turns on the light in your room. Most switches are momentary switches. They're on as long as you hold them down, and they turn off when you release them, like the horn button on your car.

Any switch **you used on the desktop computer can most likely be used on the iPad.**

THE SWITCH INTERFACE

To use switches with the iPad, we need a way to connect them – the switch interface. The most popular are Bluetooth wireless devices, which connect wirelessly to the iPad as a "keyboard" and send signals when the switches are pressed. The software interprets these signals as commands and acts accordingly.

There are already several great Bluetooth switch interfaces on the market, and several manufacturers are working on new ones with added functionality. I'll discuss a couple of the popular ones in a bit. First, let's talk about how to connect them.

Since a Bluetooth switch interface is a wireless device, it could conceivably be connected with any Bluetooth computer within range. To avoid the problem with many devices talking to each other simultaneously, Bluetooth devices must be paired with each other. Normally, you only pair a Bluetooth switch inter-

face with one iPad at a time, and you only pair a single Bluetooth keyboard with an iPad. More about that later.

To pair up your switch interface, turn it on and put it in discovery mode, following the manufacturer's instructions. Go to the Settings app on the iPad and select "Bluetooth." Turn Bluetooth on, and in the Devices section, you should see your switch interface listed. You might not recognize it, because sometimes the interfaces can have funny names. See the instructions for the switch interface to see how it will be named in the Devices list.

If you're already connected to a Bluetooth keyboard, disconnect it by touching the little blue disclosure indicator next to it in the Devices list, then choosing "Forget this Device."

Now you can select the switch interface in the Devices list and pair it with your iPad. For some devices, it's as simple as that. For others, you need to enter a specified code to confirm you have the right device. Once you're successfully paired, you can quit the Settings app and start using your switches.

Note: An interface may not show up in your Devices list if it is paired with another iPad. In that case you need to go to the other iPad, forget the device, then pair it on the new iPad.

RJ Cooper Bluetooth Switch Interface.

INTERFACE CHOICES

I'll list a few of the popular Bluetooth switch interfaces along with the advantages and disadvantages of each.

The RJ Cooper Bluetooth Switch Interface (www.rjcooper.com) is one of the smallest and lightest, and it's only $99 for two switches. The directions for turning it on or off and putting it into discovery mode are slightly complicated, but it's very easy to pair with the iPad, since it doesn't require entering a code. I like that it's smart enough to put itself to sleep when not in use, but you have to charge it occasionally by plugging it in to a USB port. There's also a four-switch model that is custom made to order, so if you want it, you have to order it in quantity.

AbleNet Blue2 Bluetooth Switch.

The AbleNet Blue2 Bluetooth Switch (www.ablenetinc.com) comes with two switches built in, plus jacks for two switches of your choice, for $149. The built-in paddle switches aren't great - they require a bit of pressure, and you have to press them a long way, but you can plug in two more switches to use instead of the two paddles. What I really like is the on-off switch, the replaceable AA batteries, and the reset button that will un-pair it with any other iPads. It also has settings for several different types of software, a switch to allow or disable keyboard repeat when the switch is held down and it goes to sleep to save the batteries when not connected to a an iPad.

The APPlicator from Inclusive TLC (www.inclusivetlc.com) is $165 and allows you to connect up to four switches. It pairs without entering a code, but you have to charge it occasionally via USB. The four switch inputs are somewhat programmable, making it work with the most apps, and you can use the switches to control your iTunes music library, too. The volume controls can even control the iOS device's camera, letting you take pictures with a switch.

The APPlicator from Inclusive TLC.

Origin Instruments (www.orin.com) showed me a great new interface at the Closing the Gap Conference that will hopefully be available soon after you read this. It handles up to four switches and is fully programmable. It even allows you to select whether the software is notified on the switch press or on the release.

You can sometimes use a Bluetooth keyboard itself as your switch interface. For instance, it's common for software developers to allow the space bar and enter key, or perhaps the number keys, to be used as switches.

One caveat: *Since the iPad thinks your switch interface is a keyboard, it sometimes won't bring up the on-screen keyboard when you'd expect it. If that happens, you need to disconnect the switch interface in order to use the on-screen keyboard. Exceptional are the RJ Cooper interface and the APPlicator, which each have a button that brings up the on-screen keyboard without disconnecting the device.*

THE SOFTWARE

The last piece of the puzzle is switch accessible software. The switch interface acts like a keyboard and sends key characters to the software just as if keys had been pressed on the keyboard. That's why some software won't work with some interfaces. You have to know what you're going to get from the interface. For example, the AbleNet Blue2 can send a space bar and enter key, two very common commands that will be recognized by many apps. For hardware reasons, RJ Cooper's interface sends the numbers 1 and 3 (1 - 4 on the four-switch model), also common, but different nonetheless.

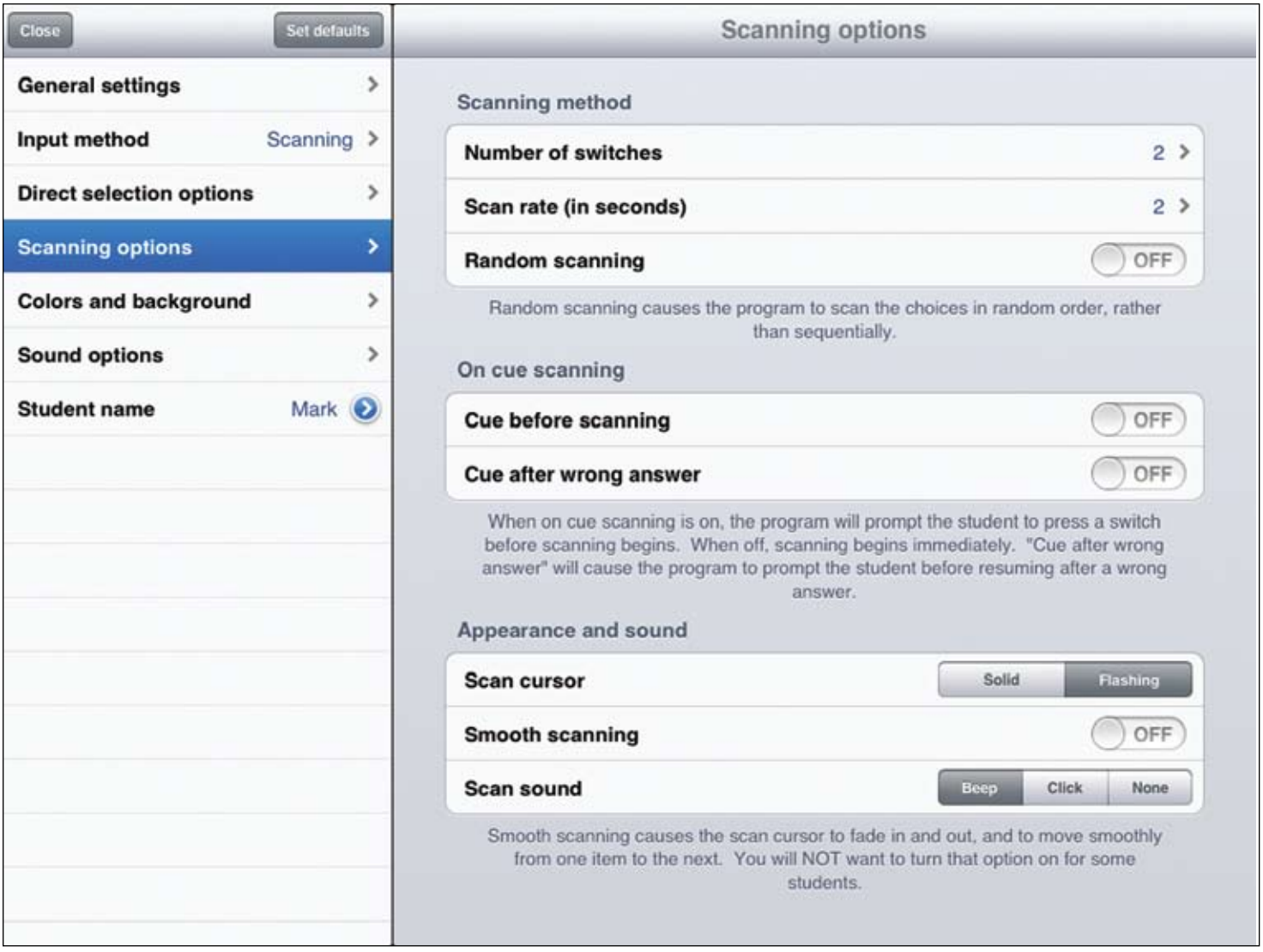
At Marblesoft, we write our software so that it doesn't matter which interface is connected, as long as we recognize the commands it sends. As more devices become available, we'll try to support them in the software.

The software can interpret the switch inputs in different ways for different situations. Three common input types are cause and effect, direct selection and scanning. With cause and effect, any switch causes an effect on screen. You can even do multiple-switch cause and effect. For example, in Marblesoft's Switch Kids app (http://itunes.apple.com/us/app/switch-kids/id467551739?mt=8), one switch causes a kid to blow up the bubble gum, a second sucks the bubble back in, a third changes the flavor of the gum and a fourth changes the kid.

For direct selection with switches, each switch will select a different item. In Judy Lynn's Switch Accessible Puzzles (http://itunes.apple.com/us/app/switch-accessible-puzzles/id562623287?ls=1&mt=8) you can specify from two to five choices for the user solving a puzzle. Each switch will select a different puzzle piece.

Scanning is usually done with one or two switches. In single-switch timed scanning, or auto-scanning, the program scans all the choices at a predetermined rate. When the correct choice is highlighted, the user presses the switch. With two-switch scanning, called step scanning, one switch is used to scan the choices and a second switch makes the selection.

Bluetooth settings.



Scan and match settings.

Some people perceive that desktop software is full-featured and that iPad apps are necessarily simple, cheap and featureless. I don't believe that's true. Features that serve people with disabilities on the desktop will serve them just as well on the iPad. We should offer just as many options so the software can meet the individual needs of the user.

The attached screenshot from Marblesoft's Scan and Match (http://itunes.apple.com/us/app/scan-and-match/id539809170?ls=1&mt=8) illustrates some of the ways we can change the functionality, appearance, prompting and reinforcement to suit the user.

CONCLUSION

Switch software is still in its infancy on iOS, but with lots of hardware and software developers working on it, your choices will increase rapidly in the coming months and years. I'm excited to be able to participate in this new technology that will provide so much functionality, independence and enjoyment for switch users everywhere. ■

Marblesoft's Switch Kids App.

Judy Lynn's Switch Accessible Puzzles.

Making friends through ROBOTS

The United States has lost its edge in mathematics and science. Experts say that technological innovation accounted for almost half of U.S. economic growth over the past 50 years; almost all of the 30 fastest-growing occupations in the next decade will require at least some background in science, technology, engineering and math (STEM). The bad news: recent studies show that American children do not have the same skills as other children throughout the world in these basic skills. The good news: STEM is now a mandate within the U.S. educational system.

THE FACTS

In an international exam given to 15-year-olds in 2009, U.S. high school students ranked significantly behind 12 industrialized nations in science and 17 nations in math. Students in only four industrialized nations scored lower in math.

Only 45 percent of U.S. high school graduates in 2011 were ready for college work in math and 30 percent were ready in science.

LEGO® AND STEM: A PERFECT MATCH

FIRST® LEGO League (FLL®) was developed to introduce kids of all abilities to the wonders and excitement of science, technology and engineering. The goal of the FLL is to provide an experience that captures young children's inherent curiosity and creativity, and directs it toward discovering the possibilities of improving the world around them through understanding, thought, planning and science. This fun and exciting global robotics and innovation program ignites an enthusiasm for discovery, science, teamwork and technology in kids ages nine to 14. Teams work as young scientists, engineers, mathematicians and creative writers, engaging in research, problem solving and engineering. Participants also learn through friendly sportsmanship, developing a true sense of community.

Students have the opportunity to solve real-world challenges by building LEGO-based robots to complete tasks on a thematic playing surface. The tasks – called missions – ask participants to problem solve using programming and building skills. The more "missions" teams accomplish, the better competition scores the team receives.

FLL teams, guided by their imaginations and adult coaches, discover exciting career possibilities and, through the process, learn to make positive contributions to society. Over the years, the program mission has sparked projects in food engineering, biomedical sciences and transportation. Each year a new research project topic is chosen as part of the competition. Team members learn more than just building robots and programming; they must also use and hone their skills in problem-solving, presentation, public speaking, ingenuity and creativity.

SUE REDEPENNING Sue is a licensed occupational therapist with over 20 years of experience working with all age groups, settings and a variety of disabilities. She is currently working at Courage Center in Minneapolis and is the Supervisor of Assistive Technology. Sue is also a licensed driving instructor working to assist in the Driver's Rehabilitation Program at Courage Center.

JENNIFER MUNDL has over 20 years of experience working within the disability community with all kinds limitations. She began the Assistive Technology Program at Courage Center in Minnesota. By background, she holds a Masters in special education and an undergraduate in computer science. She has spoken throughout the nation and creates the newsletter on technology at Courage Center, which is available through the company Web site.

HOW LEGO THERAPY AND ROBOTICS WORK TOGETHER

LEGO Therapy was developed more than 15 years ago after observing that children with autism and other neurobehavioral disorders were naturally attracted to LEGO pieces when presented with a room full of toys. Using LEGO pieces in a therapeutic and structured way was fun and seemed to reinforce appropriate social behavior naturally. Courage Center started their program as a fun event for children with disabilities. LEGO have also conquered the educational system with all the features needed to create and program a robot. Many schools have started incorporating LEGO MINDSTORMS® into their curriculum or after-school programs.

LEGO Therapy has been systematically evaluated in research studies conducted by Daniel LeGoff, Ph.D., and a replication study completed recently at Cambridge University in England under the supervision of internationally recognized autism expert Simon Baron-Cohen, Ph.D. Each study has shown that using LEGO as a modality for group interaction and communication with peers increased self-initiated social contact and the duration of social interaction in other group settings such as in the playground and school cafeteria, and improved social competence in general.

It has been shown that to become a better LEGO® builder, children need to learn from each other, cooperate, solve disputes, follow rules and be helpful. These skills are often learned and reinforced by their peers throughout the weekly sessions and generalize to school and home environments.

Courage Center hosts year-round programs which expose robotics to kids of all abilities. Participants in our programs have had a variety of disabilities: autism, spinal cord injury, learning disability, personality disorder, and cerebral palsy. Some participants are not disabled. The program, by incorporating everyone together, promotes lifelong skills for learning and social skills. Everyone benefits and adaptations are often simple. See the sidebar for ideas and recommendations for adaptations.

Assistive Technology and FLL

Assistive Technology (AT) can be used everywhere; in fact, adaptive learning is necessary for the success of all children whether disabled or not. Children love robots and it is a great medium to teach many life skills. Children think they are just having fun, when in fact they are caught up in structured learning. That's why robotics, AT and FLL fit so well together.

FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS (ASD)

AT and accommodations for autism are not expensive but do require creativity and the use of everyday objects. We recommend using a wide range of tools to help children with ASD learn the building blocks of robotics. By building LEGO structures in new and unique ways, children learn to use creativity, an important skill that was often very challenging for them.

Many children with ASD become frustrated and uncomfortable when asked to break out of repetitive activities to create something new. Using Applied Behavior Analysis (ABA), the science of figuring out how to target and systematically change a specific behavior, children with ASD can be taught to play with LEGOs in a more creative way. In a recent study,children who had wanted to create the same 24-block LEGO structure over and over again at the start of the study, began venturing out of their comfort zones to create new structures with different color patterns or shapes.

For example, snapping a yellow LEGO brick onto a blue one when only red bricks had touched blue bricks in the previous structure was a big step in helping a participant with ASD cope with new situations encountered in everyday life: for instance, learning to say 'hello' when someone they know, but were not expecting to see greets them. Through use of LEGO pieces, these skills were taught and meaningfully retained.

The FLL is a group dynamic where children with ASD can practice their social skills. This can be an area of weakness or challenge for many kids with ASD. The team at Courage Center is a great way to practice the skills they learn in therapy to ensure that they work in a group setting and see how the child can develop or gain skills in the social area over time with their involvement with the FLL team. The OT helps to facilitate these social goals and challenges the kids in a safe non-threatening way so that step by step they are increasing skill. Building with LEGO pieces is often so motivating it takes some of the fear out of social interaction for that child.

Physical Disabilities

The ability to manipulate real things allows a child with a physical disability to make a product or a new design come to life. It is important early in life to see what can be adapted and what cannot for a child to participate. From handling individual LEGO pieces to connecting them to form a robot to programming the assembled robot, there are many opportunities to explore which adaptations and which AT can make activities like these accessible. This technology also can be something that may help this child in school, with homework, chores or work. Plus, they are learning it first in a motivating, fun way; later, they can use it for more complex, high-level work. A Trackball, a head mouse, and eye gaze are examples of AT that can help with computer programming.

Cognitive Disabilities

Testing a child's memory, ability to transition, and ability to follow multiple step, written or verbal commands, all can be incorporated into day-to-day work on the FLL team. The child can use a planner, an iPad or a computer participants to remember to go to the LEGO activity; to use at home to learn more about science or technology; and to record where they left off and what they need to work on next week. A timer may also help cue the child to stop or move onto the next activity.

These and there individual cognitive strategies are fun and important ways a child can learn to compensate for a cognitive deficit, and become more successful in the work they do.

Courage Center professionals have discovered many ways to adapt toys and play.

- Develop new play materials
- Alter a traditional toy or robot
- Change game rules' and set up situations to promote play.
- Use colors (e.g., inexpensive, waterproof, colored plastic tape) so children who are blind or low vision find parts of the robot easier.
- Use hands on demonstration or YouTube videos as an alternative teaching tool.

Adaptations can...

- allow for discovery;
- increase a child's opportunity to be successful;
- enable a child to become a full, active participant;
- address the child's individual needs;
- promote and facilitate enjoyment, personal power and control; and
- give a child a level of control of his/her surroundings.

Adaptations can enhance the quality of a child's life by helping her develop self-confidence and the will and desire to continue and strive for new heights. We can observe and provide an opportunity for a more equal partnership by supporting and encouraging their initiations. By adapting, we are not lessening the challenge for the child, but rather allowing that child access to the challenge. Play is as unique as each child so adaptations need to be individualized as well. Adaptations are unique and require creativity. The methods to create adaptations are not always expensive but require the use of everyday products. When adaptations are necessary, first think about the following list and then create the best possible adaptations for that particular child. It's also important to check the rules of FLL competition to ensure which modifications are allowed.

Stabilize

Steady play materials by attaching them to a surface.

- Use a C-clamp to attach the robot to a table or wheelchair tray.
- Put one side of a Velcro strip on the floor and the other side on the bottom.
- Screw suction cups onto the bottom of robot.
- Place self-adhesive Velcro on each square of a board game and on the bottom of the LEGO pieces.
- Use anti-skid rug material, Rubbermaid shelf liner or Dycem under the LEGO to prevent sliding.
- Toys that snap or stick together (LEGO bricks, Bristle blocks, Magnet blocks).

Enlarge

Make items bigger so they are easier to see. Make parts bigger so they are easier to grasp and handle.

- Screw dowel rods onto pieces for a larger handle.
- Attach foam hair curlers to handles.
- Make color copy indicators for finding things easier.

Non-skid

Special rug material or non-skid shelf liner can be used for keeping robots steady on a flat surface.

Velcro

Attach strips of both halves of Velcro onto LEGO pieces to make them stick together and easier to build than conventional bricks.

- Use Velcro to make wrist and ankle bands on children and then attach pieces to the bands.
- Attach Velcro to the palm of a glove or mitten for easier grasping.

Shape sorters

Adapt shape sorter boxes by changing the lids or use plastic containers or coffee cans, changing the lids to make it easier to fit shapes into the holes (or use without a lid for simple in/out activities).

Easels

Provide small easels for children with poor upper body strength. Attach drawing paper or instructions with sticky poster putty, two-sided tape or drafting tape (it won't rip your paper). Place silly putty or finger paint in a plastic bag for a child who is tactilely sensitive or who places toys in his/her mouth. It is best to make them easier to handle and to clean.

Source Ideas for Adaptation Materials

- Appliance shop - Large packing cases
- Building contractor - Scrap materials, wire, tile, boards, building blocks
- Cleaners - Shirt cardboard, wire hangers

Here are some recommendations and ideas:

- Fabric shop - Small pieces of fabric, ribbon and tape, loose buttons, zippers
- Grocery store - Boxes of all sizes, Styrofoam trays, wooden crates
- Ice cream store - Picture posters, sturdy containers for storage, personal; "cubbies"
- Leather shop - Leather scraps
- Local factory - Wire, Styrofoam, foam rubber pads, spools, cones
- Lumber shop - Wood scraps, sawdust
- Newspaper office - Newsprint rolls, advertising booklets for pictures to cut out
- Office - Used computer paper for artwork
- Paint shop - Sample color cards, paint buckets, stirrers, old paintbrushes
- Post office - Newsprint scraps, posters
- Plumber - Rubber or plastic tubing
- Retail store - Discarded seasonal decorations
- Shoe store - Boxes, old shoes for dress up
- Wallpaper store - Wallpaper sample books
- Handles - Wind masking tape or use foam hair curlers on the handles of spoons, pencils, crayons, wands, etc. to make handling easier. Punch a pencil or paint brush through a Styrofoam ball to make it easier to hold.

Robotics is fun for kids and adults alike. Legos provide many opportunities for children with disabilities. The impact of Legos have on learning and socialization are only two of the benefits they provide through assistive technology methods. Real-life learning makes it fun such that kids partake and don't realize everything that is happening behind the scenes. You never know what will be the next greatest discovery and it could be a child with a disability.

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iPads to Support Students with **Autism Spectrum Disorders**

One districts' implementation plan

Teaching students with autism spectrum disorder (ASD) in the regular classroom takes a lot of planning, collaboration and strategies. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) defines autistic disorder as a pervasive developmental disorder characterized by qualitative impairment in social interaction, qualitative impairment in communication and restricted, repetitive and stereotypic patterns of behavior, interests and activities.

The degree of impairment in each area varies in individual students. Strategies that work for one student may not work for another. In the Upper Canada District School Board (UCDSB), school teams were looking for a new way to engage these students in the regular classroom while focusing on building skills in areas where needed. When looking critically at the learning profiles of these students, Superintendent of School Effectiveness, Susan Edwards, proposed exploring the use of iPads to reach and teach all students, but more specifically, students with ASD.

In late August 2011, principals were asked to invite classroom teachers to apply to be included in the ASD iPad Project. Teachers had to write a proposal suggesting how they might use the iPad to increase academic and social participation for a student with ASD in their classroom. It was important that the submissions came from the teachers themselves. We wanted teachers who would be involved because of a keen interest in how the tool could be used and who would be innovators in the use of apps to meet student needs. During September 2011, 55 teacher-student partners were selected to participate in the project. Each teacher-student pairing received iPads. We thought it important to equip the teacher with their own iPad, as well as equipping their student, so that the teacher could fully explore the iPad's potential as a teaching and inclusionary tool.

To help teachers focus on the use of apps to meet specific student needs, a Goals Template was created. The template was directly related to information in the students' individual education plans (IEPs). To help teachers fill in the goals template, Regional Student Engagement Teachers (SETs) for each family of schools met with school teams. They gathered student information, a list of strengths and needs and created a student profile. They used the Underlying Characteristics Checklist to gather information for the profile and to help select goals. Goals chosen could be from any section of the IEP (alternative program pages, academic program pages or accommodations). The plan had to include a list of the specific apps to be used to meet the chosen IEP expectations and a method of data collection to track progress. Evaluation of progress was then recorded at the end of the term. The SETs were involved with the iPad project from beginning to end. They helped schools write goals, find apps, implement strategies for using the iPad effectively and assess which apps were associated with achieving expectations as set in the IEP.

Collaborative learning and support are considered important at UCDSB, therefore a strategy was needed to facilitate this for staff working with students on iPads. UCDSB is a district that covers a wide geography. The strategy implemented by three SETs was "App Smackdown." The Smackdown was open to all school teams, not just those involved in the iPad project. First, midway through the year, a template was created in SMART Notebook software to gather information about the apps staff across the District were using to support student goals and curricular applications, including the name of the app, producer, cost, the description of the app, curricular links and a description of how the app was being used.

The completed templates were collated into a single file to facilitate sharing. Next, participants from four families of schools gathered in one of four schools in four different towns to share with friends and colleagues hundreds of kilometers away via Adobe Connect. A two-minute timer was set and participants were invited to share the information about their favorite apps, which had been previously recorded in the template. Using Adobe Connect software and an LCD projector, speakers and a stand microphone, we were all able to watch the same SMART Notebook file and hear the participants from the different schools share their description of how the apps were being used. Each location also used another LCD projector and speakers connected to an iPad that had been loaded with all of the apps being shared so participants could investigate the various apps as part of the event.

At the beginning of March 2012, a survey was created using SurveyMonkey, an online survey tool. We wanted a way to collect data that was quick and easy for teachers to complete and for responses to be analyzed. The survey consisted of five questions, which were constructed so that teachers could select answers from a list and/or add their own answers. The data we gathered confirmed what had been observed in participating classrooms across the District.

Please select the area(s) of need you focused on for the student selected for the iPad project.

	Response Percent	Response Count
academic	72.7%	40
social	52.7%	20
communication	60.0%	33
behavior	29.1%	16
fine motor	25.5%	14

Chart 1: Teachers were asked to focus on no more than three goals per student for this project. The chart shows the goals and the percentage of students who had these areas highlighted on their goal template. As would be expected, many students had academic goals on their goal template. Math, reading, writing, written output and organization were the popular areas of focus for skill development under the broader heading of "academics."

	Response Percent	Response Count
engagement in learning	63.0%	34
socialization skills	31.5%	14
communication skills	50.0%	27
inclusion in the classroom	44.4%	24
behavior (tranistioning, self-regulation, etc.)	38.9%	21
independence	50.0%	27
work output	29.6%	16

Chart 2: This graph shows the area(s) of growth demonstrated by the students attributed to their use of the iPad.

In Chart 2, teachers were asked to select areas where the students had shown growth due to the use of the iPad. The options in Chart 2 were not necessarily goal areas teachers had selected for their students; rather they were areas where students with autism spectrum disorder, by definition, show deficits. We wanted to capture if using iPads with these students resulted in gains in these general categories. For example, 50 percent of teachers reported communication skills as an area of growth. This means that 27 of the 54 respondents saw an improvement in their students' ability to communicate through the use of the iPad. Not all of these respondents had identified communication goals for their students as some students were deemed to be effective communicators prior to the beginning of the study. The same could be said for socialization skills, engagement, behavior, independence, inclusion and work output. Teachers were experiencing success with these students in the regular classroom.

In an effort to stress the movement from goals to tools, the teachers were asked to submit the name of all apps that were used successfully with the students to support each of the areas in Chart 1. An app was deemed successful if it was used effectively to meet a goal. Hundreds of apps were submitted. The apps were organized into the following categories, which correspond to categories identified in Chart 1: Academic, Communication, Social, Fine Motor, Behavior. One additional category of General Use was also included to capture other apps. A directory called Apps for ASD iPad Project, was created. The price, a brief description and an age range for each app was included, as well as a direct link to the app in iTunes. The directory was posted to smartinclusion.wikispaces.com and emailed to all principals and vice principals in the Upper Canada District School Board to share with staff. The directory was also sent to Pathways to Independence, the Children's Hospital of Eastern Ontario (CHEO) and other community partners that support students with autism spectrum disorders.

The survey had identified that the time to find apps, the money to purchase apps and the narrowing down of selection of apps were barriers to effective use of the iPads. The hope was that the creation of the Apps for ASD iPad Project directory would help to alleviate some of these barriers.

The iPad project is continuing this school year, 2012-2013, based on the positive experiences and outcomes reported during the 2011-2012 school year. The students were able to keep the iPads and take them home over the summer. They continue to use this tool, alongside other tools, as part of their Smart Inclusion Toolkit this current school year to promote successful academic and social participation. The original teachers had to pass the iPad over to the students' new teachers so that they could become comfortable with the apps their students need to use to be successful in the classroom.

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Adobe Connect software: www.adobe.com/products/adobeconnect.html

SurveyMonkey: www.surveymonkey.com/

Apps for ASD iPad Project Directory: http://smartinclusion.wikispaces.com/iPads.ASD+Research ■

NAME OF APP	DESCRIPTION	AGE RANGE	COST
LANGUAGE APPS			
A Novel Idea	This app helps with story writing elements: characters, setting, and plot. Create scenes and characters in no time.	10 - 18 years	Free / Pro $2.99
ABA Flash Cards-Actions (Emotions, Vehicles, Sports, Earth Science available too)	Flash cards are used to foster mastery of new vocabulary and concepts. Visit the developers web site to find more apps . www.kindergarten.com	3 - 8 years	Free
ABC Easy Writer-Printing HD Free Lite	Learn alphabet tracing. Trace upper and lower case letters. Stroke guidance provided.	2+	Free
ABC Magnetic Land	Through the use of colourful magnets, kids learn numbers, letters, symbols, shapes, animals and much more.	3 to 8 years	$1.99
ABC Print Big Trace HD (also available- cursive and numbers)	Trace oversized letters with letter stroke guidance. Audio included.	2+	Free Full Version-$1.99
Ace Learn 2 Bee: Sight Words	This app provides a fun environment for children to learn essential English words. Sight words can be grouped into pre-primer up to third grade.	3+	$3.99
Cimo Spelling Sight	Learn 50 high frequency words from the Dolch Sight Word list.	4 to 9 years	Free
Color SlapPs	Teach children the names of twelve different colours. Created by a Speech and Language Pathologist.	2 to 8 years	Free
Fancy Pages Free	Bring together photos, clipart, text and freehand drawing. Create presentations, flyers, booklets, notes, sketches, charts, etc.	6+	Free
Fun Letters-cursive hand writing	Learn the alphabet, letters sounds and names. Trace cursive letters. Good for fine motor development.	3+	Free
I Like Books	" Enjoy 37 ""I Like"" children's picture books. Children learn about the world around them while learning how to read. "	1+	$1.99
iConverse	This Augmentative Alternative Communication (AAC) is designed for individuals who have yet to master language. Use the built in buttons or create your own.	3+	$9.99

iMovie	Make HD movies with this easy to use app. Create trailers, add photos, music and sound effects. Share your movie on the web.	6+	$4.99
Kids ABC Alphabet Puzzle Game	Learn how to recognize shapes and figures by completing puzzles. Audio and visual hints can be provided. Use own photos to create puzzles.	2 to 6 years	Free
Kid's Book Report	Students can write all of the details needed for a good book report using the templates in this app.	6+	$0.99
LAZ Level E Library	Children learn to read, write and discover the wonders of science. The LAZ Library starts at level aa and goes to Level R.	3+	$6.99 per level
My First Words- Flash-cards by Alligator Apps	Fully customizable, this app teaches students vocabulary. It combines audio, voice and written words.	1 to 6 years	Free
Phonic Awareness, 1st Grade	Students learn how to segment words, blend consonants, and learn vowel sounds.	3 to 8 years	Free
Phonics Vowels - Short Vowels, Long Vowels, Two Vowels	Students learn beginning sounds, ending sounds, word families, short vowel sounds, long vowel sounds and more.	3 to 8 years	Free
Reading Comprehen-sion Grades 2-3	Short, engaging stories help to build reading comprehension. Immediate feedback helps keep students focused. Available from 1st grade to 3rd grade.	5 to 9 years	$1.99 for each level
Scribble Press	Create and share stories with great drawing and writing tools. Download books to iBooks library. Over 50 story templates.	5+	Free
See.Touch.Learn	This app is a picture learning system designed for students with special needs. Customizable for individual students. In app purchases for other categories available.	1+	Free
Sentence Builder for iPad	Learn how to build grammatically correct sentences. 100 pictures provided to write about.	5+	$5.99
Speak It! Text to Speech	This app reads your documents, emails, favourite articles. Copy what you want read into Speak it.	8+	$1.99
Spell-A-Word,	This is an RJ Cooper app that builds keyboarding and spelling skills in students. Lessons can be customized for individual students.	5+	Free
Starfall ABCs,	Students can see, hear, and interact with letters and sounds in words, sentences, and games. Great for students learning English.	2+	$2.99
StoryKit	Students can write stories by writing text. They can illustrate by drawing or taking a picture. They can record sound.	4+	Free
TeachMe: Kindergarten	Students learn sight words, addition, subtraction, and spelling. Students earn a coin after 3 correct responses. Coins can be used to purchase items. TeachMe apps start at toddler and go to 2nd grade.	3 to 5 years	$0.99
Toontastic	Make cartoons to tell stories. Promotes creativity. Students can draw their own characters and settings or use ones that are included in the app.	4 to 10 years	Free
Touch and Learn- ABC Alphabet and 123 Numbers	Teach letters from A to Z. Teach numbers from 1 to 100. Teach phonics.	2+	Free
TumbleBooksToGo for iPad- 6-Pack Vol1	Tumblebooks are animated, talking picture books that have text, narration and sentence highlighting. Other packs are available at various costs.	1 to 10 years	$5.99
Writer's Studio	Create text, art and graphics to share with friends. Text to speech included. Add voice, music, or a soundtrack!	8+	$2.99
MATH			
Amazing Coin (CAD)	Students learn about Canadian coins by counting, paying, making change and matching. They are rewarded with a quarter and they can use spend their money in the food store.	3 to 8 years	$1.99
Counting	Learn numbers from 1 to 10.	2 to 6 years	$0.99
Counting Bear	Learn how to count from 1 to 20 using real photos. Add text and voice.	2 to 6 years	$0.99
Jungle Coins	Easy to use educational app that teaches kids coin math in multiple languages. Canadian coins available as an in app purchase.	4+	$2.99
LetsTans 10-in-1	Use virtual tangrams to finish over 1500 puzzles.	6+	Free
Math Easy HD	Learn to count from 0 to 20, identify odd and even numbers, add and subtract and learn simple multiplication.	2 to 8 years	$1.99 / lite version avail-able
Math Kid	Build foundation skills in Math through visual supports. Add, subtract, multiply, divide, and figure out fractions and percents. Rewards are built in.	4 to 11 years	Free
Math Terms	This app contains almost 1000 visual definitions of math terms for middle school students.	10 to 16 years	Free
Quick Graph	Quick Graph makes graphing equations easy in 2D and 3D. Up to 6 equations can be visualized at the same time.	10+	Free

Shape & Color	Learn shapes and colours in learning mode or game mode.	2 to 8 years	Free
Sketchpad Explorer	This app is based on The Geometer's Sketchpad®. Sketchpad Explorer allows you to interact with and investigate any document created in Sketchpad.	6+	Free
TeachMe: Kindergarten	Students learn sight words, addition, subtraction, and spelling. Students earn a coin after 3 correct response. Coins can be used to purchase items. TeachMe apps start at toddler and go to 2nd grade.	3 to 5 years	$0.99
Tell Time - Little Matchups Game	Students learn to tell time by matching analog to digital clocks. Create your own matching games. Add voice.	3 to 10 years	Free
FRENCH			
French Baby Flash Cards!	Over 450 French words in 9 different categories.	1+	Free
French Verbs Free	This app contains the most popular French verbs in 16 different verb tenses. Full version has 2100 verbs.	8+	Free
MUSIC			
Music Notes	Learn to recognize music notes as they appear on the staff. There is a train mode and a play mode. Also available by same developer: Music Tones, Music Intervals, Music Cubes and Music Keys.	5+	Free
Music Sparkles	This app contains a large collection of musical instruments. Just tap and play the instrument you want.	1+	Free
SCIENCE			
LeafSnap for iPad	Learn to identify trees and flowers with this visual recognition software.	8+	Free
Science 360 for iPad	The National Science Foundation has provided science and engineering video from around the world.	8+	Free
AutismXpressPro	This app is designed to help students with autism to recognize and express their emotions through games.	3 to 8 years	$1.99
Comics Creator	This app allows you to create comics using your own photos and one of ten templates. Rotate, pan, zoom in, & zoom out. A great app for creating social stories!	3+	$0.99
Chess	Play chess against the iPad or against another opponent. Great for building turn taking skills and social skills.	8+	Free
Dusty D. Dawg Has Feelings Too,	This is a great story book that focuses on emotions. Customize the first page with the student's photo and name. Add your voice or the student's voice to each page.	3 to 8 years	Free
SOCIAL			
face-cards C	This app is a resource for exploring feelings and the faces that go with them. Face-cards portray the ten most common emotion expressions. People on the autism spectrum use face-cards to identify and explain feelings.	3+	Free
iCreate…Social Skill Stories	The app is designed to make unlimited personalized social skill story books by importing personal photos, adding titles, text and audio to unlimited pages in the story.	2+	$4.99
If..Then..Fun Deck	This problem solving app has 52 if then cars that will enhance students' critical thinking, inferencing, and reasoning skills.	8+	$1.99
iGet…My Clasmates Photo Album	This app gives picture, text and audio support to individuals learning about classmates. Add photo albums with up to thirty icons that can be personalized by the user. Text statements and audio recording can be added to each photo.	3+	$2.99
Model Me Going Places 2	This app provides social stories for students who may have difficulty navigating going places in the community. Stories include going to the mall, play ground, doctor, hairdresser, restaurant, and grocery store.	2+	Free
Quick Cues	This app helps teens and young adults on the autism spectrum to handle new situations and learn new skills. The five modules include: communication, life skills, socialization, coping, and on the job.	teens/ young adults	$4.99
Social Skill Builder	This app is a series of interactive videos that teach social thinking, language and behaviour that are critical to everyday living. Focus is on: friendship/life skills, critical thinking, emotions, and consequences.	3+	Free
Social Skills Sampler HD	This app is a complement to the Functional Skills System software. Each app contains digital videos that focus on functional life, literacy, math, social, health, transportation and work skills.	4+	Free
"Super Duper ""What are They Thinking?"" "	Use the App to improve your students' inferencing, reasoning, and conversational skills. The student then gives a verbal response. You score their response as correct or not.	4+	$1.99
Touch and Learn - Emotions	This app focuses on helping kids read body language and understand emotions by looking at gorgeous pictures and figuring out which person is expressing a given emotion.	3+	Free
The Social Express	This app is designed to teach users how to think about and manage social situations, helping them to develop meaningful social relationships and succeed in life. Based on the work of Michelle Garcia Winner.	4+	$89.99
What Would You Do at School If Fun Deck	Select the cards you want students to see, and have them work on solving problems and practicing good social skills as they discuss situations in and around school. The prompts include questions like, "What would you do if	8+	$1.99
What Would You Do at Home If Fun Deck	Select the cards you want students to see, and have them work on solving problems and practicing good social skills as they discuss situations in and around home. The prompts include questions like, "What would you do if	8+	$1.99

COMMUNICATION			
ABA Receptive Identification	This app teaches foundational language concepts to children. They learn to ask for, label and receptively identify items.	1 to 6 years	$1.99
Audio Memos	This is an easy to use voice recorder. Create audio notes and save them or email them.	3+	Free
Answer:YesNo HD	This app provides the user with two customizable buttons that can contain pictures and/or text. Audio can be added.	2 +	$3.99
ChoiceBoard-Creator	Create choice boards of up to six choices. Use your own pictures or text.	2+	Free
Conversation Builder	This app helps children learn multi-exchange conversations in social settings. Conversation is presented visually to that students recognize and master the flow of conversation. In app purchases available for other conversations. (4.99)	2 to 8 years	$9.99
Easy Board	This is an easy way for teachers to provide visuals such as first/then, yes/no, and listening.	4 to 10 years	$0.99
First-Then Board	Provide a first-then board using built in pics or pics from the web. Start with an activity then offer a reward!	2 to 8 years	$1.99
iConverse	This Augmentative Alternative Communication (AAC) is designed for individuals who have yet to master language. Use the built in buttons or create your own.	3+	$9.99
Injini Lite	This app builds receptive language through fun games such as matching, tracing and find it.	2 to 6 years	Free
IPrompts® XL	This app allows you to create picture schedules for daily activities or to complete tasks. It also contains a visual countdown timer, choice prompts and an image library.	2+	$49.99
LinguPingu	The free version offers two categories-transportation and animals. Students learn vocabulary in French and in English. The full version comes with nine different categories.	2 to 8 yeas	Free
Match it up!	This app helps students to develop visual perception skills through the matching of conceptually related images. It also helps develop language skills by naming objects and colours.	2+	Free
Proloquo2Go	This app provides a full-featured Augmentative and Alternative Communication solution for students who are non or minimally verbal. It includes over 7000 items, advanced word prediction and is fully expandable.	4+	$189.99
See.Touch.Learn	This app is a picture learning system designed to build vocabulary for students with special needs. Customizable for individual students. In app purchases for other categories available.	1 +	Free
Show Me….	This app is designed to improve receptive and expressive language. A speech model is presented for the child to imitate. The child's speech is recorded and then scored.	2 to 8 years	$9.99
Sound Touch	This app provides the images and sounds of 360 animals, birds, vehicles, musical instruments and household items. Students tap a cartoon image and the real image pops open accompanied by the sound it makes.	2 to 5 years	$4.99 / lite version- Free
Tom's Messenger	Record a short video and send it as a text message. You can choose to be Tom or another character. (in app purchase of 0.99)	6 +	Free
TapToTalk	This app turns your iPad into an augmentative and alternative communication device. Use the online tool, TapToTalk Designer at www.taptotalk.com, to create albums and sync them to your iPad.	4 +	Free
Talk Assist	Talk Assist is an alternative speech aid that provides a voice for people who cannot speak for themselves. Anything you type in will be spoken out loud for others to hear.	8+	Free
Understanding Inferences Fun	Answer questions or complete sentences to help boost student's inferencing and reasoning skills. 52 question cards available.	6+	$1.99
Verbally	Verbally is an easy-to-use, comprehensive Augmentative and Alternative Communication (AAC) app. It contains word grids, phrases grids and text prediction.	8+	$1.99
Wheels on the Bus HD	This app encourages children's language and motor development. Sing with the student and have the student sing back and record the song.	2 to 5 years	$1.99
BEHAVIOR			
Anger & Stress Management	This app provides relaxing music to help relax people in times of stress or frustration.	1+	Free
Anger Thermometer	The Anger Thermometer App teaches people how to identify, understand, and control their feelings and emotions. It encourages them to use coping strategies before losing control completely.	4+	$1.99
AutismXpressPro	This app is designed to help students with autism to recognize and express their emotions through games.	3 to 8 years	$1.99
Behaviour Breakthrough	This app is a training application using simulation and an interactive environment. Certain actions happen based on the choices of the adult user.	For Teachers	Free
BetterBrain	BetterBrain gets students to practice challenging memory tasks where they have to remember simultaneously audio and visual events.	8+	$2.99
Calm Counter	Calm Counter is a visual and audio tool to help people calm down when they are angry or anxious. The app includes a social story about anger, and audio/visual tools for calming down.	4+	$2.99

Fluid Monkey	This app provides a relaxing sensory atmosphere for students who need to calm or relax. Fluid environments can be changed to suit the needs of individual students.	1+	Free
Fan Free	Need some white noise to keep calm? This app is perfect for such times. Three different fans from which to choose.	1+	Free
Fluid	Turn your iPad into a fluid environment. Touch the screen and it's as if you just put your hand through a stream. Audio included.	1+	Free
Fluidity	This calming app allows students to play with or look at water. Uses customized photos or use the ones within the app.	1+	Free
Heat Pad	This app provides a relaxing environment without providing the feeling of heat. Nine different environments available.	1+	Free
HumorCalendar;	" This app tracks a student's humour for 365 days of the year. At the end of each day the students must answer the question ""How was your humour today?"" Record with a happy face, sad face or whatever face is needed. "	3 to 10 years	Free
Pull-Ups iGo Potty	This is a fun, rewarding app that will help train a student to use the toilet.	1 to 6 years	Free
iGlow	This relaxation app allows students to draw in seven colours of light. The drawings fade.	3 to 8 years	$0.99
Liquid Mantra	Rising Lite is a real-time 3D fluid dynamics visualizer. Relax and watch waves roll in at the beach or lava flow down a mountain side.	1+	Free
Nature Sounds	This app provides relaxing nature sounds to help students calm. Many different sounds to choose from.	1+	Free
Now What	This app assists kids who need help with transitions and knowing what comes next in their day. The schedules are presented in text format.	12 years and up	Free
Peaceful Pond	Relax to the sound to water in the pond. Sounds of thunder can be turned on.	1+	Free
iScheduler	This app helps students to organize their daily activities, and track what is finished and not finished. Rewards are issued when tasks are completed.	3+	$0.99
Sleep Pillow Sounds	This app provides an advanced set of high quality ambient sounds, premixed for sleep enhancement. The sounds are specifically recorded and enhanced to relax you and to make you sleep.	1+	Free
Stress Tracker	This app allows you to track your stress daily. It also provides build in strategies that can help you calm during times when you need to. Data is collected and presented as graphs.	8+	Free
Spin.The.Fan	This is a calming app. Students can spin the fan manually or it can be set for automatic.	1+	Free
Touch and Learn	This app focuses on helping kids read body language and understand emotions by looking at gorgeous pictures and figuring out which person is expressing a given emotion.	2+	Free
Uzu	Uzu is a kinetic multitouch particle visualizer. It is helps student to calm as points of light shoot across the screen. Very visual!	1+	$1.99
Relax Melodies HD	This app provides 46 different sounds that can help you to relax.	1+	Free
VisTimer	This visual timer is in pie chart format. As the time ticks away, the pie chart starts to disappear. The free version measures time up to 5 minutes.	3+	Free
Time Timer	This app contains three different timer modes: 60 minute mode, custom mode and clock mode. This app allows you to set more than one timer at once.	3+	$6.99
Work System	This app allows you to set up work tasks as based on the four essential questions of Structured Teaching. Students will know what to do, how much to do, when they are done and what to do next.	8+	Free
Video Scheduler	Use this app to video segments for video modeling or using picture/video schedules to help organize your student. Scheduler will promote independence and learning!	3+	$12.99
FINE MOTOR			
ABC Cursive Writing	This is a fun way for kids learning the basics of cursive writing. Trace big letters with guiding strokes.	7+	$0.99
ABC Easy Writer -Printing	This app provides upper and lower cases tracing. Audio is included so students learn the letter names.	2 to 6 years	Free
ABC Letter Tracing	Students learn to trace letters and are guided. Feedback is provided for proper letter stroke.	2 to 6 years	Free
Absolute Board	This app allows students to sketch and take notes with their finger! They can share and save their ideas then email their work.	3+	Free
All-in-One Big Trace Combo	Students can trace oversized letters and numbers. Both print and cursive are offered.	2 to 6 years	Free or $2.99
Big Number Trace HD	Students learn the proper strokes with large numbers and as well are provided with audio of each number name.	2 to 6 years	Free
Build It Up	This app develops visual-perceptual skills as well as fine motor skills. Students will also learn math concepts such as size, top, bottom and before and after.	2.5 years	Free
Color Dots	This visual tracking game will build a student's visual tracking and fine motor skills. Very fun to play!	1+	$0.99

Dexteria	Dexteria is a set of therapeutic hand exercises (not games) that improve fine motor skills and handwriting readiness in children and adults.	child & adult	$4.99
Glow Draw	This is a drawing app which uses glowing colours.	3 to 6 years	Free
iWriteWords	Help Mr. Crab collect the numbered balls by dragging him with your finger - and drawing the letter at the same time.	2 to 6 years	Free or $2.99
Wood Puzzle HD	This app contains 24 different puzzles for students. Piece rotation can be turned off so pieces just slide into place or it can be turned on to provide more challenge.	2 to 5 years	$0.99
GENERAL USE			
Abilipad	This app combines the functionality of a notepad with word prediction, text-to-speech and a customizable keyboard.	4+	$19.99
Corkulous Pro	Collect, organize and share your ideas on this virtual corkboard. Includes notes, labels, photos, contacts, tasks, index cards and arrow flags. Save your board as a photo and email it to a friend.	6+	$4.99 / Free version available
Dragon Dictation	This is an east-to-use voice recognition application. Simply speak and see your words in text form. Dragon must be used with a wireless network.	4+	Free
Educreations Interactive Whiteboard	Turn your iPad into a recordable whiteboard. Create video tutorials for students. Walk students through math problems or essay writing.	4+	Free
Evernote	This app helps keep orgainzed across devices (computer too)! Create and edit text notes. Record voice notes. Organize notes by notebook tags. Sync your notes with your computer.	8+	Free
i.AM Search	This app helps teachers to discover apps for students with ASD based on over 300 unique identifiers that ask questions around age, gender, symptom domain, etc.	2 +	Free
Idea Sketch	Draw mind maps, concept maps or flow charts and convert them into a text outline or vice versa.	8+	Free
Inspiration Maps	Based on the computer software, Inspiration, this app has all of the same functions. Create mind maps, concept maps or flow charts and convert them to text. Move them to dropbox or iTunes. Use the premade templates.	8+	$6.99 until end of school year / $12.99
iThoughts	Another mindmapping, organizational tool. Export as a PDF. Organize maps into folders. Very visual.	8+	$9.99
Keynote	If you can create a powerpoint presentation then you can use keynote! Create your own presentations or open ppt presentations from your Dropbox or iCloud.	10+	$9.99
Microsoft OneNote	With this free version, you can access, create and edit up to 500 notes. Notes can include pictures, text, and bullets. Sync your notes online at www.skydrive.com.	8+	Free
N+OTES	Write your notes, create folders, search your folders, and send your notes to your email.	10+	Free
Pages	Create, edit, and view documents wherever you are. Choose from 16 templates and styles to create letters, reports, flyers, cards and posters. Customize your pages.	8+	$9.99
PaperDesk	Take your notes with you. With this app you can include drawings, import PDFs form other apps, export to Dropbox, Google Docs, email, or Twitter and keep yourself organized with folders.	10+	$3.99 for limited time (75% off)
PaperPort Notes	This is a digital note taking tool that allows you to combine documents, web content, audio, typed text as well as handwritten notes into a single document. Dragon is embedded.	5+	Free
Pictello	This app is designed to create talking photo albums and talking books. Great for Social Stories! Six language selections available.	1+	$18.99
Plain Text - Dropbox text editing	This app allows you to create and organize your documents in folders and sync them with Dropbox.	8+	Free
Puppet Pals HD	Select actors and backdrops to create your own shows and audio in real time. Purchase the Director's Pass and star in your own creation and have access to many more characters and backdrops.	3+	Free / Director's Pass- $2.99
RedLaser Barcode Scanner and QR Code Reader	Scan all major retail barcodes and QR codes. Create personalized QR codes for assignments, links to the web, etc.	6+	Free
Scribble Press	This app allows kids to imagine, create and share their own stories with great drawing and writing tools. Download your books instantly to your iBooks library!	4+	Free
ShowMe Interactive Whiteboard	This app allows you to record your voice as you create tutorials. Go to www.ShowMe.com to view samples.	3+	Free
SonicPics	Turn your photographs into narrated slideshow movies. Record your voice. Create podcasts, video blogging, audio books, photo tours and much more.	6 +	$2.99
Stickyboard	This app combines the functionality of a whiteboard with limitless sticky notes in four different colours.	8+	Free
uTrack Pro	This virtual wall allows users to keep track of their day through the use of sticky notes.	8+	$4.99

I Have an iPad and an AAC App, What do I do now

ANGELA DESIDERI is an American Speech Language-Hearing Association (ASHA) certified continuing education provider, licensed by the state of California as an SLP. Her professional experience includes extensive evaluations and specialized treatment of children with autism, Down syndrome, cerebral palsy and other communication disorders. Angela routinely conducts in-depth consults with parents, SLP professionals and school districts to implement new innovative assistive technologies, including the iPad, into both classroom and home settings.

Augmentative and alternative communication (AAC) is much more than providing an iPad owner with an AAC application and expecting functional communication to occur immediately. This is particularly true for beginning and emerging communicators, including individuals with autism spectrum disorders (ASD).

Many individuals with ASD have unique learning needs that require lots of practice, encouragement, support and instruction, which can make the AAC learning process challenging. Additionally, the iPad has contributed to more access to AAC by providing a much more cost effective solution. As a result, many speech-language pathologists are finding themselves seeking out more information regarding AAC, and their desire to learn more about AAC couldn't be more evident.

The Assistive Technology Industry Association (ATIA) recently published "The Critical Need for Knowledge and Usage of AT and AAC Among Speech-Language Pathologists," that reported 86 percent need more information on the range of AT and AAC services available and 74 percent reported that they didn't receive enough education regarding AAC while in school.

To address these issues, internationally recognized speech language pathologist Angela Desideri M.S., CCC-SLP, created SpeechTree: AAC Communication & Learning Program for iPad. According to Desideri, "I found that parents and professionals purchase AAC apps, but many are unsure how to use it with their child or students. SpeechTree uses an evidence-based systematic process that makes it easy to introduce and monitor progress. To summarize, SpeechTree helps simplify the AAC process."

AAC: HOW LANGUAGE DEVELOPS

Functional AAC communication requires operational, linguistic, social and strategic competency. Therefore, it's important to evaluate the process of language development and look at creative ways to provide and support AAC competency.

"Language develops and expands in an orderly fashion. Our devices and systems must allow for this development from the beginning. Typically, children acquire spoken language by progressing from one-word utterances to two-word utterances to simple sentences and so on. Language form, function and use proceed in a fairly predictable pattern. AAC intervention should begin early, and clinicians should provide support for the way we know language develops rather than use devices that generate complete sentences at the onset." ~ Julie Schers and Pamela Hart, Wichita State University, in the The ASHA Leader Vol. 7 No. 16. September 10, 2002

WHAT IS SPEECHTREE?

SpeechTree is a fully functioning, customizable AAC application that includes a learning program designed to give beginning and emerging communicators the skills necessary to communicate. SpeechTree's learning section incorporates evidence-based features of Applied Behavior Analysis (ABA) and employs a systematic three-step process that allows parents, teachers and therapists without extensive AAC experience to easily introduce and monitor progress.

SpeechTree features include:

- Customizable to match the student's needs
- Data collection
- 20 pre-designed lessons
- Thousands of real pictures and colorful symbols
- Text-to-speech
- Pre-set communication pages

HOW IT WORKS: A SYSTEMATIC PROCESS

SpeechTree consists of two different parts: Lessons and AAC. Each part builds on previous learning to systematically teach language and AAC use, while encouraging language progression from one-word utterances to two- to three-word phrases and simple sentences, using ABA and evidence-based principles.

Lessons: Learning One-Word Utterances and AAC Use

Each lesson has three parts: teaching, receptive and expressive. A variety of settings are available to enhance learning, based on the individual's learning needs.

Teaching: Eight pictures are individually presented using random rotation and modeled for the AAC learner using motivating prompts to help keep the individual participating and engaged in the lesson. Modeling, visual reinforcement and auditory reinforcements are used.

Receptive: Individuals learn to receptively identify the vocabulary learned in the teaching section from a random field of six vocabulary choices. Errorless learning, positive reinforcement, visual and auditory reinforcements and data collection are used. This section can also be used to enhance literacy.

Expressive: The individual is requested to receptively identify the vocabulary and press the message window to communicate the vocabulary, just as they will do in the AAC system.

Data: At the end of each receptive and expressive section, data is generated and illustrated in a bar graph with percentages for correct responses on first and second attempts and incorrect responses. These detailed reports can be printed or emailed from within the app for easy sharing between parents, teachers and therapists. Additionally, the data helps track progress and monitor areas that require further growth.

AAC: Two- to Three-Word Phrases and Simple Sentences

The AAC section is designed for quick communication by using a series of scrollable starter phrases, such as "I want," "I hear," "He is," etc. These starter phrases encourage AAC users to expand language to two- to three-word utterances and build on what was learned in the lessons. Additionally, best AAC practice principles are used that include a core word package, quick words, color coding, text-to-speech and fully customizable options with thousands of real photographs and colorful symbols to continue to expand language and communication skills.

Benefits:

- .The lessons provide a place to start and help make the AAC learning process easier.
- Many AAC users have learned how to use the toolbar to combine words into phrases and sentences.
- Many individuals learn vocabulary quicker. One student learned the items after only three teaching sessions and also learned to read the words.
- SpeechTree lessons provide a way to obtain baselines to determine the learners' knowledge level before teaching begins.
- SLPs have been better able to focus on users' strengths by reviewing the lesson data.
- Parents and SLPs have been able to easily share data reports and discuss progress and areas that require further growth.

In summary, SpeechTree uses a systematic, step-by-step process that allows for quick learning by parents, SLPs and students; helps individuals learn vocabulary and AAC use more quickly than other previously available systems; data collection helps SLPs better prepare lessons that focus on an individual's strengths; lessons and data help parents and SLPs determine student's advancements and is a complete and customizable AAC solution.

To learn more about SpeechTree, including how to download a free lesson, go to www.speechtreeapp.com. SpeechTree offers one free lesson, and the full-featured program is sold on iTunes for $169.99. Additionally, SpeechTree has begun a series of free webinars that teach practical strategies to implement the program. You can access the webinars by liking its Facebook page, www.facebook.com/speechtree.

REFERENCES

Assistive Technology Industry Association (ATIA). (2012). The Critical Need for Knowledge and Usage of AT and AAC Among Speech Language Pathologists. http://www.atia.org/files/public/ATIA%20SLP%20Survey%20White%20Paper_6_12_12.pdf ■

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