Assistive Technology Resources for Children and Adults with Disabilities

Closing The Gap

Solutions

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CONTACT INFORMATION

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

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Using Off-the-Shelf Products for Environmental Control:

Robots, Lightbulbs and Flying Things, Oh My!

Inside all of us is a desire to be seen, heard and valued. In the land of complex communication needs that are often accompanied by complex motor needs the ability to convey "self" is likely to be compromised. Not only do some individuals struggle to make themselves heard, they may also find themselves on the outside looking in, unable to participate in activities that others easily accomplish.

For years, our therapy group has been passionate about switch-adapted play, knowing that individuals who use switches need just as many toys and play experiences as other children, teens and adults. Our desire has been for them to have just as many opportunities to play, listen to music and enjoy other fun experiences like their peers do. Instead of just one or two switch toys (if they are lucky), we have hoped for chests or closets full of toys. Since switch toys are expensive and challenging to adapt, most of these individuals have limited play and entertainment time. In addition, many of the adapted toys have a single, or very limited function. While many clever people have dreamed up numerous uses for re-purposing a switch-operated toy, the toys themselves are often ones that peers would be less interested in playing with. Then other toys are simply tough to purpose beyond the concept of "hit the switch and a single outcome occurs." It's no wonder that switch activation might decrease as the child learns what will happen and the outcome is completely predictable.

With the expansion of environmental control apps and wireless toy apps, our dream of chests full of toys seems more likely. These "toys" might still be expen-

LAUREL BUELL, M.ED., OTR/L, is an occupational therapist, special educator and lover of all things related to assistive technology. She has been in the field since 1980 and has had the great privilege of working with many like-minded professionals. Laurel's focus is related to purposeful play and video modeling, enticing kids and adults alike to interact more fully with others in their world. When not thinking AAC and AT, she enjoys her children and grandchildren.

BRENDA DEL MONTEL, Speech Language Pathologist, Brenda is a wife and mother of two and has been working as a therapist for over 17 years. She has worked with children and adults with multiple disabilities from day one. She is an expert in AAC (Augmentative and Alternative Communication) as well as educational software. She also currently works for the Special Education Technology Center funded by the Office of Superintendent out of Central Washington University.

ANTHON MCLAWS, OTR/L, has been an occupational therapist for 20 years and has worked primarily in schools and home health. He is the owner of Therapy One, a pediatric therapy company providing services throughout Arizona and Washington. His passion is for assistive technology, AAC, and toy adaptation. He lives in Gilbert, Arizona with his wife and two sons.

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sive, but with the use of technology that others in the family enjoy too, (Alexa, Apple TV, etc.) we have so many more options when it comes to adapted play.

We initially had to ask ourselves, "What is the purpose of adapting a toy?" Is it so a child can play? Is it so a teenager could experience control? Beyond the "fun factor," we realized that the purpose of adapting high-interest "toys" was to create human interactions. Picture 9

Then that begged the question, "What is the function of communication?" The obvious answer was "human connection!" It's absolutely necessary to connect, human-to-human, before there is even a need for communication. Whether you are looking at choice making, social language, core words or fringe vocabulary, none of it matters unless the child with complex needs is invested in using communication to connect with the communication partner.

So we went back to the question of what might improve interest, and what might facilitate human connection. Tablets with Bluetooth connectivity have transformed the world of environmental controls, making wireless access to household activities and remote-controlled toys easily available. Asking Siri to find a nearby restaurant, or telling Alexa to turn on your favorite radio station is tasks that are both useful and fun.

As it turns out, synthetic speech produced by communication systems is now clear enough to activate both Siri (through the iOS platform) and Alexa (Amazon Echo). In addition, using a combination of a Bluetooth switch interface and macros/recipes created within the switch access of the accessibility section of the iPad led to some amazing outcomes.

Our "Off-the-Shelf" project was established to investigate consumer items and see what we could learn about making them "accessible". "Able-bodied" consumers were able to activate things via the interfaces created for the general population. However, consumers that had limited motor access were still on the sidelines, watching, but not engaging. As we started playing with new toys, we realized we wanted to learn more about what could be adapted, what made adaptation possible and what things to look for when considering making a purchase. The project was envisioned initially as we loved to play, we thought technology (in general) was just plain fun, and we wanted to move beyond typical switch adaptations. We looked at three main areas of interaction:

1. Controlling tasks in a home via onboard Bluetooth control (such as turning lights on and off)
2. Using speech recognition via a communication device and interfaces (such as an apple TV and Echo Dot)
3. Playing with remote control toys using a tablet as the remote (including cars, robots and drones).

From there, we began diving into our own personal areas of interest, comparing notes and discovering those things that could prove to be guides for successful adaptation. The first criterion for off-the-shelf item consideration was whether it could be controlled wirelessly via an app. The next criterion which turned out to be much more imperative, was the app itself. It was soon evident that the app, as the interface between switch and toy, was the single most compelling feature, which determined whether the toy could be usefully adapted. Within the iOS operating system, in the "accessibility" section is the area of switch control. A sub-category of switch control was the ability to create "recipes," which are essentially macros, capturing a certain touch/stroke, or series of strokes, to be replayed with a switch command. With a recipe, a switch signal being sent to the tablet (via a switch interface) could be used to activate portions of the screen just as if you were touching the screen with a finger. The signal could consistently replicate a touch on the screen with each switch activation, but it would not be aware of screen changes. Our hunt, therefore, was to find apps that had pretty clean interfaces and which did not change screens much while activating the toy.

Image 1: Parrot Minidrone Mambo

Our first foray into an attempt at toy adaptation was with the robots "Dot and Dash". We heard this was a popular set of programmable toys controlled by an iPad. As we set about playing with the robots, we saw that the app was more geared toward teaching coding to the typically developing middle-schooler. A series of commands needed to be generated, and then a "play" function set the commands in motion. Unfortunately, the "play" function moved around on the page, depending on the coding that had been created. We hoped that partner-play might be possible, with a peer doing the coding and the child using the switch to be in control of activating the code, causing the robot to do its thing. In the version we looked at, the "play" function kept moving between screens. A recipe could be created in which the signal from a switch would activate a particular spot on the screen (as if you touched the play button), but the "play" button kept moving, depending on what level you were in. This was quickly frustrating for our end goal and us. We were looking for toys that the adults could set up with a relatively low learning curve (as opposed to having to learn robotic code – even if designed for 12 year olds), and which could yield consistent results for our switch user.

We next found a drone called the Parrot Minidrone Mambo at the Apple Store. (Image 1) This toy turned out to be as much of a success as the Dot and Dash was a disappointment. Better news yet, the drone was spotted on Amazon in a refurbished version for $60. The thing that made this toy such a great find was

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Image 2: Apple TV app "Remote"

that it could be directed all over the room with only three switches. The app itself has nine "hot spots," but in further analysis, three could be used to make the functions really powerful. One switch served as a toggle to cause the drone to take off and land. When the fans on the drone engaged and the drone lifted off the ground, it was difficult to ignore what was happening. A second switch turned the hovering drone incrementally, and the third switch moved it forward. We also discovered that more than one switch interface could be connected to a single iPad at a time. This made it possible for multiple users to control different functions (such as "reverse" or "turn counter-clockwise"). Even better, the app itself remained active. This enabled a play partner to control specified functions to more actively be a part of the play experience. Once we narrowed the power functions to three separate switch commands, we turned to Lisa Rotelli from Adaptive Switch Labs. With her help, and a specialized switch interface, we were able to fly the drone with the controls on a power wheelchair head array. The ability to direct the movement of an object outside oneself is a very powerful motivator, and was exciting to recreate.

Our journey into discovery of additional gems took us into attempting to control other off-the shelf products. (Image 2) The app for Apple TV (called "Remote") has an uncluttered app interface, but required a minimum of six separate commands to be sent (up, down, left, right, menu and select) to fully navigate throughout TV options. A shorter version was to use menu and select, paired with the microphone (listening to speech produced by a communication system). While this interface showed some promise, it required more separate switch access points than was possible for bodies with complex motor limitations. In addition, the left/right and up/down strokes were not always precise, and it was sometimes frustrating as a switch activation could send you past the show you were looking for.

Using iHome, Eve, WeMo or Hue allowed us to turn lights on and off, either via special light bulbs or via an interface box plugged into the wall. This was particularly interesting as the box could be used to turn any appliance off or on that could stay in a locked-on position, such as a fan or lamp. A switch hit managed a simple on and off with ease. The "play" potential here was relatively limited, as the function was just on and off.

The Echo Dot proved to be an item with much more "bang for the buck." (Image 3) A speech command, from a communication device, generated by a message starting with "Alexa," brought forth an amazing amount of entertainment, and play/communication potential. Trying a message such as "Alexa, tell me a joke", might yield the following: "What's the difference between bird flu and swine flu?" (Answer – one requires 'tweatment' and the other requires 'oinkment.'") "Why are mathematician's good dancers? (Answer - they have algo-rhythm.") Just because we were entertained for a while doesn't mean everyone would be. However, for someone who wants to keep telling jokes without having to have someone else program in each joke, this felt like great potential. According to some of the Echo Dot's literature, "Alexa will play music, provide information, deliver news and sports scores, tell you the weather, control your SmartHome and even allow Prime members to order products they've ordered before." We found that it worked better if the activation word "Alexa" was programmed into the message, rather than being activated as a separate message. We also discovered a newsfeed that would send new Alexa functions on a daily basis. The only real limitation with the Echo Dot was it needed to be connected to Wi-Fi to work. This might be a problem in some schools where wireless access is restricted. There are hundreds of additional fun and entertaining Alexa commands and functions, including:

- "Alexa, tell me a story."
- "Alexa, call _____ (friend's name) mobile."
- "Alexa, tell me a joke."
- "Alexa, what's the sports news?"
- "Alexa, turn on/off my party lights"

It turns out that one Echo Dot can call another Echo Dot in a completely separate location, making "phone calls" possible without setting up a cell phone plan. One would be limited by calling places with the Dot, and with Wi-Fi connectivity, but would make longer-range communication possible within these parameters. Promotional literature on the

We tried a variety of toys. We discovered that simply because a toy was expensive, it didn't necessarily make it better. Often times the more expensive toys had much more complex apps, which got in the way of using recipes. The more the app could do sometimes became prob-

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Image 4: The Miposaur from Amazon

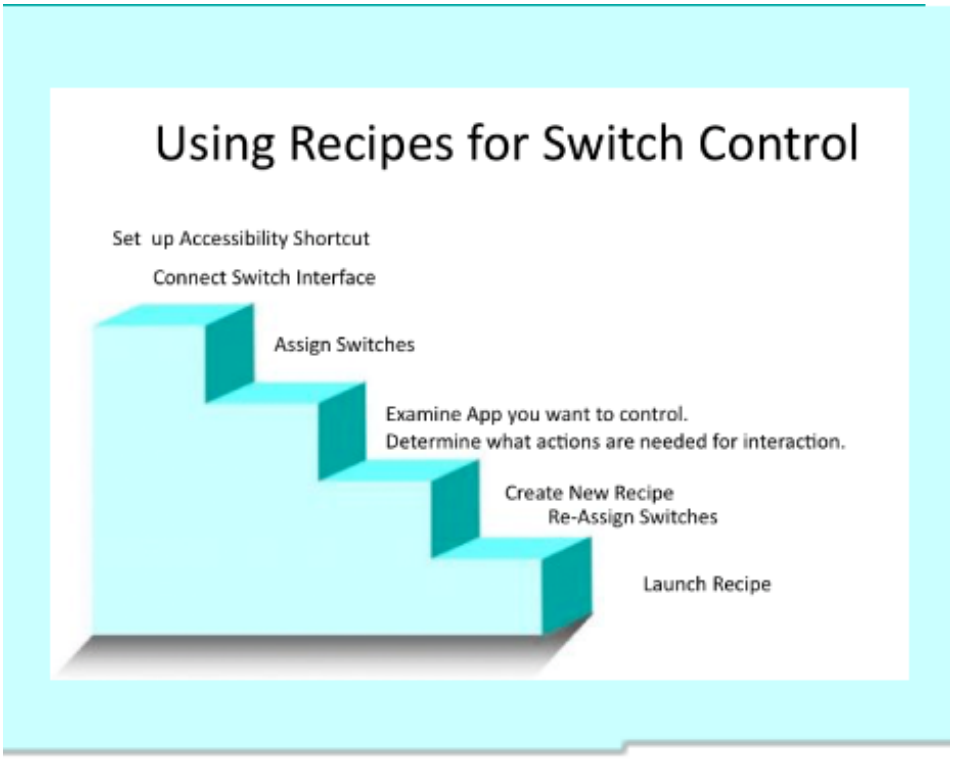

Image 5: Steps for recipes

lematic. Frequently, one had to prowl through the app to see what the toy was programmed to pay attention to (via the Bluetooth signal being generated by the tablet). The Miposaur (a dinosaur from Amazon, (Image 4) retailing for $80) had many layers of activities built into the app. In one section, it could be told to dance. This felt to be the best option for a toy to be remotely controlled by switches. Two to four separate switch-hits caused a fair amount of movement, spinning and dino-tail swishing that could be paced according to the music. Other areas did not create as much movement or had too many subtle responses.

Toys like Sphero and Ollie had apps that were difficult to create functional motions in the recipe format. As a fully capable adult, we could hit a switch and operate the Sphero or Ollie. However, when complicated and spastic head-switch users attempted the task, they often hit a switch several times. There was no way to adjust the recipe to only take one command. There is tremendous value in trying each toy with these children and teens that have complicated bodies. As with all switch activation, a team approach to determining the best switches and switch sites is required.

Since a "recipe" is the core of much of the discussion above, a more in-depth description of recipes should be examined. For a tutorial with pictures on how to create a recipe, please reference a tip we posted on AACintervention.com, Caroline's recipes, 2016, tip 2. Our discussion here will be limited to variables that had immediate bearing on our access project.

The term "recipe", (Image 5) when used for switch control, refers to a set of instructions that can be sent to a switch or switches, in order to make a particular outcome occur. A recipe is used to access the tablet with a switch by sending a signal that replaces a gesture, or series of gestures, when you cannot activate the tablet in a typical fashion. The first thing to do is to set the accessibility Shortcut so one can move in and out of switch activation easily.

The above referenced tutorial is a great guide for making your first "recipe." However, as part of this process, we discovered some additional tips and tricks. Rather than re-writing a "how to do a recipe", we decided it would be better for our readers to download the tutorial, and add the tips and tricks here.

We learned that if two different users were using switches set with the same keyboard command (such as 'space' or '1'), they would both cause the same assigned custom gesture to occur. In other words, if the custom gesture replicated a touch in the lower middle section of the tablet and was activated by a switch sending a 'space' to the tablet, a second switch, sending the same command (even over a separate interface) would cause the same custom gesture to occur. In the example of our Parrot Mambo drone, touching in the middle of the bottom of the screen created a toggle effect that caused the drone to hover and then to land. You could have two kids, each with the power to land or hover the drone, able to decide when and where to land it, and give each different movement controls once it was airborne.

The amount of different commands that could be sent to a tablet to control the toy was limited by how many output options were on the switch interface itself, as well as how many interfaces were available. In addition, signals from the interface that were native to the tablet were not recognized as part of a recipe. In other words, you could use keyboard

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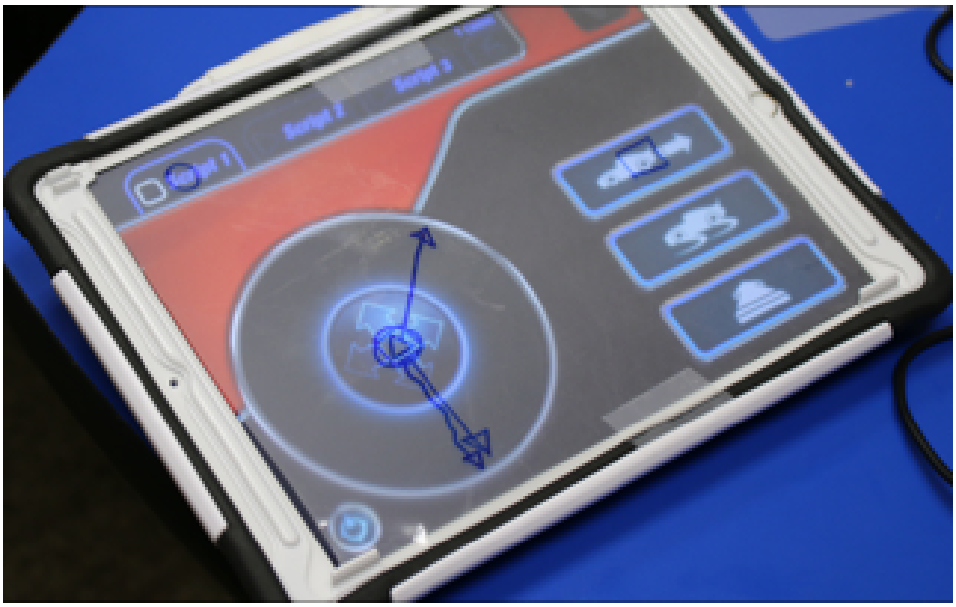

Image 6: Overlay for custom gestures

Image 7: SoundSOUL Bluetooth Dancing Water Speakers

equivalents, such as '5' or 'enter', but not tablet commands, such as 'volume up' or 'mute'. In a switch interface with four switch jacks, you could potentially have four different things the switches could do. These separate actions could be used to play with different functions of a toy. This could also be useful if you had a four-message display, and you wanted switches to say four different things. Putting a second switch interface into play could yield another four messages. You could use this for poetry reading, song play, shaking dice or spinning a dial.

A drawback with custom gestures is that when (Image 6) you are actually programming the gesture to be used in a recipe, you are no longer looking at the screen that is part of the toy app. We solved this problem by using a clear overlay. We cut apart a pouch for a table laminator, taped it to the iPad, and drew the "hot spots" on with a dry erase or permanent marker. This way, we could remember where to touch when it came time to "learn" the custom gesture. Then, when we were assigning a custom gesture, we could touch the screen with certainty in the area we want activated (or with a movement, such as a swipe).

Using switches with an iPad did not always require the use of a recipe. In our search, we discovered (Image 7) the SoundSOUL Bluetooth Dancing Water Speakers LED Speakers Wireless Water Fountain Speakers ($30 from Amazon). These speakers produced lights and changes in water streams to synchronize with music from an iPad or iPhone. Not only were they fun to use with a simple switch play/pause to start and stop the music and lights, a two-switch setup allowed you to run through a play list, starting and stopping at will, and changing songs as desired. This toy did not require a recipe to be activated. It worked seamlessly with the interface moving within a playlist in iTunes. We happened to be using the Applicator Switch interface by Pretorian (vended by Inclusive TLC), and changed the mode to F (Skip forward) and E (play/pause). With two switches,

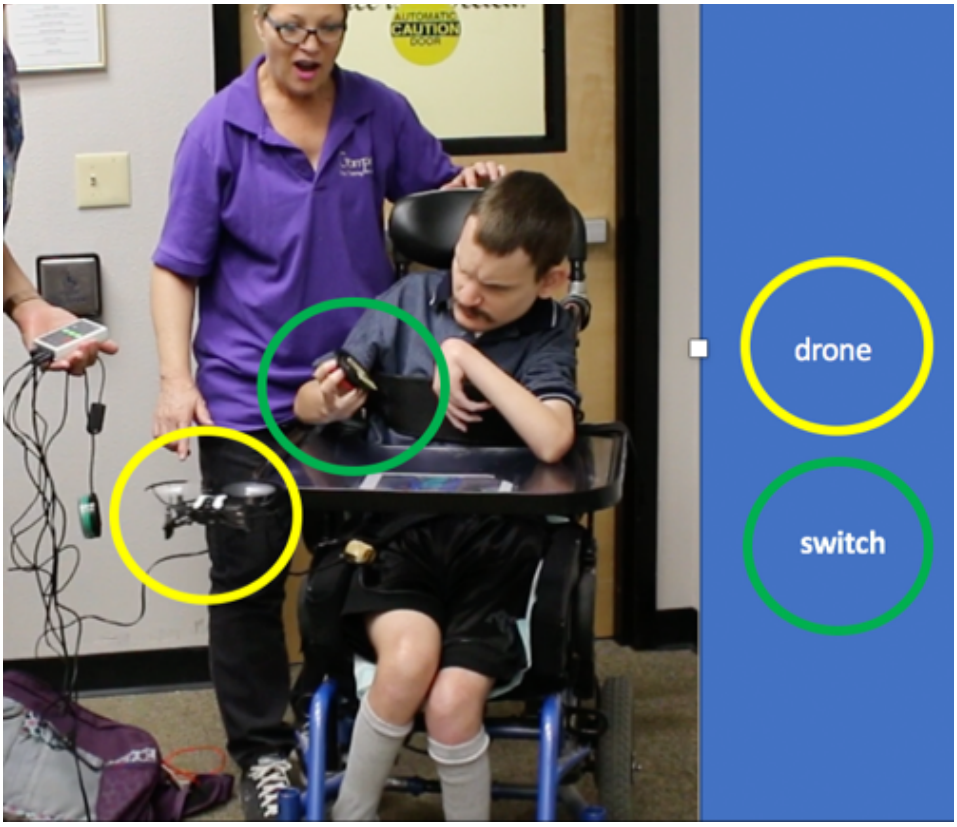

Image 8: Drone Switch

a lot of power could be controlled. Two switches could turn the user into the DJ, along with a light show!

Image 8 Just because something could be controlled wirelessly, and we thought it was interesting, didn't make it worthwhile for every individual. As we trialed different toys with children and adults, we found some who found the switch more interesting than the toy. We found that switch site and switch type were as important with the more sophisticated items as it would be for the original switch toys. Wireless switches, as a part of (or used with) the switch interface worked best, not only for passing around the control, but also for reducing the cord distraction.

Creating novel experiences brings relevancy to "You will never guess what I did today," on a phrase-based social page. Now that the friend or parent is intrigued, natural communication connections are made through dialog such as, "What did you do? Tell me the topic." The partner could lead an AAC user to a topic page, spell page, action words or describers and the language begins to flow. Write down the words they use and see if the others can figure out what happened. "Did you fly a drone?" "Did you make a robot talk? Is it something to do with a car? Tell me more!" As new people join the conversation, help the AAC user elaborate by modeling other ways to talk about the experience. Respond with social words like "Cool!" and "I want to see that!" and "What part of your body did you use to hit the switch?" Don't look now but you are hitting all areas of communication including labeling, describing, explaining, following directions, asking and answering questions, increasing vocabulary, using basic concepts in a functional way, problem solving, sequencing and social communication. Create these novel experiences and connection will lead to all your communication goals! ■

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A Multifaceted AT Success Story Culminating in an Educational Dream Come True: One Man's 33 Year Journey to Achieving a College Degree

By Pete Gefteas

Pete Gefteas is a 51 year old man with multiple disabilities who has used assistive technology for nearly 20 years. Through the use of AT, he has been able to enhance many facets of his life such as: daily living, employment, education, recreation, and social interaction. He credits much of his AT success to having a very strong support system consisting of family, friends, and a group of professionals that he refers to as his "Dream Team for Disability Services".

SUMMARY - My AT Success Story exemplifies the role that assistive technology can play in the lives of individuals with disabilities because it is reflective of how an AT user can utilize a wide array of devices in order to positively affect numerous aspects of one's life. In this essay, we will highlight how AT recently made it possible for me to complete my 33 year academic journey towards a college diploma and we will cover many of the ways in which AT has enhanced my life. Readers will be provided with details about the successes, setbacks, effective workaround solutions, and failures that I have experienced during my 19 years of using assistive technology. We will also trace my long history of using different devices beginning with my first device, the Quartet ECU, which both literally and figuratively brought light into my life and concluding with the most recent device, the VGo Telepresence Robot, which offers users a revolutionary new means for achieving inclusion.

Much of my success can be attributed to the fact that AT devices are designed to address a wide variety of purposes such as daily living, employment and education. In other words, the user often finds that there exists a device to meet their specific needs. However, AT devices often have problematic limitations and it is how a user addresses these obstacles that can determine his/her degree of success. For the first six years that I used AT, I enjoyed moderate success but it was only after I began working with experienced AT specialists that I was finally able to take full advantage of the capabilities of AT. My story features many of the common strategies to AT success that have paved the way for countless people with disabilities to attain lives filled with greater independence, higher self-esteem and a newfound sense of accomplishment. The turning point in my success story was my introduction to the strategy of employing effective workaround solutions. My 2 Easter Seals AT trainers have taught me the immense importance of workarounds and together we created many of these innovative solutions. This article will highlight some of the workarounds that have been especially valuable to me.

As a Bates College student in the mid-1980s, I was in excellent health and participated in varsity sports. I entered the final semester of my senior year as a student in good academic standing and fully expected to graduate with my class in the spring of 1988. However, midway through the semester, I suddenly became permanently disabled and had to take a medical leave of absence six weeks prior to graduation. When I left college, I told the Dean that I would eventually be able to complete my degree when the voice activated computers depicted in futuristic science fiction shows/movies became reality. I also explained to him that I was worried that it might take decades for technology to advance that far. He informed me that he had seen some students return after 25 to 30 years and complete their degrees. He told me to always remember that it's not when someone graduates that matters. Rather, the important thing is that someone does graduate. We kept in touch over the years and he often reiterated his powerful words of encouragement. Little did I know during our conversation in 1988 that his words would eventually prove prophetic because it would take 24 years until AT would evolve to where I would have the tools needed to resume my college education.

After leaving school, I tried all possible medical treatments and, unfortunately, everything failed. Doctors informed me that I had to accept the fact that I would

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be permanently disabled and virtually bedridden for the rest of my life. To make matters worse, my disabilities rendered me homebound which created a profound sense of isolation. For the next decade, I could not even perform a simple task like turning on the lights. For all intents and purposes, I was merely existing. It was not until I was introduced to AT in the late 1990s that I once again began truly living.

Like so many other AT success stories, my story began because a thoughtful person went out of his way to introduce me to the amazing world of AT. It was his dedication to promoting AT awareness that would forever change my life in ways that I had only dreamed of. In 1998, I called a nearby office of the Massachusetts Rehabilitation Commission (MRC) in the hopes of receiving services so that someone could prepare lunch for me while my parents were both at work. I explained to Bruce Copeland, who was the MRC counselor answering the phones that day, how I was not able to prepare lunch for myself because of my disabilities. He responded by politely explaining that MRC only provided meal services to people with disabilities who lived alone and that I would not qualify for such services since I lived with my parents. He then asked me the most important question of my life when he said, "Even though we can't provide you with any meals services, would you be interested in a voice activated computer?" I asked him if he meant a voice activated computer like the ones depicted in science fiction movies. He told me that such computers had become reality and that I seemed like an ideal candidate to receive one from the Commission. Of course, I enthusiastically agreed to receive the exact type of computer that I had looked forward to using for so long.

Bruce easily could have ended the conversation about meals services without ever mentioning AT. Instead, he redirected my life down a pathway that would be filled with devices that empowered me. That conversation was a pivotal moment in my life and in the years that followed I have sought to positively impact people with disabilities by sharing my AT knowledge just like he had done for me. I've written numerous articles about AT and in 2009 I won a national video contest for demonstrating AT devices. It's with that ongoing desire to promote AT awareness that I enter this contest. It's also important to note that Disability Rights Activists like Ed Roberts, Elmer Bartels, and Charles Carr were pioneers in promoting the philosophy known as Independent Living and, in the 1970s, they dreamed of a future in which people with disabilities could enjoy lives filled with independence and self-reliance. Everyone participating in this contest represents the huge strides that AT has enabled the disabled community to take towards achieving Independent Living and by sharing my success story I'm able to play a small part in illustrating this point.

After I officially became a consumer of MRC, my counselor, Marcel Dube, and I created a rehabilitation plan that proposed utilizing AT to help me gain control of my living environment (e.g. bedroom), find employment, and complete my college degree at Bates College. We had immediate success in the first two facets of the plan but, up until recently, completing my college education was the one noteworthy endeavor where success had eluded me. Thanks to AT and the advent of online courses, my previously impossible educational dream was ultimately converted into reality and I'm thrilled to announce that last month I finally achieved this long awaited goal when I graduated from Bates College with a BA in History!

As you will see, my story exemplifies the crucial role that AT currently plays for students with disabilities who are seeking to utilize accessible higher education through online courses. The combination of AT and online courses has become a popular means of attaining a college education and is the focal point of many of today's AT success stories. A large number of my classmates in the 2 recent online courses that I took explained that they were disabled and used AT devices. The realization that AT currently plays an indispensable role in the college aspirations of so many AT user's taking online courses prompted me to recently write an article about this new academic approach which was published in the Massachusetts AT Program Newsletter. (http://www.massmatch.org/whatsnew/Newsletters/2016_Fall.php#Online_Learning)

My quest to complete my degree is a microcosm of my overall AT success story because it entails successes, failures and setbacks and is reflective of how an AT user must often be patient and perseverant before eventually achieving success. Much of my story is comprised of numerous failed attempts at resuming my college studies. Throughout this long arduous educational journey, my unwavering desire to graduate has been a major driving force that has motivated me for the past 20 years to continually expand my collection of AT devices in search of the necessary tools to finish my degree. So, it seems fitting to focus our discussion by specifically recounting the AT obstacles that I experienced and gradually overcame in order to achieve my recent academic goal.

There are numerous devices that have been instrumental to my success. One of the goals of this article is to highlight several devices that currently enable me to achieve a level of independent living. We will examine the following devices:

- Quartet Technology Inc. Environmental Control Unit (ECU) - http://www.qtiusa.com/
- Dragon NaturallySpeaking Voice Recognition Software - https://www.nuance.com/dragon.html
- SmartNav Head Mouse - https://www.naturalpoint.com/smartnav/
- Nuance Inc. PDF Reader - recently discontinued
- DialVision Adjustable Eyeglasses - https://www.dialvisionofficial.com/
- VGo Telepresence Robot - http://www.vgocom.com/

Upon receiving my first computer with Dragon NaturallySpeaking voice recognition software, my initial hope was that

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I would be able to immediately resume my education. I was so excited that I contacted Bates College and asked them if there were some way for me to complete my degree by using my computer. They informed me that only one of my professors had saved my grades from my final semester, so the only possible course credit that I could receive from my final semester would be for that one course. To make matters worse, the college had a strict policy limiting students to only two off-campus independent studies. This meant that even if I took the two courses, I would never be able to graduate because I would always be one on-campus course short of the necessary graduation requirements. Despite this obstacle, I was determined to achieve credits for the three possible courses that the college would allow. To my surprise, my hopes of making any headway towards completing my degree were completely dashed after a few months of computer training. My Dragon trainer and I discovered that Dragon could not open PDF files without the entire computer freezing. Consequently, I would not be able to access many books and articles. I contacted Dragon and was told that their designers were aware of the problem but presently there was no possible solution. So, I had to resign myself to the fact that I would have to wait until Dragon resolved this critical issue.

My success story reflects many of the positive aspects that the role of AT plays but it also clearly illustrates that there are often occasions when AT fails to meet the needs of the user. When faced with AT failures, I've relied upon the life approach expressed by actor James Troesh who lived with quadriplegia for many years. Shortly after becoming disabled, I saw a television program in which Mr. Troesh explained the popular disability motto: "Think about what you can do, not about what you can't do." The words of this successful actor with a disability had a profound influence on my outlook on life and, for the first 10 years of my life as a person with a disability, I tried to focus on appreciating

Video - https://www.youtube.com/watch?v=cp_1xOQz92g&t=182s

the enjoyment I derived from spending time with my family and watching sports, TV, and movies. However, when I began using AT, his words took on a far more complex meaning because I was able to perform so many new tasks which meant that I had much more to be grateful for. So, rather than dwelling on my inability to resume my college education, I reveled in the joy of being able to use the 2 AT devices that MRC had provided me.

Like countless of other AT success stories, mine involves a vivid and exhilarating memory of the first time that I used AT. The first device that I received was the Quartet Technology ECU (Environmental Control Unit) which enabled me to regain control of my living environment. By using simple voice commands I was able to control my bedroom lights, hospital bed, TV, cable, CD player, and drapery opener. I'll never forget how liberating it was for me to turn on the lights during that special day when I began using the ECU. Performing that simple task signified the beginning of a new era for me; one in which I would be able to use AT devices to be more self-reliant and achieve independent living to a level that was beyond my wildest expectations. For example, I was able to operate my CD player and listen to music whenever I wanted instead of asking a family member to turn it on for me. Often, an article written by a user highlights the impact that the devices have had on them while failing to adequately address the important aspect of AT's impact on the caretakers. Like thousands of other Americans with disabilities, AT gave me the means to perform tasks on my own and, thereby, relieved some of the burden that my family had undertaken for so many years.

(View video above)
https://www.youtube.com/watch?v=cp_1xOQz92g&t=182s

The benefits from the second device that I used were likewise life changing. Dragon gave me the means to operate a computer which enabled me to find my first gainful employment as a person with a disability! I was hired by my family's restaurant to design/print menus and flyers. I also used my computer to do the types of things that most people take for granted. I surfed the web, created greeting cards for family and friends and made coloring pages for my nieces and nephew. I especially enjoyed buying gifts online for my family on birthdays and being

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able to buy gifts for everyone for Christmas is something that I treasured more than words can express. With all these new capabilities made possible by AT, I found it relatively easy to cope with my first academic setback by thinking about what I could do.

It's important to note that my use of the ECU and Dragon represent a fundamental principle at the core of every AT user's success story. Namely, that AT enables a user to capitalize upon the premise that people with disabilities are 'differently abled'. A user utilizes their abilities to operate a device which, in turn, makes it possible for them to perform specific tasks in spite of their disabilities. In my case, even though I have fine motor skill issues, I do have a strong speaking voice which gives me the means to efficiently use these two devices. So, where many people who are nondisabled might use their hands to perform these tasks, I simply do the tasks differently.

In 2004, I approached MRC to request the latest version of Dragon to see if the problem with PDF files still existed. Unfortunately, despite the full support of my MRC counselor, Bruce Copeland, my request for AT services was denied by an upper-level MRC official. I was told that I was denied because I am severely disabled. As I have learned in my recent Disability Studies college courses, discrimination is something that people with disabilities often encounter when requesting AT services. Like many other AT success stories, mine involved an advocate at a state Office on Disability who played a vital role in my ultimately receiving services. My highly knowledgeable advocate, Mary Fitzgerald, wrote a powerful and persuasive letter to the Commissioner of MRC who happened to be the famous disability rights leader Elmer Bartels. Upon reading the letter's specific references to regulations that prohibit discrimination based on the severity of one's disability, he instantly ordered in writing that AT services be provided to me and he reiterated that a person cannot be denied services based on their disabilities.

My old computer did not meet the minimum requirements for speed and memory to use the newest version of Dragon, so MRC provided me with a new computer as well. Then, in early 2005, my counselor decided to enlist the AT services of Easter Seals Massachusetts to provide me with AT training. His decision to do so would forever change my life because my Easter Seals trainer, Eric Oddleifson, introduced me to the use of so-called "workaround solutions". This commonly used problem solving approach by AT trainers and users has been a key element in many success stories and it certainly was the case with mine. As I explained in an article for Closing the Gap Magazine, Easter Seals MA has a long history of providing expert training to people with disabilities and has developed effective strategies that enable its clients to achieve AT success. It was immediately clear to me that Eric's attitude was completely different from any trainer that I had previously worked with. My first three trainers repeatedly told me, "You can't do that because you're disabled." Instead, Eric would frequently say to me, "Let's find another way for you to accomplish this particular task."

One of the strengths of Easter Seals AT specialists is that they assess the user's functional needs and then often have a user try different devices to see which ones best meet those needs. This trial and error approach has been the foundation of a plethora of AT success stories and it proved pivotal in mine. Like many state AT Act Programs, Massachusetts' Program has AT Loan Centers that serve as an invaluable resource to users. Eric and I found the centers to be essential in our efforts to create a workaround for one of my most troublesome Dragon issues. Since my first day using Dragon, I had noticed that it froze several times each day and the user was required to manually restart the computer. With my physical limitations, I'm unable to physically restart the computer myself. So, I constantly had to ask my parents to restart the computer for me. We needed to create a workaround that gave me a hands-free method to do this.

Eric explained to me that often an effective workaround can be created by combining the use of multiple devices. He introduced me to a head mouse software program called HandiEye, which could be connected to a Logitech webcam so that the user could navigate mouse movement by turning their head up, down, right and left. These two devices provided me with the means to restart the computer. However, I still needed a way to open HandiEye when Dragon froze. I asked Eric if there were other voice recognition software programs and he recommended ViaVoice. As is often the case with many success stories, luck played a key role. It turned out that Dragon and ViaVoice used different commands to awaken from sleep mode. So, I was able to keep ViaVoice asleep until needed and then I used it to open HandiEye and restart the computer.

It was so gratifying to have created a workaround that resolved this long-standing problem. However, when Eric installed the newest version of Dragon, we were disappointed to learn that the PDF issue still remained as detrimental as ever. I was left with the sad realization that resuming my education was still on hold indefinitely. In the meantime, I expanded my list of computer accomplishments by selling hundreds of Disney videos on eBay and Amazon during the next several years.

In 2008, I learned about the growing popularity of online courses and thought that it would offer me the perfect solution to my quandary about attending on-campus courses. So, I contacted the Bates Academic Standing Committee and requested to be reinstated as an active student. I explained that since my disabilities rendered me homebound, my only means of completing my degree would be by taking online courses. Unfortunately, my petition was denied because the college had a strict policy prohibiting online courses. The college also explained that it was opposed to reinstating me until I had a viable plan to achieve credits for ALL four courses.

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Even though finishing college was still beyond my reach, I sought to employ the positive life philosophy that James Troesh espoused. I created a website for my family's restaurant. I wrote my first published magazine article which signified the start of my part-time career as a freelance writer of AT topics. This article highlighted how I used my two devices to dramatically improve my life and it also explained many of the Dragon workarounds that Eric and I created to improve mouse movement and dictation. I also joined the Massachusetts AT Program Advisory Council which has been one of the keys to my success because, as all users can attest, it's important to keep abreast of the latest AT inventions. The Council is a great resource for such information. In 2009, I came in first place in a national AT success story video contest and found it very rewarding to know that thousands of viewers had been able to see firsthand what I had described in writing in my article the year before.

(View video right side)

https://www.youtube.com/watch?v=H2KxdCjRlZM&t=262s

In 2010, Nuance, the manufacturer of Dragon, invented its own PDF Reader. Finally, after years of waiting, the most significant AT obstacle was eliminated. I noticed that online courses were rapidly becoming commonplace among US colleges, so I was confident that in the near future Bates would revise its policy. I reached out to MRC and requested training on how to use the PDF reader. I also requested a large TV in order to address my visual disability. I'd always experienced eyestrain after only short periods of using a computer and I was not able to read small font. Subsequently, MRC provided me with a large TV which made a huge improvement. (Image 1) As part of my training, Eric also introduced me to a Dragon command called "Read That" which reads text aloud. By using the new PDF reader and this command, I was able to reduce eyestrain by having Dragon read PDF documents aloud. This was a big step forward because we had

Video - https://www.youtube.com/watch?v=H2KxdCjRlZM&t=262s

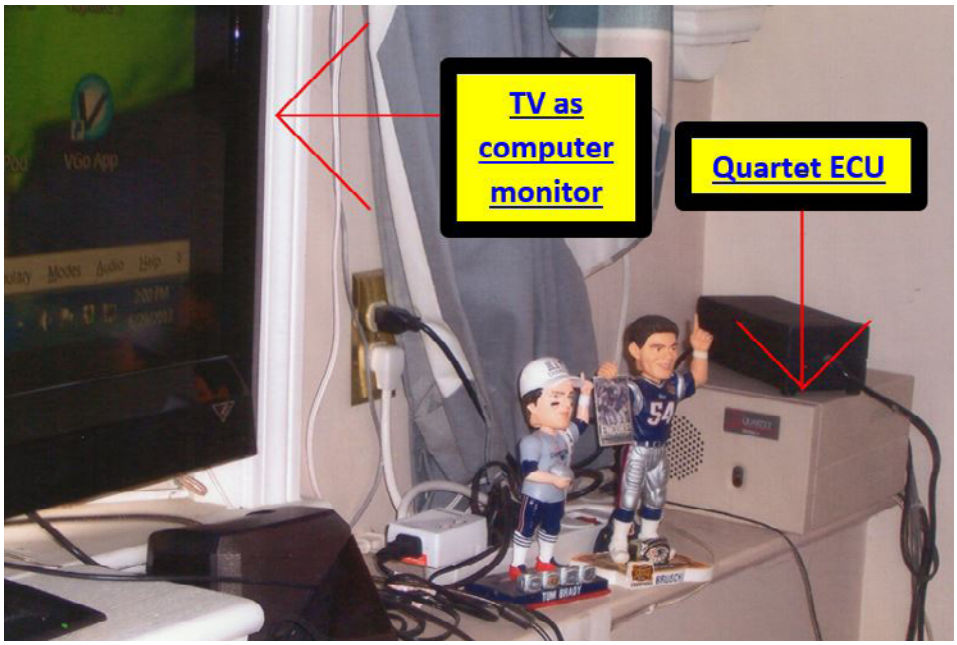

Image 1: TV and ECU

experienced failure when I tried using a variety of screen readers in 2005. Dragon's imprecise mouse movement and delayed response time made it impossible for me to effectively use those programs.

While I waited for Bates to change its policy, MRC hired me in 2011 to be the Outreach Coordinator for the Massachusetts AT School Share Program. It's a part-time job but it's steady work and one of my lifelong goals had always been to someday get a so-called steady job. I found it quite ironic and yet somehow fitting that the very agency that had denied me AT services in 2005 would hire me years later to work in the field of AT. For the first time in my life I was receiving steady paychecks! This job also enabled

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me to learn a great deal about AT because my boss, Kobena Bonney, has a wealth of AT knowledge.

To my disbelief, in late 2011, my hard drive crashed causing irreparable computer damage. I knew that Dragon required extra speed and memory to perform efficiently and MRC would not be willing to pay for a replacement computer with those specifications. So, I used the paychecks that I saved from my new job and was able to purchase myself a new computer with speed and memory that would be ideal for Dragon. Herein lies one of the roles that AT can play in a user's life. It can provide them with the means to attain gainful employment and a salary that can be used to purchase necessities (like the appropriate computer) which otherwise would not be possible.

Eric reinstalled Dragon on my new computer and it performed superbly but we encountered an entirely new dilemma because the devices for my workaround to restart the computer were not compatible with the latest computers! This situation taught me a valuable lesson. A user is often faced with the need to adapt because AT is constantly changing and devices sometimes become obsolete or incompatible.

We borrowed a head mouse program called SmartNav and it proved to be a perfect workaround all by itself because it operated very differently from HandiEye. SmartNav is comprised of two components: a camera and head mouse software. The camera is not a webcam and has no audio; it simply recognizes a silver sticker worn on the forehead or eyeglasses. So, this resolved the problem of having only one audio input on my computer. Another stroke of luck rested in the fact that SmartNav could be left open at all times because it has a sleep mode whereby hovering the mouse over a SmartNav desktop symbol awakens it from sleep mode. This feature meant that I did not need to use a secondary voice recognition program like ViaVoice.

In 2012, I contacted Bates and learned that they reversed its policy and now accepted online courses. The Committee officially reinstated me as an active student! I approached my four courses with zestful enthusiasm and undaunted determination. I wrote a 40 page paper in lieu of the final exam that I had missed in 1988. I took two online courses in Disability Studies at the City University of New York. And finally, this past winter, I took an independent study with my former Astronomy professor. In each of these endeavors, I received a grade of A. Herein lies another reason why my story is reflective of the role that AT can play in a user's life because it helped me to achieve my academic potential so that I could show that I'm capable of being an excellent student.

Image 2: This is a photo that depicts my dad being handed my diploma. This is THE MOMENT that marked the culmination of my 33 year journey to receive my college degree and it never would have been possible without AT."

In the midst of taking these courses, there was one final piece of the puzzle that fell into place. With the large screen TV, my eyestrain was greatly reduced but extended periods of computer use still caused problems. However, in 2015, the invention of the DialVision Adjustable Eyeglasses gave me the ability to see clearly by simply adjusting a dial on each side of the glasses. I was now able to use the computer indefinitely without eyestrain. As is the case with many success stories, AT leveled the playing field so that I could now devote the necessary amount of attention to coursework just like any other student.

After decades of feeling as though I were waiting in a graduation commencement line that never moved, it was quite surreal to watch my dad walk across the stage and receive my diploma on my behalf from the Bates President on May 28. During the live streaming of the ceremony, one of my former professors sent me an email entitled "The Moment" which included a photo of my father on stage being handed my diploma (See Image 2 above). For me, it was indeed the moment where my long-held dream of becoming a college graduate came true! As the commencement concluded, I looked around my room at the AT devices that had made my academic accomplishment possible and remembered the trainers, counselors, and advocate who had given me invaluable assistance. That special day in my life represented the fact that AT can so often provide the user with new opportunities to succeed and, in this particular case,

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gave me the sense of closure that had eluded me for so many years.

I enjoyed taking college courses so much that I wanted to pursue my master's degree. As a lifelong Bostonian, it was always a childhood dream to get a Harvard degree. So, I decided to apply to a Harvard University program that is unique and accepts all students without any admissions process. But when I contacted the Admissions Department, I was told that its program required 6 online courses and 3 on-campus courses. As a reasonable accommodation under the ADA, I requested a waiver for the 3 on-campus courses but was denied. Subsequently, I applied to the City University of New York's Master's Program in Disability Studies which is fully online and was accepted!

Last week, I tried a new device that may someday open a door for me to pursue my Harvard goal and would represent a new method of inclusion for accessible higher education to those individuals with disabilities who are homebound. During a recent Council meeting, I learned that the loan centers were adding a new device called the VGo Telepresence Robot. I was excited about the prospect of possibly using the device in an upcoming meeting, so I contacted the manufacturer. My computer only has one audio input which I have to use for Dragon, so a webcam does not work on my computer. Therefore, VGo's tech person gave me the link to a virtual webcam software program that would trick the robot into working (albeit the 2 way video feature wouldn't work). He also made a tutorial video for me. (View video right side)

https://www.youtube.com/watch?v=RPaGh3OmX6Y

I borrowed the device from the loan centers and discovered that Dragon's delayed response time in executing commands prevented me from stopping and turning with any precision. So, my current Easter Seals trainer, Kevin Berner, created numerous innovative custom Dragon commands for me to drive the robot in any direction for a set number of seconds. When I used the robot at the meeting, I felt more engaged with the other members than any time in my previous nine years as a member using phone conferencing. I was also able to turn on the robot's lights to let the moderator know when I wanted to make a comment and I could see her in the video turn to the robot when the lights went on. This technique worked just as effectively as someone who raises their hand while attending in person.

Video - https://www.youtube.com/watch?v=RPaGh3OmX6Y

Once I complete my master's degree from CUNY in a few years, I will approach Harvard and ask them if I can be allowed to use the VGo Telepresence Robot as a means of attending on-campus courses. Presently, school systems across the country consider elementary and high school students with disabilities to be in attendance when using the VGo Robot. My plans of utilizing AT to someday achieve a Harvard degree is another example of how my success story is reflective of yet another role that AT can play in the user's life. Namely, it can give the user hope for the future.

As I embark on master's courses this fall, I do so with great confidence because AT has given me what I need to succeed. Overall, I'm well prepared to continue using my AT devices in the future because Eric and Kevin used several key methods of training so that I'll be able to troubleshoot on my own: screenshot tutorial videos, photos of device settings and YouTube videos.

My success story exemplifies the broad scope and the awe-inspiring magnitude of the role that AT can play. AT has improved so many facets of my life and redefined my interpretation of the phrase "what might have been". Where most of society views this phrase as entirely negative, I see how it can also represent a positive meaning because when I think of what my life 'might have been' like without AT, I'm faced with the stark realization that it probably would have been a life that was largely devoid of accomplishments and filled with a total dependency on others. So, as I reflect on my two decades long success story, I'm deeply grateful for all that AT has given me and I'm sure that it will continue to play an indispensable role in my life. ■

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Assistive Technology in Special Education, Rehabilitation and Everyday Living

36th ANNUAL CONFERENCE

Closing The Gap

SEPTEMBER 26-28, 2018

Preconference Workshops

Monday and Tuesday, September 24-25, 2018

PRIOR LAKE, MINNESOTA

CONFERENCE MOVES TO BRAND NEW, STATE-OF-THE-ART CONFERENCE CENTER!

Mystic Lake Center

The Mystic Lake Center is the newest addition to Mystic Lake Casino Hotel – the only full-service resort in the Minneapolis/Saint Paul area. Construction began in April 2016, with Mystic Lake Center is set to open early 2018. With the addition of 180 hotel rooms in a stunning new tower, this brand new Mystic Lake Center joins Mystic Lake Casino Hotel to form the second-largest hotel in the Minneapolis/Saint Paul area.

Guests will experience luxury, modern amenities and sweeping west-facing golf course views as one of the first guests in the new Promenade Tower — adjacent to the new Mystic Lake Center and everything Mystic Lake has to offer. It's all just steps away from restaurants, bars and nonstop entertainment. Learn more.

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PLAN NOW TO JOIN US IN 2018!

Join us for the 36th Annual Closing The Gap Conference and return home with knowledge and tools to implement all that is gained!
Through shared best practices and research, networking, training, hands-on opportunities and an expansive exhibit hall, conference participants will find information, strategies and products that prove beneficial and, oftentimes, unsurpassed for use in their work and in their lives.

WHO SHOULD ATTEND?

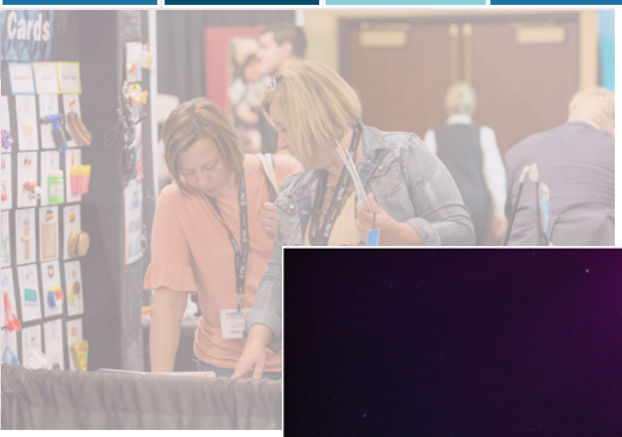
Anyone interested in finding practical and readily available AT solutions for ALL disabilities, mild to significant, infant through adult.

- ✔ SPEECH LANGUAGE PATHOLOGISTS
- ✔ OCCUPATIONAL THERAPISTS
- ✔ AT CONSULTANTS
- ✔ TECHNOLOGY SPECIALIST
- ✔ AUTISM SPECIALIST
- ✔ SPECIAL EDUCATORS
- ✔ SPECIAL EDUCATION DIRECTORS
- ✔ ADMINISTRATORS
- ✔ PHYSICAL THERAPIST
- ✔ UNIVERSITY INSTRUCTORS

This year's conference will build on a tradition of providing a comprehensive examination of the most current uses of technology by persons with disabilities and the professionals who work with them.

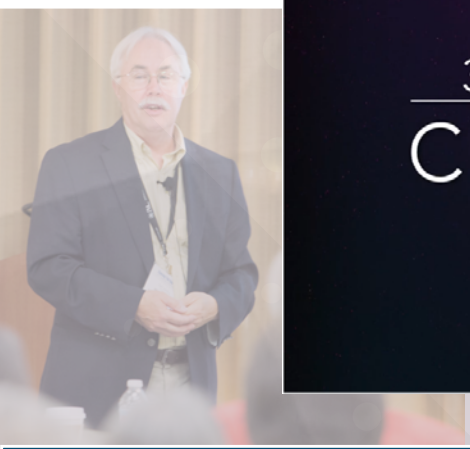
Topics will cover a broad spectrum of technology as it is being applied to all disabilities and age groups in education, rehabilitation, vocation, and independent living.

Come and learn, first-hand, about the best AT products, practices and strategies used by teachers, therapists, clinicians, parents and end users alike.



36TH ANNUAL CONFERENCE

CLOSING THE GAP



Registration detail, including, group, student and parent discounts will be available on or before January 1, 2018

"It's going to impact the whole school district"

"... a teachers conference"

A Parent's Perspective

Leveraging ASbySs in Mixed Ability Classrooms

THE CHALLENGE OF DIFFERENTIATED INSTRUCTION

Whether you are working in a regular, blended or a self-contained classroom, the need for differentiated instruction will always be great. Although you fully embrace the need to integrate the child with special needs into the regular ed curriculum, that task can sometimes feel daunting. **Animated Step-by-Steps®** (ASbySs) were designed to address the challenge of differentiated instruction across the full range of educational options. ASbySs offer something of significant value for both **regular** and **special education** early childhood students.

ANIMATED STEP-BY-STEPS®

Animated Step-by-Steps® is the name coined for a set of materials with a unique educational design. This 'read, animate … read, animate' design is created using Microsoft® PowerPoint®. Although the ASbySs approach could be rendered using more sophisticated animation authoring programs, PowerPoint is more than sufficient to get the job done!

PowerPoint® has been in the educational arena for a long time. Most teachers and therapists have at least some working knowledge for using and authoring educational content using PowerPoint®. In fact, many **Teacher Preparation Programs** now require their graduates to demonstrate some level of proficiency using **PowerPoint®** or **Keynote®** in order to graduate!

PowerPoint is **ubiquitous**, found in many classrooms. Its widespread availability eliminates the need to purchase additional expensive software for show-

Video 1 - Animated Step-by-Steps® - Five Little Snowmen https://vimeo.com/243339479

CAROL GOOSSENS, Dr. Carol Goossens' is a speech-language pathologist and special educator currently in private practice in New York City. For the past 30 years her work has focused on providing classroom-based intervention to the full spectrum of children with special needs (developmentally delayed, autism spectrum disorders, physically disabled, multiply handicapped, English as a second language). Dr. Goossens' has presented extensively both nationally and internationally and has co-authored eleven clinical books regarding her work in the area of Augmentative and Alternative Communication. She is responsible for pioneering the term Aided Language Stimulation.

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Video 2 - Animated Step-by-Steps® - Bat Facts https://vimeo.com/243339946

ing/authoring educational materials. The **animation features** offered by PowerPoint are very **robust**. With a little attention to detail you can combine your animation choices to make movements that look surprisingly realistic. Add a few sound effects and you have an engaging teaching tool. Furthermore, PowerPoint is **cross-platform** allowing you to create content that works just as well on the school's Windows-based computer as a parent's, MacBook Pro at home. In addition to the traditional **computer application** (that can be displayed on an interactive whiteboard, a desktop/laptop computer, a large screen TV using Apple TV), there is a free Microsoft PowerPoint app that allows you to extend your PowerPoint creations to your **iPad** or **Android tablet**. The fact that PowerPoint can be flexibly displayed on a wide range of technology broadens the possibilities for functional use across both the school and home environment.

The ASbySs approach is a consistent format with abundant creative flexibility. Each page consists of simple text and a series of stars denoting the presence of supporting animations/sound effects. Read the text up to the star, then click/swipe (tablet) to trigger the animation that visually and auditorily supports what you just read. When the entire page has been read/animated, symbols (SymbolStix or Picture Communication Symbols) enter to support your AAC agenda. A chime sound is used to signal page completion. Despite the difference in subject matter, these narrated videos illustrate how the ASbySs format can flexibly address a variety of purposes across activities and grades.

View Video 1: Animated Step-by-Steps® - Five Little Snowmen

View Video 2: Animated Step-by-Steps® - Bat Facts

Consider for a moment how the addition of **animated, visual support with sound effects** might enhance your preschool **Morning Meeting** when using an Interactive Whiteboard. Circle time might include the songs, ***Who Came to School Today? What's the Weather?*** **B-I-N-G-O Weather**, ***Mister Sun, Get Up and Dance*** and a host of songs chosen to support your curriculum and engage your students in learning that is fun.

Furthermore, PowerPoint® can be used to create a 'launch pad' for all your Circle Time components, streamlining implementation for the classroom staff. There is no 'down time' in your visually supported Circle Time! View Image 1:

In similar fashion, a regular ed classroom might be conducting a unit on the **Life Cycle of the Mealworm**. At first

Image 1: Miss Marsha's Morning Meeting

Image 2: Resources for the Life Cycle of the Mealworm

glance, this topic might seem a bit advanced for a classmate with significant delays. When the content of this science unit is presented as a series of ASbyS lessons with clear visuals, supporting animations, realistic sound effects, a singing song track and the excitement and power of being able to magically and remotely trigger those animations on the Interactive Whiteboard, learning can be fun and 'on target' for both the special ed and the regular ed students. View Image 2.

GENERAL GOALS OF ANIMATED STEP-BY-STEPS®

Within the school setting there are many academic needs that must be addressed over the course of the school year. Many students with Complex Communication Needs (CCN), however, continue to have ongoing needs relative to their language development and their AAC proficiency. ASbySs offer a much-needed forum for nurturing a **literacy** agenda across a wider variety of classroom activities, while simultaneously 'folding in' the strong **language** and **AAC** agenda that is crucial for students with CCN. Given this plurality of purpose, ASbySs are great for providing differentiated instruction in mixed ability classrooms.

ASbySs, by design, introduces their information gradually. Text is broken down into smaller, more manageable units; animations supporting the text are cumulatively added as the text is read and finally symbols are inserted, allowing the adult to model the use of AAC using **Aided Language Stimulation** (Goossens', Elder & Crain, 1988; Goossens', 1989). Learning is optimized as movement or a change in color is often used to focus the child's attention on the information that needs to be processed at that moment. The ASbyS format avoids making the mistake of 'overdosing' the student with too much information. Even when speech is added, the text will often appear first, leaving space for students to add the target word before it is announced by the PowerPoint® program. For example, when counting out frogs/snowmen/mealworms during ASbyS counting poems/songs, the number often appears silently, followed by a slight delay and the spoken number.

LITERACY

Whether you are following the steps for a recipe/craft/game/science/social studies project or singing/reciting a poem/song, an ASbyS will always provide you with supporting text. When you use an ASbyS, you are routinely adding a literacy layer to many activities that might not normally possess a literacy component, e.g., crafts. Furthermore, by adding a **literacy layer** to numerous classroom routines, you are offering all children, meaningful exposure to text regardless of their level of cognitive functioning. Even if some students are not currently relating to the text, they can still benefit from the language they are hearing in conjunction with reading the text and the animations that have been built-in to support that language. The ASbyS system is not a literacy program, per se. It's an approach that provides students with considerable

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Image 3: 5 Little Snowmen

Image 4: Range of Literacy Resources

exposure to text thereby providing the teacher with a forum for continually reinforcing the literacy concepts being targeted in her ongoing literacy curriculum. In the hands of a preschool teacher these 'literacy highlights' will look very different than the 'teachable moments' that might be provided when second graders are invited to take turns reading the ASbyS text aloud.

If the teacher is displaying an ASbyS on an interactive whiteboard (IWB), the **pen tools** are a wonderful way to make these 'teachable moments' more visually salient. For example, you may wish to circle high frequency words in the text; visually break the word 'aluminum (foil)' down into syllables to facilitate pronunciation; highlight the similarity of word structure for rhyming words in the **Five Little Snowmen** poem, e.g. H-ILL ST-ILL View Image 3.

While all ASbyS resources support literacy, several resources are specifically designed to promote key literacy skills such as blending/segmenting sounds and spelling. ***Mystery CVC Words, Blending CVC Mystery Words, Guess the Mystery Letter, CVC Mystery Balls, Mystery Animals, Mystery Fruits & Vegetables, Betty Botter, Apples & Bananas, Beat the Clock***. For more information: http://bit.ly/2paMZWo

View Image 4: Range of Literacy Resources

LANGUAGE

Read the text aloud (up to the star), and then invite a student to trigger an animation. The animation serves as a built-in reward and helps the child more fully appreciate what they just heard. This format is beneficial for students with language comprehension issues (you hear a phrase spoken, then you see it unfold as an animation). It's also a great strategy for helping students learning English as a second language. Although I have not personally used ASbySs with children who are deaf or hard of hearing, colleagues who have, claim the visual support provided by ASbySs is definitely an engaging asset for this population.

Typically the use of an ASbyS involves more than just reading the text. In the hands of a skilled facilitator, additional language stimulation can and should occur as part of the exposure. When using an ASbyS recipe, craft or science project, for example, a pretend play component can be added to the IWB lesson. "Who can I get to pour the water? (a digital pour) I need someone who will be very, very careful. 'Cause we don't want to spill. Joey? Okay, everyone, watch Joey carefully! Let's help him "1-2-3 (class repeats the numbers in unison then the remote switch is offered to Joey) Pour!" (the animation is revealed on the IWB) What do you think, class? I agree, well done, Joey! You didn't spill a drop!" For more information: http://bit.ly/2iffn5D

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Image 5: Resources Supporting Pretend Play

Image 6: Interdisciplinary Collaboration - Let's Go Fishing

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Image 7a: Interdisciplinary Collaboration – Hunting for Eggs

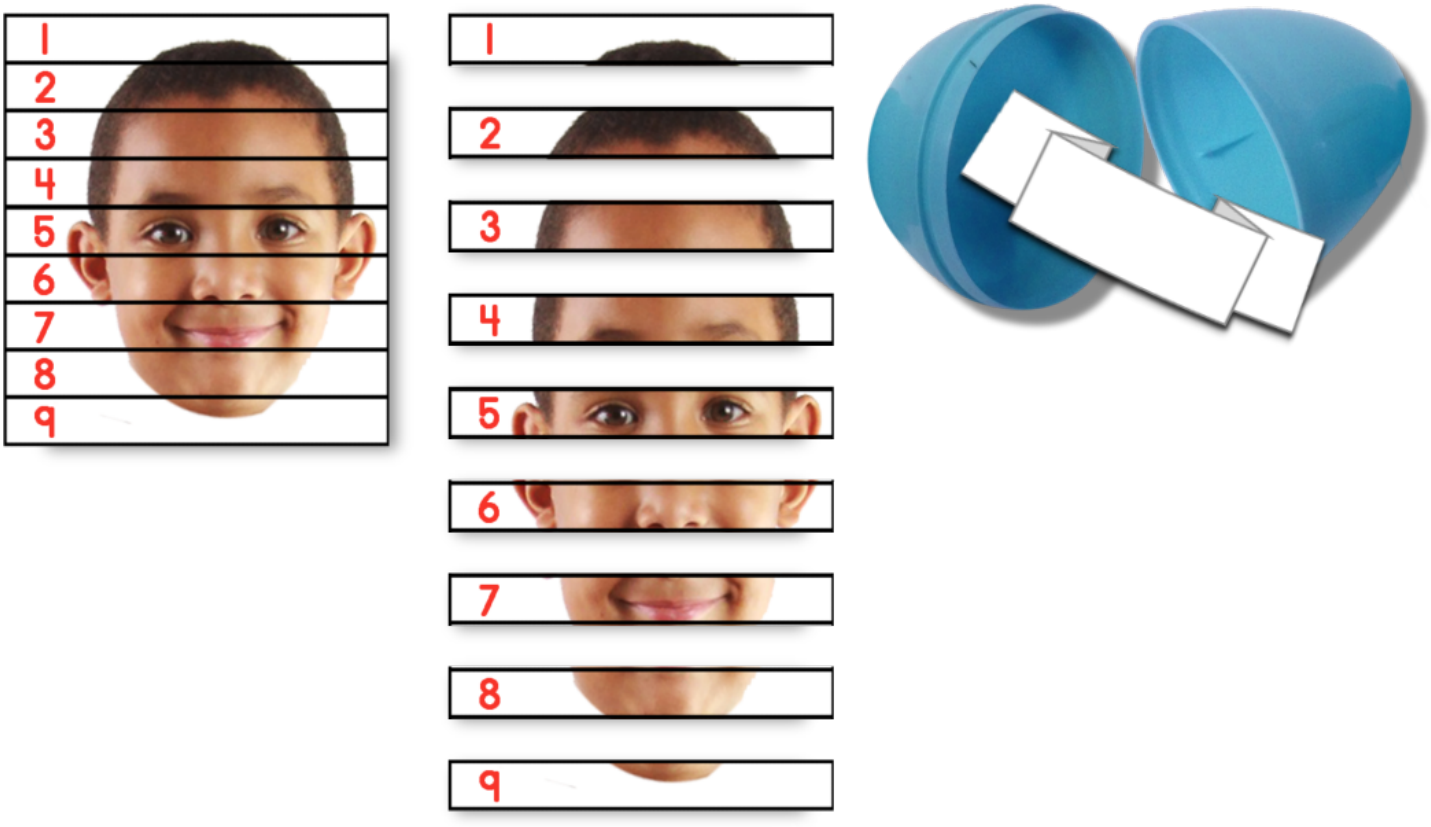

Image 7b: Fine Motor Extension Activity - Face Puzzle

Image 8: Three Formats of Animated Step-by-Steps®

Image 9: Animation Sequence – Symbols Enter Last

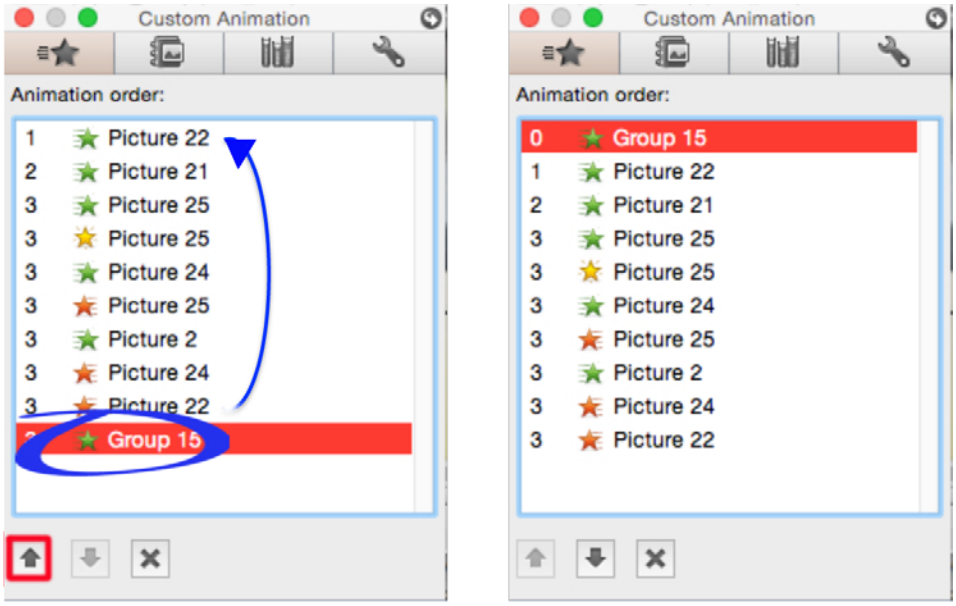

Image 10: Animation Sequence - Symbols Upfront

Whether you are a **speech-language pathologist** (SLP) or an **occupational therapist** (OT), ASbySs can foster greater interdisciplinary collaboration. Depending upon the resource, it's possible for everyone's professional agenda to be collectively addressed in shared activities that extrapolate from the use of an ASbyS. The SLP for example, might choose to use the ***Baby, What's Wrong?*** or the ***Miss Polly's Dolly*** ASbySs in conjunction with baby care or doctor pretend play props during classroom playtime. For further information on targeting pretend play: http://bit.ly/NurturingPretendPlay View Image 5: Resources Supporting Pretend Play

The SLP might also introduce the ***Let's Go Fishing*** ASbyS during her session to create a more meaningful context for a **Fishing Game** in which the OT will be targeting balance and trunk rotation during her session. View Image 6. For more information: http://bit.ly/LetsGoFishingBlog

In similar fashion, the SLP might work on prepositions using the ***Hunting for Eggs*** ASbyS which effectively 'sets the stage' for the **Egg Hunt obstacle course** that is planned for a co-treat with the OT in the afternoon. So what's inside those colorful eggs? A few eggs have a treat; others have face puzzle strips that are assembled as a fine motor task later in the session. For information on the OT goals that can be addressed during Hunting for Eggs routine, please use the following link. http://bit.ly/2chlQcv View Image 7a AND Image 7b

AAC

It's often challenging to further an AAC agenda in the milieu of a rigorous academic agenda. There never seems to be enough hours in the day to address the academic agenda and continue to 'play catch up' with the language and AAC agenda.

Every ASbyS title has three possible formats: **Regular** (no symbol-support), **SymbolStix** (n2y) and **Picture Communication Symbols** (Tobii/Dynavox). The **symbol-supported versions** of ASbySs

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Image 11: Range of Specific Academic Goals

allow the AAC agenda to be tagged on to a literacy agenda. This 'plurality of purpose' can be implemented consistently across a broad range of early childhood activities (recipes, crafts, poems, songs, stories, science projects and games) making the ASbyS design a flexible format for any classroom. View Image 8

As several goals (literacy, language and AAC) are being addressed simultaneously, ASbySs are designed to present the supporting symbols after all the animations for a page have been triggered. Once the symbols are added, they are readily available to provide **follow up comments** or to allow the class to **sing along** using the **song button**. They are also available to provide **Aided Language Stimulation** during the 'hands on' manipulation of materials when cooking, constructing a craft or conducting that science experiment. In the ***Brownies*** ASbyS example below, the first animation introduces the brownie mix box; the second animation opens the box; the third animation reveals the bag inside; the fourth animation adds the symbols to the page. "Okay let's OPEN our BOX of BROWNIES. I'm going to need some help to OPEN the BOX. Julie? 1-2-3 OPEN! Well done!

Do you all see what I see? There's something INSIDE that BOX, a BAG!"

View Image 9

This strategy of introducing the **symbol support** at the end of the animation sequence was instituted to ensure the presence of symbols would not 'steal' focus from the upfront attention on the literacy agenda. If the teacher is working with a group of students that are cognitively young, 'reading' with the symbols might be a more appropriate strategy. To accommodate this agenda, the animation sequence can be altered to allow the symbols to appear when the page opens. This can be achieved by moving the symbol animation command (always at the bottom of the list) to the top of the **custom animation sequence**. Now when the page opens, the symbols appear upfront. View Image 10. For further information on making the symbols appear up front: http://bit.ly/2oMj3zD

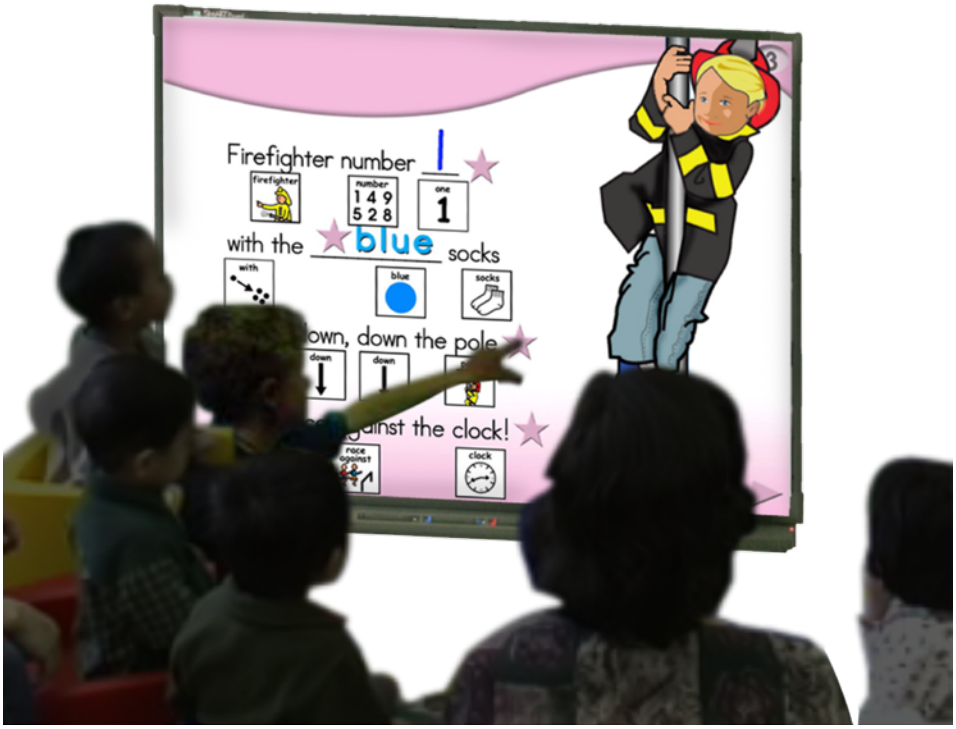

Image 12: Tapping the Interactive Whiteboard

Image 13: Teacher Using TAPit® Interactive Whiteboard

SPECIFIC GOALS OF ANIMATED STEP-BY-STEPS®

ASbyS are often designed to address specific goals typically associated with an Early Childhood curriculum (Preschool through Grade 2). In fact, most resources are multi-purpose, offering a variety of agendas that a teacher can choose to highlight or ignore, based on the needs of her students. The topics you could pursue are probably limitless but here are a few examples: colors, shapes, clothing, body parts, pretend play, charting, patterning, numbers/counting, skip counting, addition/subtraction, multiplication/division, fractions, money concepts, time concepts, temperature/seasons, and a whole host of science and social studies projects. View Image 11.

LEVERAGING THE USE OF ASBYSS

There are a variety of ways to display and use ASbySs. They can be displayed on the '**big screen**' (large interactive whiteboard, TAPit, large screen TV) or the '**little screen**' (computer monitor, iPad/android tablet). Here are a few examples of how various team members have opted to leverage use of their ASbyS.

Ms. Jones loves to use her ASbySs on her **interactive whiteboard**. Her class of preschoolers, all diagnosed with **Autism Spectrum Disorder**, are invited (individually) to approach and tap the board to trigger animations. This strategy works well for this particular class, as it allows students to be more active in what would traditionally be a more difficult 'sit and watch' activity. Now the activity has been transformed into an activity that incorporates periodic movement. As each page typically has numerous animations there are multiple opportunities to move within this activity. View Image 12

This mode of presentation also presents a very functional forum for working on impulse control and reinforces the concept of **waiting your turn**. Initially, Ms. Jones calls upon her students in the predictable order of their permanent seating arrangement (i.e., working left to right, always starting with Joey, then Bets, then Yuni, etc.). Weeks later, she began calling upon her students in the **reverse order** and further 'down the road' she began calling upon her students in **random order**. Now they are required to wait until their names are called. Supporting the idea of differentiated instruction, a face photo cue might be provided for some students.

Ms. Burton displays her ASbyS on a smaller interactive whiteboard called

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Image 14: Planting ASbyS on iPad at Activity Center

Image 15: Day 1 – Literacy Emphasis; Day 2 – Communication Emphasis

the TAPit® (http://www.teachsmart.org). All the students in her class have significant physical challenges with most being seated in wheelchairs. As access to the screen is cumbersome for the group, Ms. Burton uses a shared **remote switch** to allow her students to take turns activating the animations from their seats. She has mounted the remote switch on a board to facilitate her ability to handle the switch without inadvertently triggering the animations. Although there are a variety of wired and wireless ways to achieve this goal, Ms. Burton is using the infrared, **Jelly Beamer** (AbleNet) in conjunction with a **Switch Interface Pro** (Don Johnson Equipment) to allow the remote switch to communicate wirelessly with the TAPit interactive whiteboard. If a child is unable to activate the Jelly Beamer with their hands, their **personal switch** (e.g., accessed via the head/chin/knee) can be quickly plugged into the transmitter component, to allow the child to trigger animations when called upon to take their turn. View Image 13. For more information on using the TAPit: http://bit.ly/2nfpxcR

If you don't have access to a switch, you can use the **Attainment Switch app** to turn your iPad into a switch! For $4.99 this option is a sweet deal. For more information on the use of the Attainment Switch app: http://bit.ly/AttainmentSwitch

For a chart on numereous remote access options: http://bit.ly/RemoteSwitch-Access

Mr. White routinely uses his ASbySs on both the interactive whiteboard and the iPad within his classroom. He especially likes the fact that he can present an ASbyS as a group lesson on the IWB and then set up and activity center through which students can rotate in pairs. At the activity center the same ASbyS is displayed on the iPad and is used to pace students through their personal projects. View Image 14

This is feasible using the free **Microsoft PowerPoint app**. http://apple.co/1OO5452 Depending upon the activity, this center might be supervised/supported by a classroom assistant, SLP or an OT. The above center has been set up using a universal stand and Bluetooth Super Switch http://bit.ly/BluetoothSuperSwitch to create a simpler motor response for advancing the animations. When using the iPad/android tablet, the app accesses ASbySs that reside in your Dropbox or Google Drive. Up to eight ASbyS can reside in your app, meaning you need a WiFi connect to add resources to the app but imported resources can be used without an Internet connection. For further information on linking the Microsoft PowerPoint app to your Dropbox or Google Drive: http://bit.ly/2hVbmHs

Ms. Elyfont uses her ASbyS as a vehicle for providing the much-needed context and event sequence for nurturing AAC communication. On **day one**, the ASbyS (e.g., recipe, craft, science project) is used primarily as a **literacy activity** and a vehicle for introducing the steps and symbols that will be needed the following afternoon/day. On **day two** the ASbyS is replaced by a **communication display**. This communication display (typically projected on the IWB) allows the teacher to use Aided Language Stimulation to 'set the stage' for a true communication interaction. Students are required to use their spoken and/or AAC communication systems to direct the activity, an activity for which they all have some prior knowledge, due to their **day one** literacy exposure using the ASbyS. View Image 15.

If pictures are taken of students conducting the activity, these pictures can be imported into Pictello creating a fun literacy extension activity. For more information: http://bit.ly/2oMjQk5

Many teachers streamline their cooking activities by using labeled premeasured ingredients. In advance of the activity, an OT might work with an individual

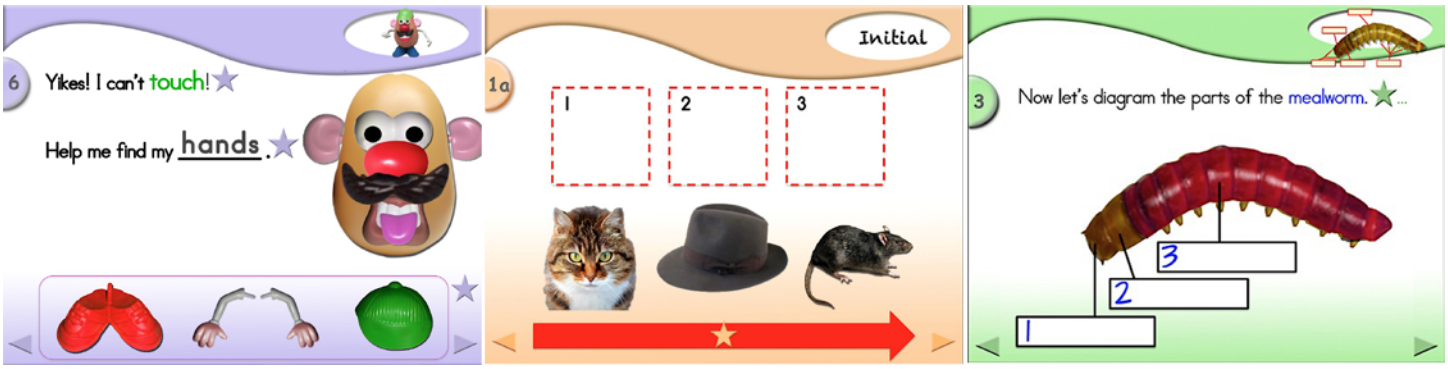

Image 16: Resources Inviting Active Participation

Image 17: Apple TV Set Up with Personalized ASbyS

student to premeasure and label the ingredients. This is a great way to work on functional fine motor skills. For more information: http://bit.ly/2xPlxRm

Ms. Kate is an OT that frequently targets **switch-training** goals within the classroom setting. Animations are programmed sequentially into every ASbyS, i.e., the first click triggers the first animation in the sequence, the second click activates the next animation, etc. This allows a child's switch to 'talk to' the IWB computer in either a wired (e.g., Don Johnson Switch Interface Pro), or wireless fashion allowing the target child to trigger the animations for the group.

When a child is first learning to use a switch, accidental activations can be disruptive especially in a group setting, so a '**safe zone**' has been built into every slide of the ASbySs. The safe zone is an established area on each page. It's typically the **project image** located in the upper right corner of the header for recipes/crafts/science projects or the **page number** presented in the upper right corner for poems/songs/stories). Here's how it works. The **safe zone** has been programmed with an action to play a 'nano second of silence' if a click occurs. If the cursor is positioned in the safe zone, any accidental/premature/impulsive switch activations will appear to have no effect (actually there is an effect. A nano second of **silence**, but that effect is essentially inert). When it's time to trigger an animation the cursor is moved out of the 'safe zone' back on to the page. For further information on using a safe zone: http://bit.ly/2oHefhB

As an aside, the ability to assign 'silence' to a shape is a very handy strategy when designing resources that encourage student responses (allowing you incorporate both animations and choices on the same page). For example, in the resource ***Helping Mister Potato Head***, the program establishes the need for a particular part and the child is invited to select the requested item from a field of three. After the correct item is established and confirmed through voice output, a final click to the right of the choice array uses animation to add the requested part to Mister Potato Head. In similar fashion ***Blending CVC Mystery Words*** invites students to consecutively activate three squares to sound out a 'mystery word'. Upon hearing these three consecutive sounds, the child is encouraged to blend them together and choose the picture corresponding to the blended word they hear. A false backing (loaded with 'silence') prevents the animation from being triggered in the event of motor targeting issues. View Image 16:.

Ms. Pat is a SLP who likes to use ASbySs on her laptop computer in her individual therapy sessions. She especially likes being able to give students with CCN an **advance preview** of the Craft/Recipe/Science activity that will be occurring in the classroom later in the day. You will recall that after all the animations for a page have been triggered, the symbols will appear and are available to provide Aided Language Stimulation. The app even allows Pat to use the **Pinch out to zoom** feature, to enlarge the symbols for better viewing. For further information on navigating within the Microsoft PowerPoint App: http://bit.ly/2oHmYQY

Gail and Joe are the parents of a child with CCN. They like to use ASbySs on her son's iPad. They also like to mirror the family iPad/computer on to the family's large screen TV using **Apple TV**. This allows the

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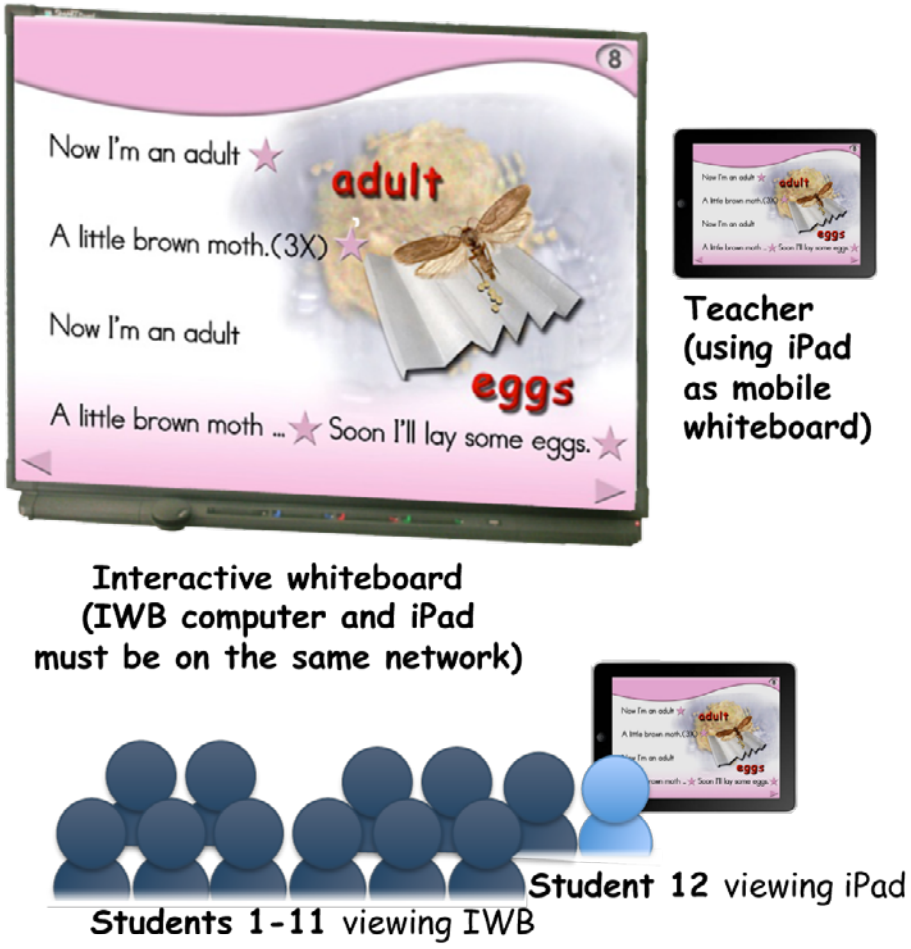

Image 18: Establishing a Parallel Universe – Splashtop Classroom

Song/Poem/Story Planning Sheet

Class: _____ Teacher: _____

Activity: 6 Big Apples Date: _____

General Roles	Specific Roles	Performed by ...	Performed with ...	Assisted by ...
Time-Dependent Repetitive Line(s)	1. Just for Me 2. Hiding in the apple tree			
Slot-Filler Items	1 Numbers (1-6 + 0) 2 (HAT, LOG, BIG, LOOSE, THEN, HAND) 3 Animals (CAT, DOG, PIG, GOOSE, HEN, GRAND)			
Non Time-Dependent Line (s)	Apple eating sounds			
Gross Motor (Acting)	Pantomime Actions			

Image 19: Planning Sheet for 6 Big Apples

entire family to gather around the TV to view an ASbyS on the 'big screen'. The family is then able to use the iPad or remote switch to trigger the animations and turn the pages. For further information on using Apple TV to project PowerPoint on your large screen TV: http://bit.ly/UsingAppleTV If a swipe is too difficult, a **remote switch setup** (e.g., using a bluetooth switch) can be established with the iPad.

This 'Apple TV' format is especially fun and powerful when an ASbyS has been **personalized** with the photo faces of family members, classmates and playmates.

View Image 17. For further information on **creating photo faces** and **personalizing ASbySs**: http://bit.ly/PhotoFaces http://bit.ly/PersonalizingASbySs

ASbySs Poems and Songs frequently include several '**static, non-animated versions**' of the poems/songs that are designed to complement the upfront-animated version. This allows teachers to re-read or re-sing a song with a natural cadence (unencumbered by frequent pauses necessary for inserting animations) and presents the poem or song in a form that is easy to send home as hard copy.

All ASbyS are saved in a PowerPoint Show format making them quick and easy to launch but more difficult to edit (e.g. personalizing with photo faces) If you wish to convert an ASbyS file from a **PowerPoint Show** format to a **PowerPoint Presentation** format that can be edited, open PowerPoint first then under **File** on the menu bar, select **Open** and navigate the PowerPoint Show file that you wish to open and edit.

Ms. Boswell has a student in her class that does not seem to relate to content presented on the IWB; he tends to be disruptive during IWB group lessons. When presenting an ASbyS lesson on the IWB, it is possible to create a '**parallel universe**' by displaying the exact same lesson on an iPad, 'up-close and personal'. This can be achieved by importing the file into the

Image 21: 'Hands On' Extension Activities

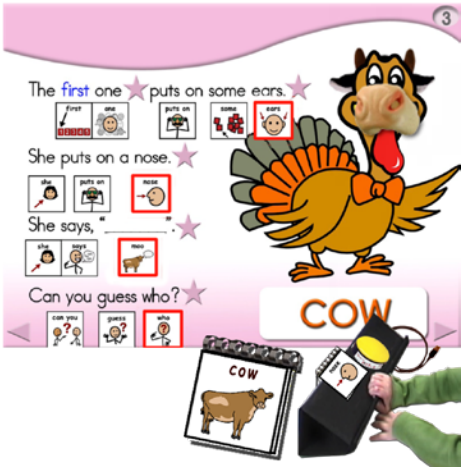

Image 20: Adding Voice-Output to Key Symbols

Dropbox app on the iPad. Typically there is a classroom assistant or personal aid available to follow along on the iPad, as the text is being read and animated by the Primary Facilitator at the IWB. If you have altered the ASbyS to make the symbols appear upfront (when each page opens rather than at the end of the animation sequence), the Secondary Facilitator (person sitting with the child) can follow along pointing to the corresponding symbols, as the page is being read/animated on the IWB. The act of touching a symbol on the Microsoft PowerPoint app produces a small red dot that can also help to focus the child's attention. Don't forget you also have the option of using the pinch zoom feature of the iPad to enlarge the symbols to make them easier to view. An alternate option would be to use **Splashtop Classroom** to mirror the content of the IWB on the teacher's iPad and up to 3 other iPads. This allows the teacher to control the Interactive Whiteboard from her iPad (allowing her to remain more face-to-face with her students) while simultaneously allowing the student to have the content of the interactive whiteboard displayed in closer proximity on his iPad. This strategy also helps minimize any issues that may exist regarding whether the student can actually see content displayed on the IWB. For further information on making the symbols appear upfront: http://bit.ly/2oMj3zD For further information on creating a 'parallel universe': http://bit.ly/2oMeZzg View Image 18.

Mr. Hettsinger typically introduces a new poem or song to his preschool class every two weeks. Most ASbyS poems and songs reflect a time-dependent repetitive line, a slot-filler format and in some instances, a non-dependent line (i.e., a sound effect adding ambience to the activity). This structure is well suited to using an ASbyS poem/song as a **mini play**. The ***6 Big Apples*** poem/song, for example, has several roles that can be assigned, based on student need. When the **6 Big Apples** ASbyS is projected on the IWB, it provides the central focus and visual support necessary for pacing successful student participation. Flip books with Dual=Representation Symbols can also be constructed to provide additional symbol or text support. View Image 19. For more information: http://bit.ly/1O7Hn8D

In an attempt to add a **greater participatory role** for key students, some teams adapt their ASbyS poems by adding voice-output to key symbols on the page (usually the slot-filler items or the time-dependent repetitive line). This can be achieved by creating a square that covers the symbol, assign voice-output to that square, make fill and line of the square transparent to reveal the underlying symbol. In the resource ***5 Fat Turkeys*** for example, voice-output could be added to the symbols representing the rhyming words in the poem. If using an iPad, the child can touch the red ringed symbols during a shared 'reading' experience or an assistant sitting with a child using a switch can manually move the cursor on and off the target symbol. View Image 20.

ASbySs often lend themselves well to follow up extension activities. While an ASbyS song/poem may be great way to introduce an activity to the class, this activity can be made more meaningful for all children by using 'hands on' props and Dual=Representation symbols that allow students to concretely experience or 'relive' the experience. Dual=Representation symbols are double sided symbol cards that have the picture symbol on one side

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and either an enlarged **printed word** or a **photo** on the flip side. ***Mary Wore Her Red Dress*** and ***I Spy with My Little Eye*** are two resources that lend themselves well to follow up extension activities. Such activities are especially amenable to 'playing teacher' with peers. View Image 21.

In summary the ASbySs approach is able to provide both special education and regular education students with a **shared, consistent approach** that simultaneously addresses **literacy, language** and **AAC** in a single resource, and does so across a wide range of **early childhood activities** (recipes, crafts, poems, songs, stories, science projects, literacy-specific activities and games) using a **broad array of technology** (interactive whiteboard, computer, graphics tablet, TV).

Differentiated instruction doesn't get any better than that!

COMMERCIAL RESOURCES

Individual and bundled ASbySs titles (e.g. 4 for the price of 3; 9 for the price of 6) can be purchased from **Teachers Pay Teachers** web site.

http://teacherspayteachers.com/Store/Bloom

Larger bulk purchases of ASbySs (e.g. 100 titles/50 titles) can be purchased at considerable savings from the **Animated Step-by-Steps®** web site

www.animatedstep-by-steps.com

Picture Communication Symbols™ (Tobii/Dynavox)

http://www.mayer-johnson.com/pcs-collections/

SymbolStix™ (n2y)

https://www.n2y.com/symbol-stix-prime/

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http://animatedstepbysteps.blogspot.com ■

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Photo Contest WINNERS!!

FIRST PLACE

Melissa Piette

First Place Winner will receive a FREE registration to the 2018 Closing The Gap conference and be on the cover of Solutions

SECOND PLACE

Julie Osherow

Second Place Winner will receive a FREE 1-year membership of Closing The Gap Solutions and be on the cover of Solutions

SECOND PLACE

Jolie Steinke

Third Place Winner will be featured on the cover of Solutions

Funding Advocacy 101: Speech Generating Devices and Medicaid

The process of obtaining health insurance funding for a patient who needs a voice is a daunting task. Speech Language Pathologists (SLPs) are not generally taught how to navigate the bureaucratic systems that rule the arena. However, with knowledge, understanding and a can-do attitude, SLPs can be very effective advocates for their patients in need of speech generating devices (SGDs).

There are a variety of funding sources within the health insurance arena, including Medicare, Medicaid, Tricare (military), the Veterans Administration and private commercial health insurance. Sometimes a patient can have more than one funding source. It's important to determine the funding source(s) at the outset as this determines which forms and information will be needed for the "funding packet" that must be submitted to request funding for a recommended SGD.

Medicaid is a program mostly for low-income families and individuals that is run by the states under federal guidelines. Medicaid coverage can often look like commercial health insurance because many state Medicaid programs contract with private insurance companies, who typically offer commercial insurance, to run their Medicaid programs. These are typically referred to as Managed Care Organizations (MCOs) or Regional Care Organizations (RCOs). While the states and MCOs do have some leeway in how their programs are run, they are subject to federal regulations that govern the Medicaid program.

Prior authorization is typically required for Medicaid funding of SGDs. The prior authorization process is the process by which an MCO determines in advance whether the device will be covered, or paid for, by Medicaid. It's a review of the funding request and supporting documentation and information to determine if medical necessity for the SGD is established. Since Medicaid is a program run by the states, there is variety in the requirements and process for obtaining prior authorization of funding. A lot of information is required for a funding request submission before an insurance company will even evaluate whether to approve the request.

Typically, manufacturers of SGDs that are eligible for Medicaid have expert funding staff that knows the funding source requirements. The Prentke Romich Company (PRC) and Saltillo Corporation, based in Ohio, manufacture the NovaChat,® ChatFusion, Accent®, Chat Express®, TouchChat® and PRiO® lines of Medicaid eligible SGDs. The PRC/Saltillo online funding assistant walks SLPs through the process, step by step. The funding website provides easy access to funding requirements and forms by state. The Funding Quick Reference Guide is a step-by-step guide to the funding process.

Generally, it's important for SLPs to remember that decision makers at health insurance companies are not typically experts about SGDs and they may not understand all the technical language that SLPs use in evaluation reports that form the basis of their recommendations. SLPs should be prepared to educate and explain technical and clinical information in a way that would make sense to a lay person. For example, SGD usage data can be great evidence of need and ability to use, but it must be presented with explanation and in a way that allows the reader to understand what it means.

Helpful funding information, resources, and tools for SLPs can be found here.

BETH MULCAHY, Beth Mulcahy is an attorney at Broehl Law Office in Wooster, Ohio. Her law firm serves as corporate counsel for the Prentke Romich Company (PRC)/Saltillo, manufacturer of Speech Generating Devices (SGDs). Beth's law practice includes extensive advocacy for adults and children all over the United States battling with health insurance companies for funding of prescribed SGDs. Beth is a graduate of the University of Dayton and a 2002 graduate of the University of Cincinnati College of Law. After law school, she began practicing at the Legal Aid Society of Greater Cincinnati, serving low-income clients in the areas of litigation, disability, housing, consumer, bankruptcy, and public benefits. She was awarded a National Consumer Law Fellowship during her tenure at Legal Aid. Prior to joining Broehl Law Office in 2015, Beth was a solo practitioner at Mulcahy Law Office, LLC focused primarily on estate planning with a passion for disability law.

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The resources available include sample evaluation reports, example appeal letters, a device trial data collection sheet, and other useful resources including a quick reference guide to the deferral and denial process.

Once an SLP submits a funding packet for prior authorization of the recommended SGD, the Medicaid MCO may respond by approving the funding request, issuing a deferral or denying coverage of the device. An approval is the best-case scenario, but a deferral or denial isn't a lost cause. A deferral means that the insurance company is not able to decide whether to approve or deny because it needs more information. It's a request for more information or for a clarification of information provided. Also, pay attention to when the deadline is for a response. If a response is not received by the deadline, the funding request is typically cancelled and then the funding packet must be resubmitted in its entirety. The funding department staff at SGD companies can provide assistance with obtaining missing information from the appropriate source to help SLPs respond to the deferral.

A denial is a decision by the insurance company not to authorize payment of the recommended device. It is not necessarily the end of the road. SLPs and families can question and challenge denials. ASHA certified SLPs who have recommended devices through the required evaluation process are the experts on their patients and on SGDs. These SLPs should feel confident in their ability to advocate for their patients to have the voices they need and deserve.

It's always vitally important to first consider and prioritize the wishes and feelings of the patient and their family. While it is illegal for insurance companies to retaliate against patients and their families for pursing their appeal rights, not every family will want to pursue appeal of coverage denials. It's a process that will require some engagement on the part of the patient, family member or caregiver and they must authorize this. Not all families can fight, some will need and want the SLP to fight for them, and some do not want a fight at all. There are additional, alternative sources of funding that can be explored and pursued.

SLPs who are going to serve as funding advocates for their patients should keep careful and detailed records of funding submission documents, data, correspondence, deferrals, denials and appeals. It's important to confirm oral communications in writing to preserve a record for appeal.

When a prior authorization request is denied, a denial notice should be in the form of a written letter and contain the specific reason or reasons for denial, the options for challenging the denial, and the deadline for each option. It's important to read the entire denial letter to fully understand the reasons for denial and how and when to respond. These options include the administrative appeal process and rights. Medicaid beneficiaries have a right to appeal adverse coverage decisions. Once those appeals are exhausted with the administrative agency that made the adverse decision (the MCO), Medicaid beneficiaries have the right to a fair hearing in front of an impartial decision maker.

If a patient or a patient's family does want to pursue administrative appeal rights, the first step is to file a written appeal in response to the denial. Pay careful attention to the deadline by which the written appeal must be submitted. If this deadline is missed, the patient loses appeal rights, the funding request is cancelled and the funding packet must be resubmitted in its entirety. Once it is resubmitted, appeal rights begin again if there is another denial issued.

The written appeal is a chance to explain in writing to the insurance company why the SLP believes the denial of the recommended SGD is the incorrect decision for the patient. It's important to respond to the specific reason given for denial. For example, there are many criteria that comprise the establishment of "medical necessity" for speech generating devices and often denial notices will lead with the statement that the funding request is being denied for "failure to establish medical necessity." This does not necessarily mean the insurance company representative who reviewed the funding request disagrees that this patient needs a speech device, but simply disagrees about which sort of device is most appropriate. In that case, it would not be as helpful to submit an appeal justifying SGD need generally based on the nonverbal status of the patient and how much a voice is needed, as it would to talk about why other devices were ruled out and why the recommended device is necessary to meet medical need.

SLPs can point out in the written appeal, where in their evaluation report the issue raised in the denial was addressed and expand or explain. An evaluation addendum might be appropriate to provide more information about the area of concern. It's best to be as specific as possible and focus on the individual patient's situation in relation to the denial reason. Sample appeal letters that can be customized to individual patient situations as appropriate, are available on the PRC funding website. Upon request, PRC provides a review by a licensed SLP to help ensure all denial reasons have been adequately addressed.

If the insurance company upholds the denial upon review of the submitted appeal, the next option is typically to request a hearing. The hearing process varies by state but all Medicaid beneficiaries have a right under federal law to a "fair hearing" when they receive an adverse benefit decision. Anyone that the patient appoints can "represent" or serve as an advocate for the patient in the hearing process. A patient can appoint their SLP or family member to represent them. The representative does not have to be a lawyer and a patient or parent can serve as their own representative.

The hearing is an opportunity to present their side to an impartial decision maker and explain why the denial is incorrect. The fair hearing comes with the right to present evidence, give testimony and the right to ask for the denial to be

overturned. The hearing is an informal proceeding with a hearing officer or administrative law judge. In many states, it can be conducted over the phone by conference call. It's recorded and everyone giving a testimony is asked to take an oath to tell the truth. SLPs and families can call the hearing office to find out more information about how the process works in their state. If a patient or their family does want to try to find an attorney to represent them, they can contact their local legal aid or disability rights organizations for possible pro bono representation if they qualify for services. Patients and families may also get good results from contacting their state Medicaid office to complain about denials they feel are not justified and the negative impact on their life from the delay in receiving prescribed medical equipment.

The hearing decision is not the end of the road either as both the patient and the insurance company have the right to appeal the hearing decision further. Appeal of the hearing decision is called "agency review." It's a review of what is already in the record; no new evidence is permitted to decide if the hearing officer made the right decision. The appeal of the hearing decision to agency review level must be requested by the deadline provided in the hearing decision, or appeal rights are lost.

Another option, outside the administrative appeal process, the "peer-to-peer" review, is also often included as an avenue to challenge denial decisions. Information about the peer-to-peer review is usually found in an initial denial notice. Essentially, it's an invitation by the decision maker at the health insurance company to the physician, who prescribed the device, to talk on the phone and discuss the device recommendation and the denial. Doctors can sometimes authorize SLPs to conduct the peer-to-peer review for them. If the insurance company does not allow doctors to delegate the peer-to-peer review participation to the SLP, the SLP can help to prepare the doctor to refute the denial reason as appropriate.

The timeframe given for a peer-to-peer review is usually very short and isn't always possible to complete. It's not required for this step be completed to preserve the patient's administrative appeal rights but, when possible, it is a good opportunity to talk to the decision maker about why the denial should be reversed and many SLPs have had great success with this option as they are able to provide verbal explanation and can get an approval without having to pursue formal appeal. It's important to note that the peer-to-peer review does not replace a written appeal nor does it impact, in any way, the deadline by which a written appeal must be submitted to preserve appeal rights.

SLPs advocating on behalf of patients for funding of recommended SGDs should always ask for help from the funding specialists at the device manufacturer. The funding staff at PRC is guided by their dedication to their mission: Because everyone deserves a voice. They are experienced at navigating the rules and requirements for the various funding sources. Upon request, there are advocates and resources available to help SLPs understand the process and achieve funding success for their patients. ■

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Four Plus More:
New Considerations for AAC Competency

In the late 1980s, Janice Light devised four components of communicative competency: linguistic, operational, social and strategic. Each domain contains multiple subtypes, outlining various stages of independence such as emergent and context-dependent. While this structure provided for a system of growth in multiple areas for individuals who use augmentative and alternative communication (AAC) systems/supports, new research offers insight into additional aspects contributing to advancement in communication. Before delving into the new findings, it's important to review the previously outlined competency areas that continue to serve as structural guidelines for assessment and growth.

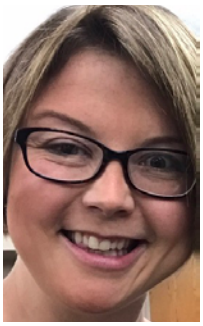
Linguistic competency demonstrates how a person using an AAC device understands the form, content, and use of language. Vocabulary sets, sentence structure and pragmatic language are all embedded within this competency. This also includes the ability to code switch as needed between audiences/purposes (such as social media) as well as the development of literacy skills to convey written ideas. Additional assessment within this area includes understanding the use of morphological markers to express plurals and a variety of verb tenses.

Operational competence is characterized by how an individual successfully navigates through their device. For example, turning a system on/off, opening a communication board, navigating through pages, and selecting a targeted symbol all serve as skills within this domain. Using a specific selection technique to access AAC symbols, whether it be through direct selection or switches, also resides within this area. Other skills include picking up a symbol and handing it to a communication partner, as when using a Picture Exchange Communication System (PECS), using pencil and paper to draw a concept and capturing as well as uploading photos to support communication via social media.

Social competence reflects the ability to initiate, maintain and terminate conversations. This includes expression of a variety of communicative functions, such as requesting, protesting, commenting, questioning and providing clarification. Portraying a positive self-image, demonstrating interest in communication partners and maintaining rapport with communication partners further comprise measures of assessment within this area. Another skill to promote social skill development includes active listening during nonobligatory turn taking. This focuses on positive comments (Right on, Cool, Wow), neutral comments (Really? No kidding, Okay), and negative comments (Oh no! Bummer! Chill out!).

Strategic competence involves repairing a communication breakdown while interacting with a communication partner. Skills identified within this area include asking a partner to provide choices to overcome vocabulary limitations (i.e. "Ask me a yes/no question."), asking a partner to predict a message as spelled out to increase efficiency, and having a communication partner assist with locating a page to meet navigational demands. Finally, individuals who utilize AAC should be prepared with a backup plan, such as a low tech option, in the event that technical difficulties arise.

Moving away from the medical versus social model of disability, researchers now recognize the combination of intrinsic (feelings, motivation, education,



JULIE PLINE, M.S., CCC-SLP, Assistive Technology Facilitator Julie has worked as a speech pathologist in the public school setting for nine years. She spent her first two years with the Special Education District of Lake County and then worked for two elementary schools in Wilmette (District 39) for five years. This is Julie's second year with the Exceptional Learners Collaborative. Julie has worked with students with a variety of needs from ages 3-21. She has presented on topics such as inclusion, differentiation, behavior management and paraprofessional training. Julie received her undergraduate degree from the University of Illinois at Urbana-Champaign and her graduate degree from Eastern Illinois University.

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health, gender, culture) and extrinsic factors (disability culture, social stigma, communication partners, trainings, overall awareness) that play a critical role. Primarily, new evidence supports both psychosocial and environmental factors as important contributions to communicative competency.

Psychosocial factors emphasize motivation and attitude. Regarding use of a device, a desired goal must be both important and attainable. A person's attitude toward AAC is also directly tied to their emotions and therefore willingness to use a communication system. Communication confidence plays a vital role achieving success within a given situation. Finally, resilience remains critical in overcoming adversities and persisting through technical difficulties as well as breakdowns in communication.

Environmental factors cover the gamut of policy, practice, advocacy, knowledge and skills. Policy looks at legislation that supports accessibility, inclusion, funding, and a universal design for learning. Practice entails ensuring proper service delivery from members of a multidisciplinary team. Advocacy implies spreading awareness and meaningful opportunities for social interactions and generalization of skills across home, school, and community settings. Knowledge encompasses skills covering AAC symbols, vocabulary set selections, positioning, funding, maintenance routines, troubleshooting and integration of AAC systems and supports into activities. Skills address communication partner training.

Now that we have the facts, where do we go from here? With increasing information to support additional factors contributing to communicative competency comes a change in thought. While our old focus lied heavily on wants and needs, the new emphasis for success with individuals who utilize AAC emphasizes goals, control and relationships. Given this background info, it's important to analyze what this means and how these additional psychosocial and environmental factors unfold in the school setting on a day-to-day basis. As service providers and members of an interdisciplinary team, it's our role to transform this evidence into practical supports to further maximize success of our students.

Psychosocial targets begin with introducing an AAC support as an empowering tool that will lead to increased independence and communicative success. For younger students, this often means teaching how use of a device (or support) results in attainment of a desired item, such as food or a preferred leisure activity. A quick response from a communication partner is key to demonstrating how efficiency improves with successful use. Attitude as applied to use of an AAC system may further improve with ownership and personalization. For example, this may entail getting a case that matches the student's favorite color, as well as programming names/icons of books and/or songs of interest. Confidence and resilience may take time to establish, but primarily come from support within the team, including many opportunities embedded throughout the day to utilize AAC supports. When targeting a new skill, assistants and team members begin with the highest level of prompting and then fade as the student attains the desired skill. Once the skill is mastered, prompting occurs from the opposing end, starting with minimal assistance and then increasing as needed. This supports continuation of success as well as increased levels of independence.

Within the realm of psychosocial factors, with the aim to generalize skills across settings, we must look at an individual's motivation to use AAC systems and supports at home. For example, participating in conversations during meals, household chores and leisure activities. Requesting snacks, socializing with siblings, requesting supplies, and commenting on music/television programs comprise only a few of many ways to encourage communication at home.

In the community, use of AAC tools may be expanded across settings, further promoting increased independence. For example, when going to a restaurant or movie theater, an individual may need assistance with ordering food, selecting drinks, and conversing regarding payment options. While shopping, phrases may include asking for a specific size, requesting the location of items and short conversational statements for interacting with clerks/cashiers. Public transportation items may include asking for the price of a train/bus ticket, conveying the name of a designated stop, and seating requests. When going to the doctor's office/hospital, it may be beneficial to have insurance and personal information preprogrammed to expedite wait time. For banking, individuals may wish to communicate information regarding deposits, withdrawals and checking/savings accounts. Community outings offer meaningful ways to communicate with unfamiliar communication partners. Additionally, requesting assistance increases achievement and success across a variety of locations and situations.

Environmental factors concentrate on inclusion, practice, partners and supports. First and foremost, students who use AAC systems must feel welcome and acknowledged as meaningful participants wherever they go. This includes home, school, and community settings. Part of inclusion includes awareness and one way to accomplish this is by providing in-service presentations on specific AAC tools and systems. This allows for students of any age to ask questions, obtain knowledge, and reduce fear when it comes to the unknown regarding people who communicate in a different way. Pointing out more similarities than differences further helps to establish social relations. For example, a presentation outlining how a student likes pizza, plays on the iPad and enjoys swimming serve as great conversation starters. An additional component outlining how the student uses an iPad to express his thoughts and participate in class discussions makes other children more apt to include an individual when the unknown has been removed.

Throughout the United States, community groups have formed, such as 'Girls

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Night Out' for girls with autism and 'Out and About' in Arizona, with the purpose of expanding social opportunities and inclusion for individuals who utilize AAC devices. Specifically, these groups target family involvement, friendships, and communication partner training and community awareness. Groups meet at different locations once per month and members are provided with phrases or sentences relating to the designated location or event to practice beforehand.

Within the school setting, the educational team should also collaborate on how an AAC device may be incorporated into nearly all activities throughout the day. For example, programming the pledge of allegiance, directions related to a job, sight words, and frequently used social comments or questions. For older students, items may include templates, graphic organizers, sequenced steps to complete vocational tasks, and comments promoting self-advocacy to direct personal needs.

Communication partner training looks different for older and younger children, but still remains vital for all ages and populations. Training for preschool and young elementary aged students can occur during play where instruction focuses on modeling, initiating, responding (giving/sharing objects) and social reinforcement/feedback. Older children may be trained in a small group setting to provide choices, offer a yes/no format for answers to questions, use the least to most prompting hierarchy and allow for sufficient wait time.

Environmental supports highlight policies that contribute to equal access for learning. Universal design for learning (UDL) provides a framework that accommodates for a variety of learning styles as well as differences. Now that we have reached the digital age, a variety of programs and apps may address the plethora of needs that students present with. For example, notetaking and speech to text or dictation software may serve as classroom tools where all students have equal access to use. Organizational tools for homework, planning and time management support independence and executive functioning skills for all as well.

As part of a classroom pilot program, a coworker and I trialed an intervention involving a class with five students who all presented as nonverbal. We created an 'AT Toolkit' comprised of switches, low-mid tech communication supports, and an adapted spinner. The kit stayed in the classroom throughout the week, and we, as AT facilitators, led a 30-minute group one time per week to model use of the tools during activities such as cooking, art, writing, and science experiments. Areas targeted included increased participation, visual modeling and growth across all four-competency areas. Throughout the year, not only did students take on increased ownership of their learning, but they also improved stamina and peer relations as general education students saw them using tools to contribute to curricular as well as social discussions.

Moving forward, the time has come to take the show on the road! As members of interdisciplinary teams we strive to improve the success of our students within the school setting, but achieving independence with AAC devices in home and community settings remains just as critical. In addition to previously identified competencies across linguistic, operational, social, and strategic areas, new evidence supports inclusion of psychosocial and environmental factors.

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product spotlight

SUPERKEYS – THE ASSISTIVE KEYBOARD FOR IPAD AND IPHONE

SuperKeys provides a new, accessible keyboard for people with mild to moderate physical challenges and those with low vision.

There's no double-tapping and no scanning – just large, clear target areas to use in your own time. There's even a shortcuts keyboard where you can enter whole customizable phrases with a single tap.

JUST SEVEN KEYS INSTEAD OF 30+

The unique design of SuperKeys gives you just seven large keys to target instead of more than 30 small ones! Just tap the cluster containing the letter you want, and then tap the letter in the enlarged cluster. There's no double-tapping, no essential swiping, and no learning required.

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Their first product, is a wearable haptic navigation device for the blind and visually impaired. It guides users to an end-destination using only vibration.

Wayband™ & Wayband™ Sport communicate navigation information by using non-intrusive tactile feedback. Offloading this from the eyes and ears delivers information without a display in a more intuitive way. Both products

are available for purchase through the WearWorks Beta-Program.

LEARN MORE

NuEyes Pro – Smartglasses for Low Vision

NUEYES OPENING UP A NEW WORLD IN LOW VISION

Felix Reges, a 10-year-old boy, is able to see clearly for the very first time with the help of wearable technology. His parents and teachers say, "It's opened up a whole new world for him."

NUEYES CHANGING FELIX'S LIFE

The Sunrise Valley Elementary School 4th grader has had severely impaired vision his entire life, but this past summer he got a pair of augmented reality (AR) glasses. This life changing technology is NuEyes featuring ODG Smartglasses, giving Felix a whole new outlook on life.

The NuEyes Smartglasses give him the ability to actually see what is outside, which used to be a grey area for him. He can now recognize faces, where before he had to be within 2 feet of the person to recognize their face. The first time Felix went to class with his NuEyes Smartglasses he was able to see his classmate's faces for the first time, instead of just recognizing them by their voices. He used to sit right next to the school board just to see a little bit, now he can sit at a normal distance and read the school board clearly.

- NuEyes gave ability to see outside world
- Felix can now recognize faces
- He sees his classmates faces for first time
- The school board can be read clearly now

WHAT NUEYES SMARTGLASSES DO

NuEyes featuring ODG Smartglasses film the outside world with a camera on the bridge of the glasses and project the image on electronic screens located in front of the user's eyes. Numerous changes can be made to the glasses based on visual needs, such as making the image bigger or changing the

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contrast of colors. This can be done by voice-activation controlling the glasses.

Also, NuEyes featuring ODG Smartglasses are wireless allowing the freedom to see anywhere. The Smartglasses are wireless and voice activated and have helped to change a little boys life. Anyone who is legally blind or severely visually impaired is eligible for the Smartglasses. At this moment a few hundred people have NuEyes featuring ODG Smartglasses and the cost is just under $6,000 a pair.

- A camera projects images back to user
- Images can be made bigger or smaller
- Contrast of images colors can be changed
- Smartglasses are voice-activated and wireless

Felix finds the glasses really fun because he loves technology and loves sharing them with his classmates. The Nueyes featuring ODG Smartglasses opens up Felix's world in a way so far that other technology has not been able to. Felix told his parents that he feels just like one of the other kids now.

FIRST EVER LIGHTWEIGHT, WIRELESS, HEAD WORN, VOICE ACTIVATED DEVICE FOR THE VISUALLY IMPAIRED.

NuEyes Pro removable visual prosthetic featuring ODG smart glasses is the first ever lightweight, wireless, head worn device that is voice activated for the visually impaired. Whether you have macular degeneration, glaucoma, diabetic retinopathy, retinitis pigmentosa, or other visual conditions NuEyes can help!

NuEyes Pro is a very simple product to use and can be either operated with our wireless controller included with the product or using simple voice commands.

FEATURES

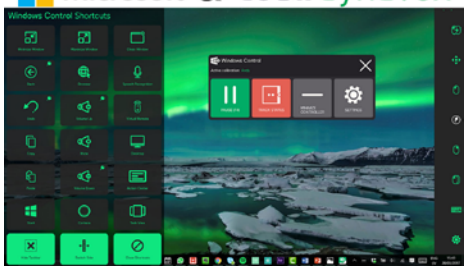
- Read and write using NuEyes
- Watch TV and Movies
- See the faces of loved ones
- Continue hobbies such as reading music and playing cards
- Regain visual independence
- Variable Magnification from 1x-12x
- Various contrast and color changes
- Voice Activated
- Wireless
- Lightweight Design
- 2 Year Warranty
- OCR
- Stream TV and Movies

LEARN MORE

Microsoft & Tobii Dynavox – Eye Tracking Access For Everyone. Computer Access For You

Microsoft introduces Eye Control! With the newest standard input method from Microsoft, every Windows 10 device is now pre-configured to use a Tobii Dynavox eye tracker.

Microsoft & tobii dynavox



See how the PCEye Plus eye tracker changed Michael's life

CONTROL YOUR WINDOWS COMPUTER WITH YOUR EYES.

To get started, all you need are three things:

- A Tobii Dynavox eye tracker
- The latest Windows 10 software (Fall Creators Update) on your PC or tablet
- Microsoft's Eye Control or choose from our software options Gaze Point or the more advanced Windows Control*

*Make sure your Tobii Dynavox software is updated to the latest release. If you're not sure, start the Tobii Dynavox software Update Notifier on your device.

EXPERTISE AND EXPERIENCE YOU CAN RELY ON

You can rely on over 11 years of dedicated research, experience, and innovation. Over the years, They have improved their technology and expertise to deliver the best results possible for you. This knowledge is built into all their eye trackers, find the right one for you here in this overview.

HIGH PRECISION AND ACCURACY

Tobii Dynavox Eye Trackers, together with the zoom functionality of Windows Control, allow you to hit even the smallest targets on the screen, almost with pixel precision, again and again.

HEAD MOVEMENT COMPENSATION

Move freely within the trackbox while maintaining superior precision and accuracy. Should you move outside of the trackbox, the eye tracker will quickly find your eyes again and continue to track them.

LARGEST TRACKBOX

The trackbox, the imaginary volume within which you can move your head without losing accuracy, or interrupting the eye tracking session, is among the largest on the market. The large size gives you the freedom to sit or lie down comfortably with maintained eye tracking performance.

SUPERIOR TRACKABILITY

Tobii Eye Trackers provides high-quality tracking results for over 95% of users, compared to any other system, regardless of most lighting conditions, eye color, or if you are wearing contacts or glasses.

THE RIGHT SOFTWARE FOR YOUR NEEDS

Microsoft Eye Control, as well as Gaze Point present a convenient entry point to eye tracking technology. If you need more features, higher speed and flexibility then Tobii Dynavox Windows Control would be the right choice for a truly full computer access.

LEARN MORE

Titan Note – Never Worry About Taking Notes

The Titan Note is a new digital recording, audio to text conversion and summarizing tech tool. Promising these new note taking features and a host of other tools, the Titan Note provides new note taking possibilities for individuals with disabilities.

You should see this tool being a game changer for many individuals with motor, learning or sensory challenges, who have difficulty with writing or typing process, who is Deaf or Hard of Hearing. It is exciting to have a new assistive option to support note taking tasks in education or in the workplace as appropriate or allowed.

Imagine never having to worry about taking notes. Imagine just putting a stylish device in front of you that does the job. Imagine always having your own personal secretary. Imagine how much time and energy you save. That is all possible, with the power of Titan Note. Simply press record, lean back and never stress about taking your notes again.

Simply place Titan Note on your table during class or a meeting, and it will not only record everything but accurately convert it to text. Titan Note is a ground-breaking tool that will improve your learning by changing how you take notes. Distinguish who is speaking, summarize, translate, share and edit your notes – all with Titan Note.

Titan Note is perfect for both students and professionals. Titan Note records everything and accurately converts it into text. You can now automatically have notes that are better than your own. It will change the way you take notes forever. All you need to do is press record

NEVER TAKE NOTES THE SAME WAY AGAIN

Just place Titan Note on your table during class or a meeting, and it will not only record everything but accurately convert it to text. Titan Note is a ground-breaking tool that will improve your learning by changing how you take notes. Distinguish who is speaking, summarize, translate, share and edit your notes – all with Titan Note.

LET TITAN NOTE DO THE WORK FOR YOU

Imagine never having to worry about taking notes. Imagine just putting a stylish device in front of you that does the job. Imagine always having your own personal secretary. Imagine how much time and energy you save. That is all possible, with the power of Titan Note. Simply press record, lean back and never stress about taking your notes again.

Titan Note is perfect for both students and professionals. Whether you're in class or an important meeting, it's stressful making sure you're taking the right notes and retaining all of the information. We get it, which is why we created Titan Note. Our note-taking tool will revolutionize how you takes notes. Now, you can truly listen while Titan Note does the rest. Why take your own notes when Titan Note perfectly does the job for you?

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Introducing a Revolutionary Plush Learning Tool!

Toys that can connect with apps through smart phones, tablets, laptops or any Bluetooth-enabled device.

Educate, Communicate & Connect With Technology

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app compatibility introduce an exciting communication device that fosters educational opportunities for all mainstream and special needs children.

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Finally, A Digital Voice Made For You

The first-ever personalized voices, unique to each individual, have arrived.

ABOUT

Over ten million people live with voicelessness. Much like Stephen Hawking, they rely on text-to-speech devices to express themselves. Yet, young or old, male or female, shy or outgoing — they all speak with similar voices.

Add to that the hundreds of millions who use generic sounding virtual assistants, GPS navigation and screen readers. Digital voices must VocaliD is the voice company that is bringing speaking machines to life. We leverage our voicebank and proprietary voice blending technology to create unique vocal persona for any device that turns text into speech.

VocaliD's custom voices are tailored to fit your unique identity. Speak through your own voice, no matter what.

SAY GOODBYE TO UNIFORM VOICES.

Until now, the creation of synthetic voices began with auditioning a voice actor. They recorded speech in a professional studio for days or weeks. An army of engineers and linguists then spent three to four months laboring over the recordings to synthesize a voice.

DIGITAL VOICES WERE EXPENSIVE

AND GENERIC — UNTIL NOW.

It's not just a speech generating device, it's your voice.

Millions of people rely on synthetic speech to communicate everyday. Yet, they're given a limited set of generic, robotic sounding voices. Voices that don't fit their body or personality.

They wouldn't dream of fitting a little girl with the prosthetic limb of a grown man — so, why then the same prosthetic voice?

BeSpoke by VocaliD empowers any text-to-speech application with a natural, unique personalized voice.

BESPOKE EMPOWERS PEOPLE TO SPEAK AS THEMSELVES.

- A young girl should be able to sound less like Stephen Hawking, and more like her own age, gender and personality.
- A spouse should be able to express his hopes, thoughts, and feelings to his loved one as himself.
- A job candidate should be able to speak with her own voice to connect with potential employers and colleagues.
- A parent should be able to hear their child speak in a voice they recognize as their child's own.

LEARN MORE

Liftware – Steady and Level

EAT WITH CONFIDENCE

Liftware's selection of stabilizing and leveling handles and attachments are designed to help people with hand tremor or limited hand and arm mobility retain dignity, confidence, and independence.

DIFFERENT PRODUCTS FOR DIFFERENT NEEDS

Liftware's selection of stabilizing and leveling handles and attachments are designed to help people with hand tremor or limited hand and arm mobility retain dignity, confidence, and independence.

Liftware Steady (previously marketed as "Liftware") is an electronic stabilizing handle and a selection of attachments that include a soup spoon, everyday spoon, fork, and spork. Liftware Steady is designed to help people with hand tremor, which may be related to Parkinson's disease or essential tremor, eat more easily.

ADAPTS TO YOUR HAND TREMOR

Liftware Steady electronically stabilizes so the attached utensil shakes 70%* less than your hand. Worry less about spilling and focus on enjoying your meal.

IT'S SMART

The stabilizing handle contains sensors that detect hand motion and a small onboard computer that distinguishes unwanted tremor from the intended movement of the hand. To stabilize the utensil, the computer directs two motors in the handle to move the utensil attachment in the opposite direction of any detected tremor.

IT'S EASY TO USE

Liftware Steady includes two parts: a stabilizing handle and a utensil attachment. Connect the attachment to turn it on automatically, enjoy your meal, then simply use the dock to charge.

Introducing Liftware Level — a new product to help hold a utensil at the angle needed to enjoy any meal. Liftware Level is designed to help people with limited hand and arm mobility, which may be related to cerebral palsy, spinal cord injury, Huntington's disease, or post-stroke deficits, eat more easily.

ADAPTS TO YOUR RANGE OF MOTION

Liftware Level uses electronic motion-stabilizing technology to keep your utensil level, regardless of how your hand or arm twists, bends, or moves.

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