Assistive Technology Resources for Children and Adults with Disabilities

Closing The Gap

Solutions

October / November
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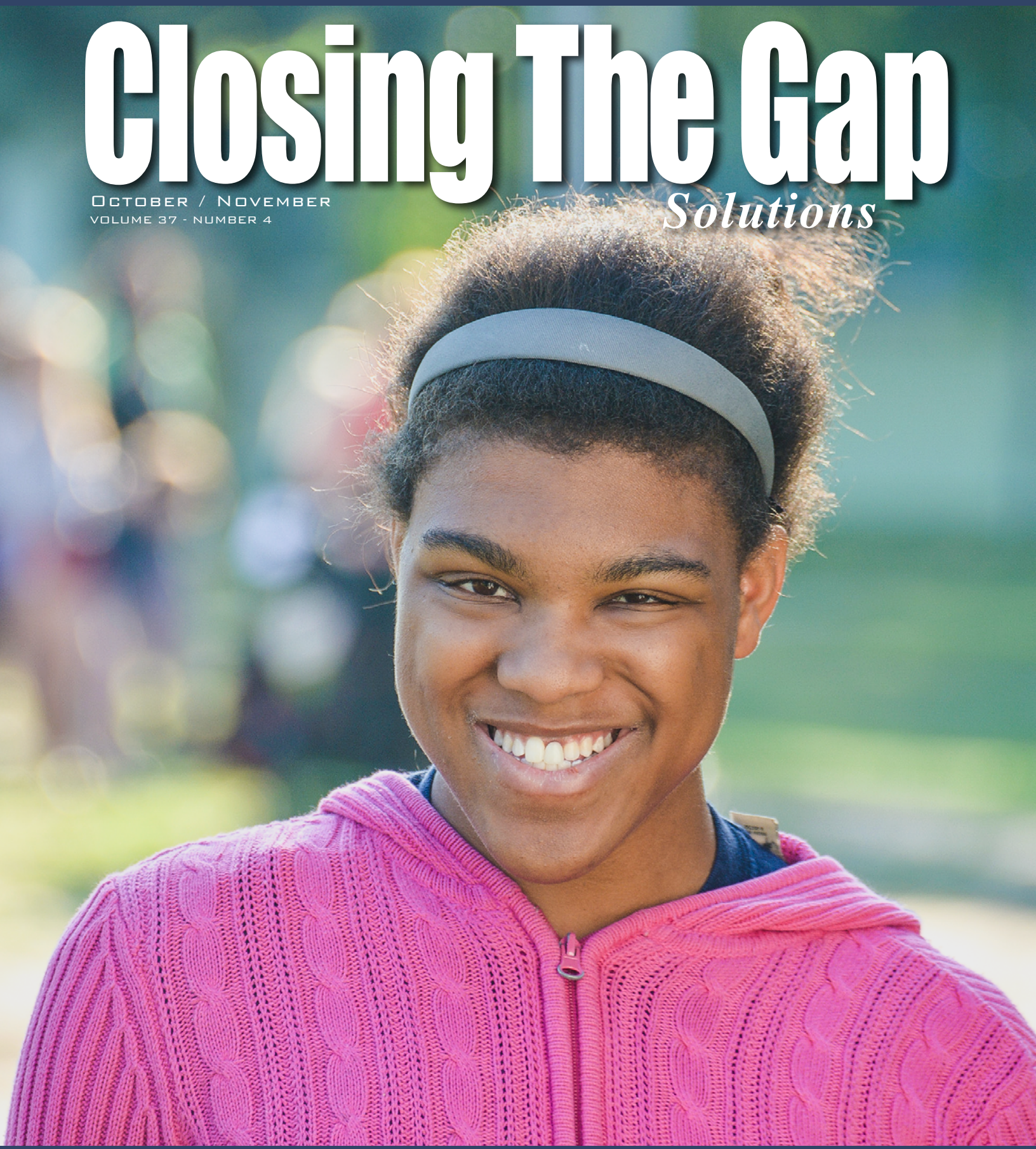

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contents

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Mounting Solutions
for Simple to Complex Mounting Needs

It's essential for a person's physical and psychological well being to be able to readily and independently access food, drinks, technology and other items in their environment. People need access to their phones, iPads, tablets, cameras, speech devices and trays to make this possible. Positioning and securing these ever-evolving items for access can be a challenge for people with major and even minor mobility limitations. Mounting systems help stabilize and position devices for optimal access on wheelchairs, tables, beds and floor stands through every stage of a condition or disease over a lifetime. With the wide variety of mounting options available, it's important to be familiar with feature considerations to determine the best mounting recommendation possible and address the access needs of individuals with disabilities and their caregivers.

Due to the progressive nature of some diseases like ALS, MS, SMA and MD, it becomes important to maintain a client's ability to access technology and initiate control as the disease progresses and motor skills decline. This typically results in an increase in use of technology to address communication and environmental control needs. Adding to the challenge, access methods, technology and positioning need to adapt to keep up with the changes in physical abilities. They may start with simple systems and need to move to more complex systems as their needs change. This becomes increasingly important when using speech devices and mobile devices to communicate via speech, email, etc. Many people with disabilities are effectively using these devices to access social media and other programs to connect with their support networks, build relationships and stay productive and safe. Providing an effective mounting solution is critical for success.

There are many mounting solutions on the market. Fixed, single-position mounts do not offer the end user the independence of moving his/her own device to a different position without help from another person. Movable mounts offer an alternative to stationary mounts and trays and provide benefits that go beyond access to the device for both the client and the professional. Family members and caretakers appreciate the safe, quick and easy repositioning of devices for transferring, eating, toileting, changing devices and pulling up to tables or sinks.

Individuals with limited use of their upper extremities can move their device to a position that facilitates independence performance. Individuals using a movable mounting system experienced functional gains and psychosocial benefits resulting from increases in their independence and self-esteem (Kinney, Gitlow, Goodwin, 2014). It's recommended to review the advantages and limitations of mounting devices. Identify mounting needs and take a holistic approach considering the person, their goals, activities, devices and the environment in which it's used. Off-the-shelf mounts cost less, but may not hold position under the weight of the device and user's touch, especially if they have high muscle tone.

Mount'n Mover movable systems offer unique features specifically designed to promote independence and access. Making it possible to mount mobile devices, speech devices, and trays on wheelchairs, tables, beds and floor stands.

MARY KAY WALCH, COTA, Director of Sales and Marketing at BlueSky Designs, has worked in the assistive technology industry for more than 30 years. Improving product design and life for individuals with disabilities. Her specialty is accessibility and independence with optimal positioning and stability through mounting solutions.

BACK TO CONTENTS

Movable Mounting Systems Available

MOUNT'N MOVER SIMPLE MOUNTS

Available with two sizes of tray, small 3.5" x 7" x .25" and large 9" x 11.5" x .375" or with a Quick Connect Receiver. The tray or Quick Connect Receiver is attached to a variable angle hinge. The hinge is available in either a high or low resistance. Mounts come attached to either 8", 12", 18" or 24" post. A 36" post available at additional cost. Lip Supports attach with adhesive tape and allows for custom supports to accommodate device size and access.

The Small and Large trays tilt, rotate and fold down to the side for easy storage. Clear trays swivel 360 degrees, lay horizontal, tilt at a variety of angles (0-90 degrees) and fold down. Simple Mounts can be combined with the Single and Dual Arm Mount'n Mover to create a double decker to hold multiple devices.

Consider the Simple Mount when:

- A simple, stable, cost effective and versatile mount is needed for tablets, phones, remotes, eating, writing, etc.
- You want a simple support that rotates in or away, and tilts at different angles.
- Tray stowage needs to be streamlined. If a device is slim or removed, Small and Large Tray Simple Mounts can be flipped down alongside the post for compact storage.
- You want a support in front of and inside your armrest, for your arm, switch or mouse.
- You want to access multiple devices at the same time. Create a Double Decker using a Simple Mount in combination with a Single or Dual Arm.

User example: *(See Image #1)*

Cindy uses a Simple Mount with a Large Tray to use her mouse and support her arm when needed. She also uses a Dual Arm Mount and a Laptop Tray to hold her Laptop and phone mounted on the opposite side of her wheelchair. She can now access her laptop from anywhere in her house, not just her office.

Another option for multiple device access is a Double Decker. This is done by combining two mounts on one post. One possible combination is a Dual Arm and Simple Mount Small Tray as shown in above image and also in the user example of Nicole.

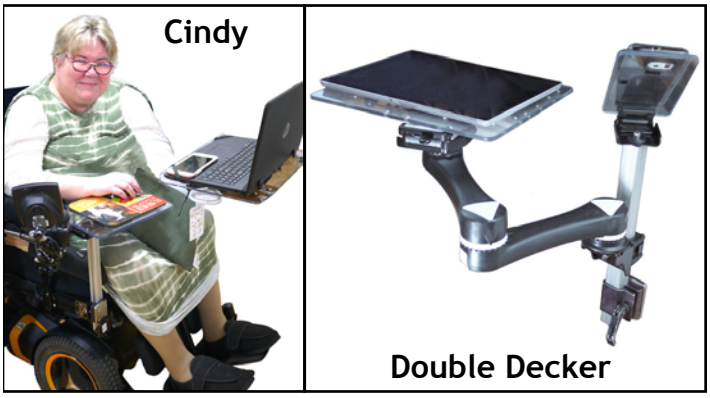


Image 1: Cindy and Double Decker

MOUNT'N MOVER EASY MOVERS

The Easy Mover is available as a Dual Arm or Single Arm and offers non-locking, movable joints and tilt that easily glide to a desired position. It's available with either a Quick Connect Receiver or Tilt Plate making it easy to remove and change out multiple trays or devices. The hinge on the Quick Connect Receiver and Tilt Plate is available with either low or high resistance and with or without locks. Custom locking Tilt Plate is ideal when accessing a heavy device in a reclined position.

Joints can be adjusted from low to high resistance, changing the effort to move the mount. Its sleek simple design makes it easier and more intuitive for multiple caregivers to adjust. The new Quick Connect Receiver is compatible with other mounts and devices on the market.

Consider Easy Mover Non-locking Arms when:

- Locked positions are not needed.
- A lightweight device is used.
- A person does not tilt in space with their device attached, and they do not press too hard when using their device.
- A simpler mount is easier and more intuitive for multiple caregivers or school staff to adjust, requires less training and reduces frustration or damage due to misuse.
- A need to change joint resistance as a person's muscle strength changes, making it easier or harder to move.
- A client is very rough on equipment; a non-locking arm has fewer parts to potentially break or come out of adjustment.

BACK TO CONTENTS

Image 2: Albert and Greta

- Two things to remember: Tilt resistance cannot be changed and lower joint resistance makes it more likely to move when it is used.

User examples: *(See Image #2)*

Albert recently purchased a new Easy Mover Dual Arm mount to hold his communication device. The Easy Mover was a good choice for Albert because he is very rough with his equipment and having less mechanical parts mean less to break.

As a very curious girl, Greta LOVES to learn and create. Greta uses eye gaze access for communication, learning, creating art and making music. Her iPad and Easy Mover Dual Arm allows her to look into things more closely. She will often search anything from maps (especially satellite model), to eBooks and learning videos on her iPad, then talk about them using her speech device. Both devices need to be carefully positioned for her to use eye gaze access and for others to use during teachable moments. Her family often uses the iPad to take photos, and will write on it like a chalkboard to annotate information to Greta. They find the Easy Mover is excellent for easy control and re-positioning.

"It's the best thing we have bought in a long time - works so well and gives Greta a lot more independence when using her iPad" - Thea, Greta's mom

Check out Greta's artwork created with eye gaze at: http://studiogreta.co.uk

MOUNT'N MOVER SINGLE AND DUAL ARMS AND TILT'N TURNER

The Dual Arm, Single Arm and Tilt'n Turner mount with locking joints offer customizable lock-setters (24 per joint) that provide secure locks and repeatable user-specific positioning. The built-in locking Tilt Plate (location where device or tray is attached) adjusts from 0 to 110 degrees and anywhere in between. Slight forward tilt aids in eye gaze access from a reclined position. Offers easy-access, one-handed operation. Press the white hoop to unlock the shoulder and elbow. The black paddle unlocks the wrist joint. The mount will support 15 pounds.

The Tilt'n Turner has one locking joint and is often used to create a double decker to allow mounting two devices or trays at the same time.

Consider Mount'n Mover Locking joints when:

- Individual uses wheelchair's tilt feature while accessing device.
- Strong athetoid movements would cause unintentional movement of the mount.
- You require low effort to move it, but stability in a "use" position.
- When you need the device to lock at a specific tilt angle.
- Active, powered chair users need mount locked in position for storage or use when out and about.
- Consistent and stable positioning of device is needed for optimal access, such as eye gaze access.
- Mounting a heavy device.

User examples: *(See Image #3)*

Brylee likes the precise positioning capabilities for her Dual Arm Moun't Mover and that she can set locked positions for her ideal position needed to access her speech device with eye gaze technology.

As a college student Nicole needs to multitask – reading, writing and use a laptop. She uses a Tilt'n Turner, a Dual Arm Mount'n Mover, Laptop Tray and 12" x 16" Tray with Lip to use her laptop and read at the same time.

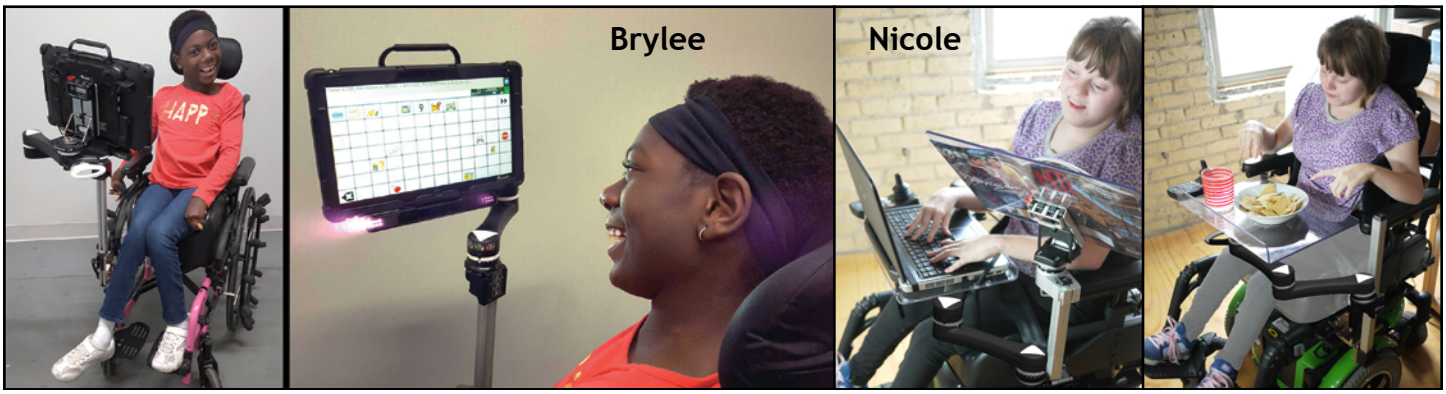


Image 3: Brylee and Nicole

BACK TO CONTENTS

Image 4: Anthony, Catalina and Universal Access Station

TABLE OPTIONS: MOUNT'N TILTER AND TABLE CLAMP

Made for surface mounting, the Mount'n Tilter is lightweight and portable. Compatible with the Quick Release Plate for quickly switching out devices. Tilt plate locks securely.

The Table Clamp secures to any desk, table or tray with a ½" to 3" edge with a swivel screw. Requires a Mount'n Mover Post that slips into the clamp slot. Attach desired mount to end of Post. The Cam Lever allows for easy height adjustability.

User examples: *(See Image #4)*

Anthony needs access to several speech generating devices for his job as a Technical Support Technician for an AAC company. He uses the Mount'n Tilter at his desk to assist him when doing his tech support with customers and is able to swap out different devices independently. The Mount'n Tilter provides a simple, yet secure mounting solution when at his desk. Anthony also uses a Mount'n Mover Dual Arm for his wheelchair and a custom mount from BlueSky Designs for his phone and camera.

Catalina uses a Mount'n Tilter to access her eye-gaze device when she is at a table. Her parents like that it fits in her backpack when they go out to eat.

The Universal Access Station Kit consists of a Table Clamp, Easy Mover Dual Arm, Post and iTab Tray and provides optimal and flexible positioning for access in the classroom. This student demonstrated improved upright posture as a result of the iPad positioning higher off the table.

POW!R MOUNTS: HYBRID DUAL ARM WITH POW!R SHOULDER OR TILT

The next generation of mounting technology for individuals with complex needs is now available. An accessible motorized mounting system used to support and move devices up to 15 pounds to a person's preferred position using a switch. The Hybrid Pow!r mounts combine a Dual Arm Mount'n Mover with a single power joint. The powered joint can be controlled via switches, either alternating directions in a momentary mode; or going between two target positions, stopping anywhere in between. Target positions are programmed for quick and easy movement to specific locations. Two switches may be used, with one switch for either direction. A Pow!r Mount app, either controlled directly via a smart phone or through switches, is under development.

The Hybrid Dual Arm with Pow!r Shoulder has a range of movement of 360 degrees. The Hybrid Dual Arm with Pow!r Tilt has a tilt range of movement of 180 degrees. They mount to wheelchairs, beds or table and you can attach trays, speech devices, camera, laptop, suction tube and more. The built-in keypad is used for attendant control. It's powered by a rechargeable battery, wall outlet or wheelchair battery. The automatic back-off feature provides safety.

A third Pow!r system, the Pow!r Joint, may be used to build a custom solution for whatever purpose you need, such as moving a backpack or joystick from one positions to another.

See videos at: https://www.mountnmover.com/products/powr-mounts

Video: Pow!r Mount Shoulder Hybrid

BACK TO CONTENTS

Image 5: Scott and Brea

User examples of power mounting needs: *(See Image 5)*

Scott lives fairly independently, with part time attendants. He enjoys playing games and socializing with friends on the computer. The Pow!r Shoulder makes it possible for him to independently suction himself. He uses a switch and the Pow!r Shoulder to move the suction tube into position (his mouth) and another switch to activate the suction machine. Using the Pow!r Mount has resulted in a decrease in frequency of respiratory illness, reduced anxiety and increased engagement with friends.

Brea accesses her speech generating device using eye gaze technology. Using her Mount'n Mover with a Pow! Shoulder she is able to move her device into position whenever she has something to say and doesn't have to wait for someone to assist her. She is also able to move her device out of the way when she pulls up to a table.

Video: Use a Pow!r Mount Joint for Independent Suctioning

DEVICE AND TRAY ATTACHMENTS

More and more people want access to their mobile devices at all times, and often to multiple devices at the same time. The Mount'n Mover readily attaches to speech generating devices, laptops, iPads, tablets, phones, trays and cameras. Device plates are designed for device compatibility and can be used with accessories like the Universal Rotator or Stand +90 to add rotation angle adjustment or downward tilt. Both are great for eye-gaze systems. The Universal Rotator angle adjustment is great for eye-gaze systems or iPads and tablets that can move from landscape to portrait. The Stand +90 is ideal for accessing devices from a bed or reclined position.

User examples: *(See Image 6)*

Sophia uses the Stand +90 and the Universal Rotator on her Speech Device when she is in her wheelchair and bed. This al-

Image 6: Sophia, Greg and Obed

BACK TO CONTENTS

lows her device to be accurately positioned for eye-gaze access and adjusted as her position changes. Watch Sohpia's video to see how she uses her devices to communicate, learn and interact with her classmaes remotely: *(See Video of Sophia Doebbert ABOVE)* https://www.mountnmover.com/community/sophia-doebbert-and-her-mountn-mover-video

Greg Wickenburg's Mount'n Mover Dual Arm and Camera Plate provides him the accessibility he needs to do the thing he loves most - photography! He quit photography years ago out of frustration, but advances in technology now make it possible for him to take photos again! It wasn't long before he was winning awards for his double exposure technique using silhouettes of a subject's profile and filling them with texture to create unique one of a kind image. He likes this because it's one of the few things he can do totally independently.

It's important to recognize other ways mounting systems can

Video of Sophia Doebbert

be used to solve access challenges. Obed, a 6th grade student, wanted to play the trumpet. The call for help came because the student only has functional use of one arm and is in a wheelchair, adding a bit of a challenge to holding up the trumpet and manipulating its buttons. But, where there is a will (and the right mounting system), there is a way. Matthew Press, the assistive technology coordinator for the school campus came over with the Dual Arm mount and worked with the student and band teacher to get the trumpet placed in the right position, adding a little Velcro to secure the trumpet to the mounting plate. Now, Obed is learning to play the trumpet for his band elective.

FLOOR STANDS

A floor stand can position devices for access from a bed, chair, reclined or standing position. They are also useful when devices need to be moved from room to room, protecting it from being dropped.

ADDRESSING MOUNTING NEEDS IN AN ACADEMIC SETTING

The classroom, library and common areas need to provide the least restrictive environment to support students' performance and participation to foster learning and social well-being. Educators need to address the wide range of abilities of their student's assistive technology and give them the tools to provide a more accessible learning environment for the students in need of these devices day to day, room to room. A flexible, movable mount allows quick adjustments that can be tailored to a variety of student's physical needs. Mobile devices and trays can be attached to a rolling Floor Stand providing portability and accessibility. It also helps keep expensive technology safe from being dropped or stolen, an added investment benefit for the school. For the therapist, a movable mount can be quickly attached to a variety of surfaces, easily moved, and provide a stable, yet flexible set up for evaluation.

School examples: (See Image #7)

Providing students with as many communication opportunities as possible throughout the day is critical for success. A school in Delaware can testify to this. They had everything - seating systems, speech devices, software, switches and adapted curriculum. What they lacked was a good way to provide stable, flexible and optimal access to these tools in every environment. Their mounting approaches were not portable, and provided limited, less than optimal access to communication. After discovering the Mount'n Mover, they got to work attaching speech devices to gait trainers, adapted classroom chairs, wheelchairs, high/low standers, beds and more. According to Julie, an OT in an elementary school, the Mount'n Mover was key in improving their students' communication success.

Julie said, "If I had to pick the single game changer that brought it all together for our students, it would be the Mount'n Mover!"

"We started to notice that when students had access throughout the ENTIRE day, in any and every piece of equipment, this constant access led to increased communication. There were no more sabotaged "speech" sessions. The set-up time significantly decreased, and anyone could do it! It was a total game changer!"

"What separates the Mount'n Mover from other mounting systems is its versatility, forgiveness, the ability to "hack it" - attaching different devices and moving to countless access positions and their outstanding customer service."

As a result of some very creative thinking, Special Education Teacher Breanna Martins at the Robbinsdale Transition Center in Minnesota was able to position and secure a dust mop on a student's Rifton Gait Trainer by using the Mount'n Mover post extension kit and hardware. Now the student can participate in various jobs around the school while getting their steps in, providing both therapeutic and vocational benefits!

BACK TO CONTENTS

Image 7: Activity chair, Stander, and Rifton Gait Trainer

EVALUATION

Understanding the features and benefits of simple to complex mounting solutions will help professionals, parents and consumers be proactive in creating a more accessible environment to support performance and participation, resulting in a better quality of life for the individual. An important part of the assessment process for professionals is determining the functional needs, goals and preferences of their client. It's equally essential for professionals to have in-depth awareness of assistive technology and its use, preparing them to recommend the correct match between the person and the assistive technology.

Knowing what key questions to ask during the evaluation process will help determine the best alternatives for mounting and positioning devices.

- Does the mounting system need to allow for daily adjustments for: daily changes in positioning, growth, fatigue, setting and the ability to see and interact with others?
- Can the user move the mount independently?
- Does the mount allow access to a variety of items such as books, phones, keyboards, a computer, toys or recreational equipment?
- Can it provide multiple operating positions without the use of tools?
- Does it enable independent access to a communication device in all situations and environments?
- Can the device be moved out of the way (i.e., for transfers, eating, pulling up to a table, toileting) rather than removing it entirely, protecting the device from being vulnerable from damage and loss?
- Does the mount provide consistent positioning with lock positions for specific locations? Does it provide easy set up for both the user and the caregiver?
- Can the mount move from wheelchair to bed, eliminating the need for two different mounts?

Designed with the end user in mind, new mounting solutions facilitate independence and participation in meaningful activities for individuals of all ages and abilities.

Goodwin, D., Gitlow, L., Kinney, A., Chapman, S., 2014. Functional and Psychosocial Impact of Accessible Mounting Technology

Company website: www.mountnmover.com

Mount'n Mover Comparison Chart: Download a copy here: https://www.mountnmover.com/sites/default/files/Spec%20Table%20All%20Mounts_5.pdf

If you are interested in scheduling a webinar or in-service to learn more about mounting solutions please contact Mary Kay Walch at mkwalch@blueskydesigns.us or 888-724-7002.

SUMMARY

Positioning and securing devices and trays for access can be a challenge for people with major and minor mobility limitations. Mounting systems help stabilize and position devices on wheelchairs, tables, beds and floor stands. While static mounts position a device, a movable mount can enhance a person's abilities to do more. Understanding the features and benefits of simple to complex mounting solutions will help create a more accessible environment and facilitate independence and participation. ■

BACK TO CONTENTS

DISKoveries

THE APPLE WATCH AND SPECIAL NEEDS HEALTH AND SAFETY

By Joan Tanenhaus

AUTHOR'S NOTE:

As this DISKoveries article was about to be published, Apple announced the new Apple Watch 4 and watchOS 5, with some outstanding new Health and Safety features, as well as other changes in display, size, processor , etc. An update, including a detailed review of the watch's new Fall Detection capabilities, its notification for "too low heart rate" and the ability to record medically accurate electrocardiograms approved by the FDA will appear in an upcoming DISKoveries article. Look also for Apple Watch Apps reviews in the December 2018 DISKoveries.

The Apple Watch

A digital smart watch is often defined as a "touchscreen wearable computer worn on the wrist." Its power lies in its ability to deliver updated information (including phone calls, emails, messages, news, etc.) without the user ever having to refer to a smartphone. It also gives the user the power to send messages, make phone calls, track information, etc. In addition, the watch supports many other functions through apps, including tracking activity and heart rate. Smart watches support Wi-Fi and Bluetooth, and early models required that they be connected with a smartphone which must be on, charged and within a close range.

Released in 2017, the Apple Watch Series 3 comes in two configurations- GPS and GPS + Cellular. The GPS + Cellular watch differs from the GPS model and from previous Apple Watches as it comes with LTE connectivity which lets you get internet and phone connectivity even when your iPhone is far away. The phone needs to be on and charged but does not need to be within range. In addition to this, the Apple Watch 3 features a new processor and a new chipset, which delivers improved performance and efficiency compared to earlier versions. It also has a barometric altimeter that tracks elevation data, which is good for tracking outdoor activities such as cycling, skiing or running, as well as for tracking stairs. The Apple Watch 3 can be easily identified by its red digital crown.

If you have the GPS only configuration or any earlier Apple Watch, and your phone and watch are both connected to the same Wi-Fi network, the watch has full functionality. If it can't connect to Wi-Fi, cellular or your iPhone, the Apple Watch can still be used as a watch and to track your workouts, as an alarm, timer and stopwatch. It can play music from a synced playlist, display photos from synced photo albums, make purchases with Apple Pay, check your heart rate and set and respond to reminders. (From Apple Support: https://support.apple.com/en-us/HT205547)

BACK TO CONTENTS

HAPTICS: THE POWER OF TOUCH

One of the unique features of the Apple Watch is the way that it interfaces with your body through its system of haptics—the delivery of information using physical sensations (vibrations). Apple uses their "taptic engine" to deliver these sensations to your wrist, to alert you, remind you, to share a personal message or to convey some information. It's an important way to get the user's attention and each haptic can delivered be alone, or combined with an audible tone and a visual message. Providing visual, auditory and haptic feedback reinforces the meaning of the message. It's helpful to use the haptic as the first step in the reminder. As users get used to the sensation, they can often turn off the sound. There are two levels of haptic strength and also a stronger Prominent Haptic for some common alerts. Some alerts also have patterns. For example, a Message notification is a single vibration, while the "Time to Stand" alert generates two taps. This way you can recognize an alert without checking the display. In addition, now, when you pay with Apple Watch, you can also "feel" a confirmation as well as seeing and hearing it. Users should pick and choose carefully which apps they allow to give notifications so that only the most important are transmitted- if too many alerts are sent, they might be ignored.

While not considered an accessibility feature, Haptics is having a profound influence on the use of the Apple Watch for those with Special Needs. This feature, when combined with specialized apps, will continue to increase the watch's power to assist the lives of those with Special Needs. Like the Apple iPad Pro series, the Apple Watch may not be for our youngest learners, but can have a definite role for those who are in high school, young adults in college and those entering transitions to adult programs and jobs.

WAYS TO LISTEN TO THE APPLE WATCH

With the Apple Watch, we can now listen to the phone, notifications, alarms, Siri, VoiceOver, music, etc. and with watchOS 5, to be released in the Fall, 2018, you will be able to stream podcasts, hear audiobooks and meditation sessions from apps such as Pandora and Audible.

Like any phone or tablet, there are times when you want to hear sound directly from the device and other times when you want it to be mute or to hear the sound privately. These options are all available with the Apple Watch, with control from Settings or from the dock. Since the Apple Watch has Bluetooth capability, it can connect to any Bluetooth enabled earphones. Following are some ways to enhance your listening to the Apple Watch via Bluetooth.

AFTERSHOKZ TREKZ AIR WIRELESS BONE CONDUCTION HEADPHONES (AFTERSHOKZ: WWW.AFTERSHOKZ.COM)

Sounds are transmitted to our inner ears both through our ears (air conduction) and through the bones of our skull (bone conduction). With bone conduction headphones, the vibrations of the bones in the head bypass the outer and middle ear and directly stimulate the inner ear (cochlear). This lets you continue to hear environmental noises through your ears while the earphones deliver other sounds (music, telephone, etc.) directly through the bones. With these headphones, transducers (the part that sends the vibration through your cheekbones to your cochlear) get positioned in front of your ears, not on them. The side pieces near your ears contain the power and volume controls. In addition to this ability to allow users to hear environmental sounds, these bone conduction earphones have other advantages for those with Special Needs. If the individual has a conductive hearing loss, they provide a good way to listen to music and the voice output of the Apple Watch and the iPhone. For those with vision loss, the earphones continue to allow the user to be aware of environmental sounds and navigational instructions, when they are listening to music or the phone. Trekz Air can also benefit users who cannot tolerate earphones in their ears, those with motor limitations, who might not be able to handle small ear pieces, and those who benefit from additional sound for attention and focus. It also can enhance accessibility options such as MonoAudio, Speak Selection, Audio Description and VoiceOver. (See Apple Watch and watchOS Accessibility below)

AfterShokz Trekz Air: (www.aftershokz.com)

BACK TO CONTENTS

Bose SoundWear Companion Speaker (www.bose.com)

BOSE SOUNDWEAR COMPANION SPEAKER (BOSE: WWW.BOSE.COM)

This flexible and wearable neckband Bluetooth speaker is both hands free and ears free. It rests on your shoulders, conforms to your neck and has sound that you can hear, while still maintaining full contact with the environment. There is a speaker on each side, and in addition, the right hand side has three-buttons that control volume, music controls, phone and Siri. Because it's a body-worn speaker (and not earphones), the sound can be heard by others nearby. This design provides options for those with Special Needs who might not be able to use earphones, for those with motor limitations and for others who can benefit from additional sound to help attention and focus.

Apple AirPods (www.apple.com)

AirFly (TwelveSouth: www.twelvesouth.com)

APPLE AIRPODS (WWW.APPLE.COM)

For those who prefer traditional earpieces, these Bluetooth AirPods rest outside the ear canal and allow you to continue to hear outside noises so that you are not isolated from the environment. In addition, they can be used with one or both ears. The microphones (one in each earpiece) are designed to filter out external noise and focus on the sound of your voice, helping with phone use as well as with using Speech Recognition with texts, emails, Siri, etc. (If you are concerned about losing the AirPods, or would like to be able to take them off and have them stay around your neck, there are several companies that sell AirPod straps. Just search for AirPod accessories.)

AIRFLY (TWELVESOUTH: WWW.TWELVESOUTH.COM)

AirFly lets you listen to in-flight TV or the gym machine TV audio with your AirPods or with any other Bluetooth wireless headphones. It pairs with the headphones and then plugs into the wired audio jack on planes, in fitness centers or anywhere else wired headphones were previously used. AirFly stays charged for

BACK TO CONTENTS

X-Large Watch Face

Wheelchair Tracking

eight hours and includes a USB charging cable and travel pouch. Great accessory to have to ensure listening abilities when you need to use a wired audio jack.

APPLE WATCH AND WATCH OS ACCESSIBILITY

Apple Watch accessibility features can help enhance the lives of individual with Special needs. (For accessibility options on the watch, go to Setting> General>Accessibility).

For those with low vision, here are the following options: **VoiceOver** (reads out-loud all buttons and text), **Screen Curtain** (this turns the display off while VoiceOver is active, providing privacy and security), **Zoom** (increases the magnification of the watch interface), **Reduce Motion** (limits animations when zooming which may cause discomfort if you are sensitive them), **On/Off Labels** (makes it easier to see whether a setting is on or off), **Grayscale** (When color impairs visibility, you can enable grayscale, which is then applied system-wide), **Bold Text** (text will appear darker), **Brightness** and **Text Size** (allows user to adjust the size of the text seen on screen. Any apps that support Dynamic Type will adjust to this size text. They also adjust brightness on screen), **Transparency** (reducing the transparency of the background increases the contrast on screen) **X-Large Watch Face** (the numbers take up the entire screen, making it easier to view the time) and **Speak Time** (tap to hear time spoken).

For those with hearing impairments, Apple Watch supports **Mono Audio** which lets you play both audio channels in both ears, and also lets you adjust the balance for greater volume in either ear.

For those who use wheelchairs, Apple Watch has options to track pushes instead of steps and will register different types of pushes, speeds and terrains. There is also a Roll goal in the Activity app, instead of a Stand goal. New in Apple Watch Series 3, there is Click Speed Adjustments which allow setting speed for double clicks and triple click on the side button, which allow more time to open apps and features like Apple Pay.

For more detailed information about Apple Watch and Accessibility, see the archived webinar **Touch As a Way of Seeing: The iPad and Apple Watch as a Low Vision Support** by Luis Perez on Closing The Gap's website, as well as his article, **Smart Watches for Access and Inclusion**, in the April/May 2016 issue of Closing The Gap, and his YouTube channel at http://bit.ly/AppleWatchYouTube.

Many other Apple Watch features provide increased accessibility for those with Special Needs as well as improving the quality of life by making many things easier to do and making it possible to do many things that otherwise were not possible. For example: **Apple Pay** (pay with Credit Card with Apple Watch without needing to take out card or phone), **Nightstand Mode** (use the Apple Watch as a nightstand clock and alarm clock when it's charging), the ability to place and answer the phone without taking the phone out, security of a device that is easy to

BACK TO CONTENTS

access-hard to lose, the ability to ping to find your phone, environmental control and much more.

Following are some ways that the Apple Watch can also help improve health and safety, both with built-in applications, free apps from the Apple Store, as well as with externally connected devices and accessories.

HEALTH AND SAFETY FEATURES (BUILT INTO THE APPLE WATCH

1. **In Case of Emergency**: Apple has built-in Emergency SOS on the Apple Watch. Press and hold the side button on the watch and an Emergency SOS slider appears. The watch calls emergency services (911) and also sends your emergency contacts a text with your current location and for a period of time after, it updates when your location changes. Also in an emergency, Apple Watch users can just say, "Hey Siri, Call (name) and Siri will place a call, hands free.

Emergency SOS

2. **Medical ID**: This is built into the iOS Health app on your iPhone and, when set-up, will be available on the watch in emergency situations, even if the phone is locked. It will make name, date-of-birth, emergency contacts, medical conditions, allergies, blood type, etc. available to medical responders in case of emergency. Wearing the watch ensures that this information is with you whenever an emergency might occur.
3. **No Need To Carry a Phone: With the Apple Watch 3, GPS + Cellular**: As detailed above, there is no need to carry a phone, which means there is no chance of losing the phone. The watch is secure to the body- ensuring that there is always going to be contact if needed in a health emergency or in a dangerous situation.
4. **Haptic Notifications and Reminders**: Always private and always received! You can set reminders to take medications,

Medical ID

eat, drink water and as well as for other health needs and these will vibrate using Haptics and appear visually on the watch screen. These reminders are inconspicuous and private. Again, no need to carry the phone if the cellular watch is worn.

Heart Rate Tracking

5. **Heart Rate Tracking**: You can check your heart rate any time using the Heart Rate app. Open the app, then wait for Apple Watch to measure your heart rate. You can also view

BACK TO CONTENTS

your resting, walking, breathe, workout and recovery rates throughout the day. When you use the Workout app, Apple Watch measures your heart rate continuously during the workout and for three minutes after the workout to determine a workout recovery rate.

Heart Rate Notification

6. **Elevated Heart Rate Notifications**: This option, when enabled, will have your Watch send you notification if you are not actively working out but it detects that your heart rate (beats per minute BPM) is elevated. You can set the range for notifications depending on what your normal steady heart rate usually is. Elevated Heart Rate could signal a health issue.

Flashlight

7. **A Flashlight at your Wrist**: This safety feature provides a hands-free flashlight, always available on your wrist. Handy for whenever you need an extra, focused light-on a keyhole, on text that's hard to read, for sudden darkness and more. Swipe up from the bottom edge of the watch face, and you'll see the flashlight icon. There are three modes: steady white light, flashing white light and steady red light.
8. **Speak Time**: Someone who cannot tell time or see the clock can just touch the watch face and the time will be spoken aloud. To use this feature, just set Mickey or Minnie Mouse as your watch face, make sure Silent Mode is off and Tap to Speak Time is on.
9. **Auto Unlock**: If you use a Mac computer or laptop, you don't need to log-on with a password if you are wearing an Apple Watch. See https://support.apple.com/en-us/ht206995 for instructions on how to set this up for automatic use.

Walkie Talkie

10. **Walkie Talkie**: watch0S 5, when released, will have a new app called Walkie Talkie which will turn the Apple Watch into a simple Walkie-Talkie. It will provide another mode of fast and direct communication for the watch user.

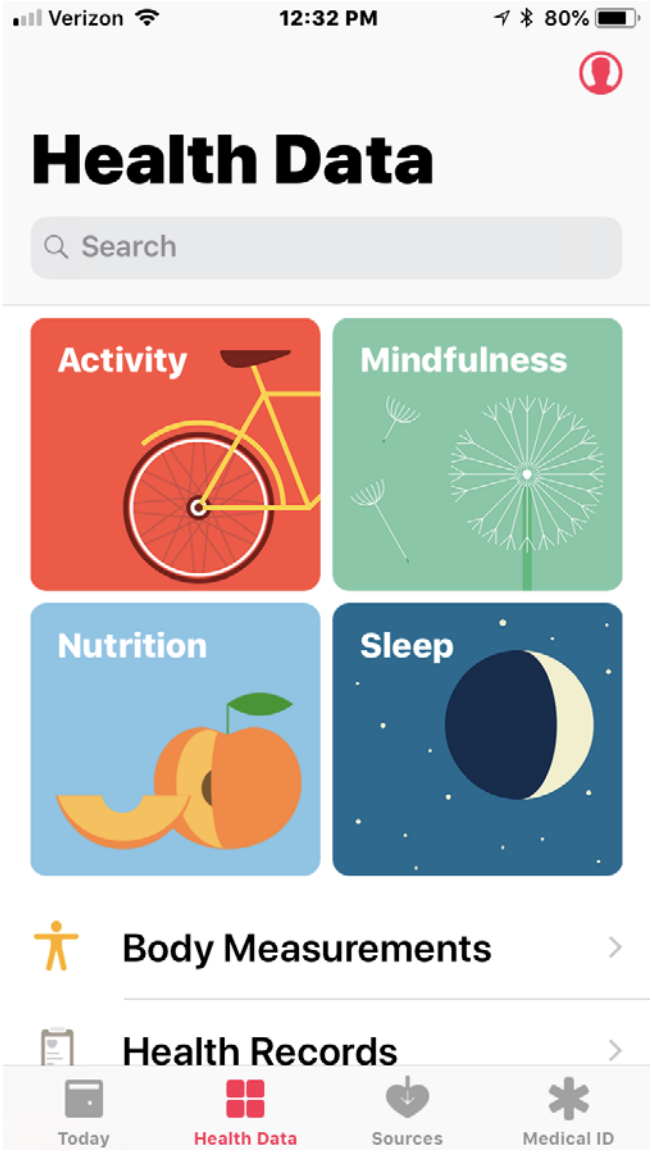
THE HEALTH APP (BUILT INTO THE APPLE WATCH AND IPHONE)

The Health App consolidates your health data from the iPhone, the Apple Watch and from third-party apps you use. It tracks your heart rate and recommends other helpful apps that relate to health. You can set up apps and accessories so they also send data to the Health app, you can enter data manually and you also have control to change how the Health app prioritizes data from these other sources.

The important part is that you are able to keep all your health information in one place and under your control. You decide which apps can access your data, and which information is placed in the app. Your phone and watch are locked with a passcode and all information is encrypted, protecting your privacy.

11. **Mindfulness: Breathe App**: This built-in Apple Watch app uses Haptic feedback to prompt you and then guide you through breathing exercises. It doesn't turn on in response to your stress level, but does let you customize your training sessions, and provides a weekly summary of your sessions, including information about your heart rate. The Health app also recommend other apps for mediation, calming, etc., each with different features. See also the review below for

BACK TO CONTENTS



Health App

Spire which is an external device that provides stress reduction and encourages mindfulness and meditation as part of daily health routines.

12. **Sleep tracking**: The Apple Watch has the ability to track some very basic sleep information such as the time you are asleep and the time spent in bed. It doesn't provide any graphs of the sleep stages and doesn't have the ability to wake you. However, there are a large range of free sleep apps that work together with the Apple Watch and many of these are recommended by Apple. You can download and run several which will each gather data and coordinate their information within the Apple Health App. Some will show graphs of the nights' sleep, others analyze both motion and sound, some show detailed sleep diagrams that show different sleep patterns, some analyze naps and snoring patterns, etc. If you are interested in sleep tracking download several free apps and try them. This will let you evaluate features, view graphs, analyze the information tracked, and see which apps are best for you.
13. **Activity Tracker**: The Activity Tracker has three rings: one each for Stand, Move and Exercise. The goal of the Stand ring is for the user to stand and move around for at least one minute per hour, for 12 hours each day. The Move ring uses motion and heart rate data to determine calorie counts. It's like a step goal but measured in calories instead of steps. The Exercise ring looks at your heart rate and movement. The Activity Tracker also shows Steps, Distance in miles and number of flights of steps climbed each day. The object is to close each of these rings—meet all three goals, daily. Results are displayed with rings along with several other colorful graphs that clearly show patterns of movement and improvement.
14. **Nutrition**: This section recommends a large collection of Apple Apps to assist with nutrition goals, as well as a place to record nutritional data about 40 different vitamins, minerals and other nutritional intake, such as caffeine, carbohydrate, water consumption, different kinds of fat, dietary sugar, etc. Each one of these is explained in detail and there are apps recommended for more detailed information about each of them.

HEALTH ACCESSORIES

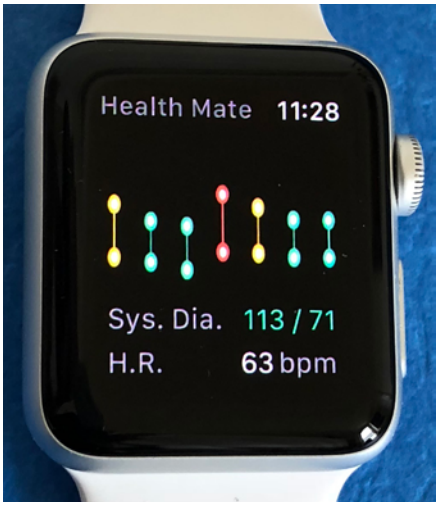
In addition to built-in features and downloadable apps, there is a group of medical and related accessories that continue Apple's mission of providing Health Options for the Apple Watch and/or Apple iPhone. Following is a brief review of some of these:

WIRELESS BLOOD PRESSURE MONITOR (NOKIA: WWW.NOKIA.COM)

This is blood pressure monitoring at its easiest. Slip on the cuff, start the app, follow the steps and the results appear on

Nokia Wireless Blood Pressure Monitor: (Nokia: www.nokia.com)

BACK TO CONTENTS



Nokia Wireless Blood Pressure Monitor: (Nokia: www.nokia.com)

your phone and on the Apple Watch. The app presents the readout as well as a color coded graphic that clearly shows if the blood pressure is Normal, Elevated, High-Stage 1, High-Stage 2 or Hypertensive crisis. Resting heart rate is also displayed and classified as normal, slow or fast. There is an area to add comments. Results are automatically synced and create a date/time chart of past measurements. (The Apple Watch app displays the latest blood pressure and heart rate results and a color coded circle displaying the descriptive Normal, Elevated, High, etc.) The phone app has clear directions and illustrations on how to sit, put the cuff on and use the device. A PDF of a more detailed manual is available on the website. Users are encouraged to share data with their doctor. The BPM is paired automatically with Bluetooth and is charged by four AAA batteries. The device is FDA cleared, and complies with international standards.

Spire Mindfulness (Spire: www.spire.io)

Spire Mindfulness Activity Tracker (Spire: www.spire.io)

SPIRE MINDFULNESS + ACTIVITY TRACKER (SPIRE: WWW.SPIRE.IO)

The Spire is a wearable device (worn next to your body- on the waistband of your pants or for women, on your bra) that tracks breathing patterns and rate to discover when you are calm or tense. If your breathing is slow and smooth for a sustained duration, Spire classifies that as calm. If fast and erratic while your body is still, it will classify as tense; medium yet consistent, while your body is stationary, it will classify as focused. Spire also counts your steps and measures how long you've been sedentary. The iPhone app lets you view your data and patterns over time and gives guidance to learn how to use your breathing to relax and reduce tension. Boosts provide short training sessions and information exercises. You can set notifications (sound and/or vibrations) so that Spire lets you know there has been a tense, or sedentary streak. When you feel the vibration, you can then visit the Boosts and select an exercise to do. The Apple Watch app shows you the day's summary of calm, tense, focus and activity minutes in a visual display. Spire can be an excellent way to introduce the concepts of relaxation and mindfulness and begin a structured training program. It teaches you to feel the differences between calm and tense and to make positive changes.

BACK TO CONTENTS

Nokia Thermo Smart Temporal Thermometer
(Nokia: www.nokia.com)

NOKIA THERMO SMART TEMPORAL THERMOMETER (NOKIA: WWW.NOKIA.COM)

The Nokia Thermo gives quick and easy temperature taking (Celsius and Fahrenheit), with automatic syncing (Bluetooth or Wi-Fi) with the iPhone and instant results on the built-in LED screen. In addition, you can enter comments, medication, photos or any other pertinent information into the Nokia Health app to share with the doctor. While taking temperature, there is no discomfort as direct contact with the skin in not necessary- you can be up to 0.5" away. Just scan across the forehead in a straight line, starting from the center of the forehead. Thermo is FDA cleared, uses AAA batteries and Nokia provides excellent reference materials and technical support.

UPRIGHT GO POSTURE TRAINER (WWW.UPRIGHTPOSE.COM)

This is a wearable device (about 2 ¼" by 1 \4") that sits on your back and gently vibrates when you slouch. It comes with a USB charging cable, a stack of adhesive pads and some alcohol wipes. With both a training and a tracking mode, the app generates a personalized training plan with a set of daily goals, which are addressed during the training time. There is a Help Center in the phone app that contains training tutorials on a large group of topics- how to find your upright posture, how to place the Go on your back, calibrating, etc. You can also search these tutorials for answers to your questions or email questions or chat online. The Apple Watch app lets you view a graphic that shows your current posture whenever you are wearing the UPRIGHT, lets you switch between Training and Tracking and gives you live training feedback as you proceed through the day. (Mac users can also see their posture avatar on their Mac as well) While training their posture, users feel like there is a real team working with them! Over a two-week training period, you will gradually increase the daily training time from five minutes to an hour, and you can put in overtime if you want. The training support is excellent and always available. The company, Upright Technologies, has several on-going small research projects in the use of the UPRIGHT GO Posture Trainer in the areas of lower and upper back pain, kyphosis and lordosis, Parkinson's disease, and Cerebral Palsy; and a planned study in the area of Osteoporosis. If you are interested in more information about this research or in participating with the company, you can contact Alex Gomberg, Physical Therapist at UPRIGHT by email at alex@uprightpost.com for further information.

UPRIGHT GO Posture Trainer (www.uprightpose.com)

ORGANIZATIONAL ACCESSORIES FOR THE APPLE WATCH

Here are some new and well-designed organizational tools made by TwelveSouth, a company that creates and sells Apple only products for all your needs. The following will help you organize and keep all your loose cables, adapters, etc. together and accessible all the time.

TIMEPORTER FOR APPLE WATCH (TWELVESOUTH: WWW.TWELVESOUTH.COM)

This is both a case and a charging stand for the Apple Watch. Measuring 1.65" deep x 2.95 inches wide x 7.05 inches long, the Time Porter holds an extra-long charging cable, USB adapter, an extra watch band, and a USB charger in a silicone-lined case. You just push your charging disc into the opening on the top of the TimePorter and place the watch on top to charge it. If you open the case a little, you have a display stand for viewing time and notifications. If you prefer nightstand mode, you can lay your watch across the TimePorter horizontally and angle the case. If you have a USB battery charger, put it inside and you'll have a

BACK TO CONTENTS

BookBook CaddySack (TwelveSouth: www.twelvesouth.com)

BookBook CaddySack (TwelveSouth: www.twelvesouth.com)

wireless charging station.

BOOKBOOK CADDYSACK (TWELVESOUTH: WWW.TWELVESOUTH.COM)

This is a leather travel case, (8" by 5.7". 1.6") designed to carry your iPhone and Apple Watch accessories. Inside are a variety of elastic bands and pockets to hold all the chargers, adapters, earphone or AirPods, miscellaneous cables, etc. you need, at home or when you are headed out for the day or for a trip. It fits easily in a drawer or on a shelf so you always know where everything is.

This article, the first in a series about the Apple Watch, is meant as an introduction and overview of the Health and Safety Options of the Apple Watch. As mentioned above, look for the upcoming review of the new Apple Watch 4 and watchOS 5 in the next DISKoveries. It will feature detailed reviews of the Fall Detection and ECG functions. For further information, visit the product website, www.apple.com, the included links, Google, YouTube, etc. and always check with your doctor before purchasing and using any medical devices.

Joan Tanenhaus, M.A., CCC, Speech-Language Pathologist/Assistive Technology Specialist, is Founder and Executive Director of Technology for Language and Learning, Inc., a non-profit organization dedicated to advancing the use of computers and technology with children and adults with Special Needs. (e-mail: ForTLL@aol.com) ■

iOS Recipes:

Increasing Access to Educational and Leisure Apps

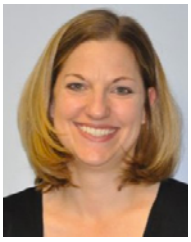
The widespread availability of iPads and other tablet devices has disrupted both educational technology and augmentative and alternative communication. In the area of educational technology, several studies have linked the use of iPads to increases in student engagement (Mango, 2015; Cardullo, et.al., 2017). In addition, productivity and utility applications are used to streamline tasks and increase student learning (Strudler & Hearrington, 2008). Results from surveys reveal that parents of students with disabilities desire assistance from professionals with understanding of mobile devices and associated apps (Meder & Wegner, 2015).

iPads, and other touch screen technology, provide an intuitive interface for many users, but what options are available when you cannot touch a touch screen (Boster and McCarthy, 2017)? For individuals with complex motor profiles, direct selection through physical (e.g., touch) or generated activation (e.g., mouse, mouse emulator or eye gaze) may not be possible. Rather, these individuals rely on indirect selection (scanning) techniques to access systems (ASHA, n.d.). For students with complex communication and motor needs, switch use offers a means of interacting with the environment and others (Roche, et.al., 2015). Switch control is one of the many accessible features available within the iOS operating system to improve access for individuals with disabilities (Apple, n.d.). However, most app developers are not optimizing their apps for switch access.

iOS switch recipes, with the ability to assign actions or custom gestures to switch activations, can help increase access to apps not already optimized. Switch access and switch recipes require the appropriate hardware, knowledge of the set-up process and most importantly the ability to select and implement apps that accomplish the desired task. With a little time, practice, and patience, you can create recipes to enable a user to interact with the screen for a variety of pursuits.

HARDWARE & ACCESSORIES

An iOS device (e.g., iPad, iPod Touch, iPhone) with version 10 of iOS or later is recommended for switch access and recipes. As for switches, almost any switch will work, however you must have a mechanism for the switch to interface with the iOS device. This could be wireless using compatible Bluetooth



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BACK TO CONTENTS

technology (e.g. AbleNet's Blue2 or Tecla-e) or a wired switch interface. There are a range of wired switch interface options on the market, each with its own pros and cons. Depending on the switch interface you might also need an adapter. For the examples here, we are using a Don Johnston Switch Interface Pro 6.0 and an Apple brand Camera Connection Kit adapter.

Process

As with so many processes, the steps are simple; success lies in the planning and execution of the details. The general steps for creating iOS recipes are:

1. Select an app and identify the motor acts to replicate.
2. Draw a template of the motor acts.
3. Set up one switch for each motor act.
4. Create the recipe.
5. Assign the switches
6. Select actions or record gestures
7. Set your recipe to launch
8. Turn on switch access
9. PLAY!

There are ample resources that provide detailed step-by-step directions or videos for setting up switches and creating recipes, such as those include in the resources. Given that fewer supports for selecting apps and using switch recipes in educational and therapeutic activities are available, this will be our focus.

Selecting Apps

With more than two million apps available in the App Store (Livewire, April 2018), choosing apps can be a challenge. Considering the cognitive, language, motor and vision profile of the student adds a new layer of complexity. When selecting apps for switch access, we first look for apps that will fulfill a purposeful task for the student. The task might be academic, leisure or communication based. Then, we consider the student's interest and motivation to use the app. Finally, we must consider the motor task(s) of the app and whether the act(s) can be mimicked through an existing action or custom a gesture.

Understanding the provided actions and custom gesture feature will help to identify those apps with motor tasks that are conducive to switch access through recipes. The primary pre-programed actions are: tap middle of screen, right-to-left swipe, left-to-right swipe and hold a point (which you select). These actions work well for very simple motor tasks like turning a page in a book (left-to-right swipe) or playing a drum (hold a point). Most apps require more complex motor acts, such as tapping and dragging in a specific location on the screen. These will require the use of custom gestures. Apps with a small set of distinct motor acts lend themselves to switch access through custom gestures. Also, consider apps that can be used cooperatively. For cooperative engagement, the target student will use switch access to complete the simpler motor act while a partner completes more complex motor acts. Apps that use the accelerometer (i.e., requiring tilting the iOS device in space) cannot be accessed with recipes.

STARTING SIMPLE WITH AN ACADEMIC ACCESS TASK

The simplest place to start is a single switch and single motor act. For this simple setup, we will use an academic access task example. We selected *Explain Everything Whiteboard*, an interactive whiteboard and screencasting app. This app allows for the creation of interactive tutorials and presentations. The academic task for our target student was to revisit biology lectures at home to prepare for a quiz. Explain Everything is our go-to tool for uploading a PowerPoint, adding annotation and dropping in audio to create this type of preview/review video of class content. While the app has many other features and broader use potential for exploring or extending academic concepts, a simple video meets our student's current need.

Our goal was to allow the student to play/pause the video in order to control the pace of the review, while preserving a second switch for accessing a dedicated communication device through auto scanning. Since the app requires a single tap in the bottom center of the iPad screen, we were able to setup the student's left head switch with a custom gesture for this simple motor act. Once the *Explain Everything* recipe was launched on iOS device, the student was able to review his lectures independently starting and stopping the video as needed. (See Image 1)

BEYOND THE BASICS WITH A LEISURE TASK

Stepping beyond the basics takes us to using two switches to complete two motor acts within an app. For this example, the task is a leisure activity. Our target student's motivation and attention to the iOS device is highly variable. In addition, fluxuations in motor control and cortical visual impairment needed to be considered. For this activity the goal was not independence, but rather meaningful switch use, increased visual attention and discriminating between the function of two switches.

We identified the *SpinArt* app by Pseudo Studios, Inc. due to its simple motor acts that did not require precise timing and its high visual interest. The two motor acts that were identified for the student to complete through switch access were starting/stopping the spin and adding paint to the virtual paper. The motor act for controlling the spin requires a tap on a specific location to start and stop the spinning. The motor act for painting requires touching within the boundary of the paper and dragging the paint across the page. For a direct access user, painting has infinite options for how the paint is applied to the page, changing the outcome of the art. For switch access to be successful we needed to identify a single motor act that could achieve a satisfactory outcome. Through trial and error, we discovered that tapping, then painting a "+" on the page created an interesting visual effect. With our two physical switches setup and each assigned a custom gesture (spin and paint), we could then launch

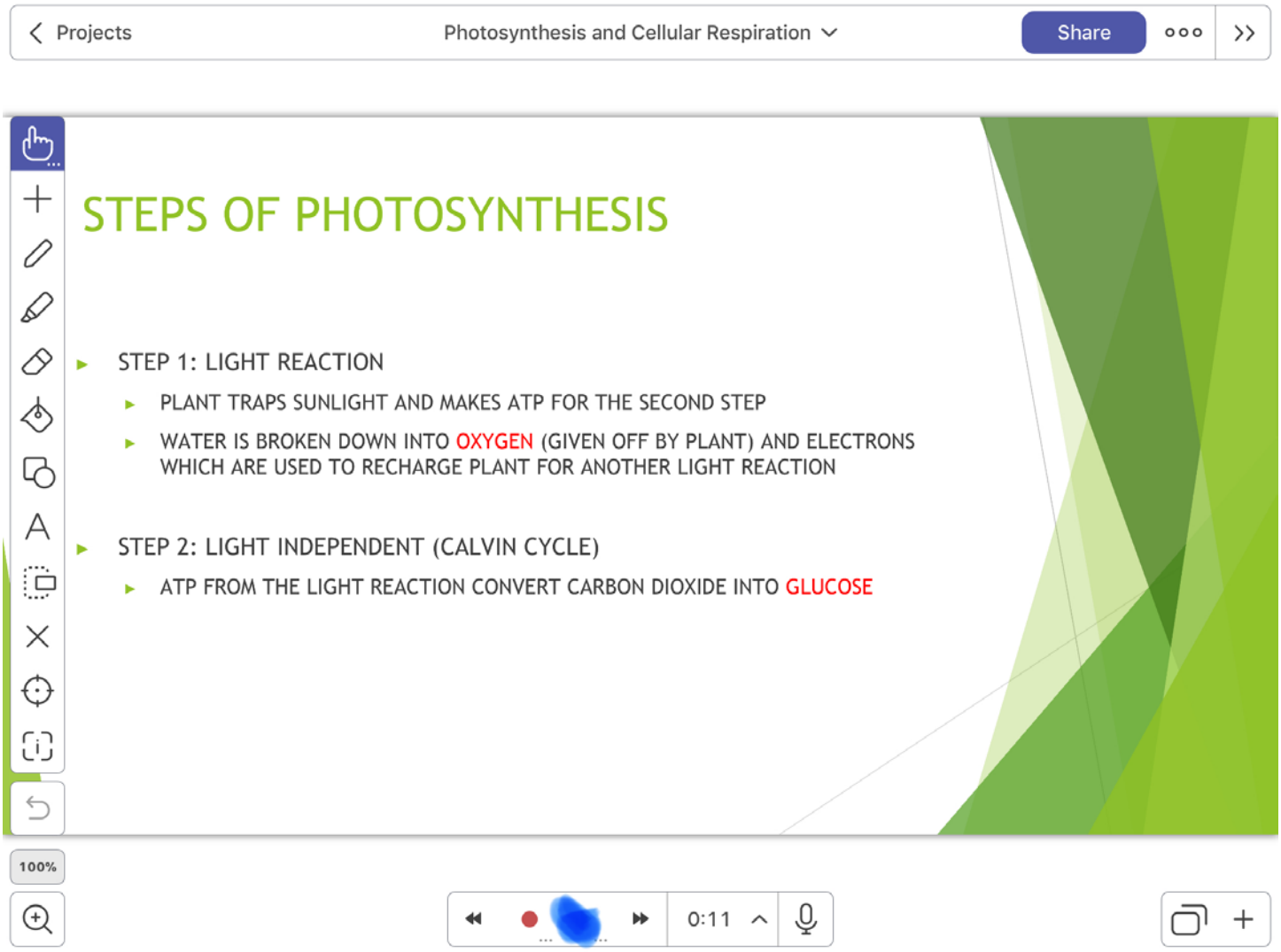

Image 1 - Screenshot with the custom gestures drawn to visualize a single motor act (play/pause) in Explain Everything Whiteboard

the recipe. The clinician completed the additional motor acts, allowing the student to accomplish those actions identified as the most salient to meet the goals. (See Image 2)

ADVANCED SWITCH RECIPE WITH AN INTERACTIVE COMMUNICATION TASK

Multiple motor acts can be made accessible, even with a single switch using the Don Johnston Switch Interface 6.0. For this communication focused task, we will use a combination of communication methods, include a play partner and, of course, incorporate plenty of meaningful switch activations. In this example, our target student will use two physical switches, each set up to act as four unique switches to complete eight distinct motor acts within the app. Our target student will use partner-assisted scanning to make choices and guide the action of the play partner. The play partner will be responsible for those motor acts within the app that are either less conducive to creating gestures or are operational (i.e., pressing next or done) in nature.

For this activity we selected the pretend baking app, *Cake Pop Maker* by Bake More Cake Maker Inc. This app allows the user to select a cake flavor, add ingredients, stir the batter, bake, decorate and pretend to eat a cake pop. The action happens across several screens that require a combination of simple and complex motor acts. By balancing the motor demands and the interest of the step, we identified eight distinct motor acts for our target student to complete. These included adding the four ingredients (four motor acts), stirring the batter (one motor act), and eating the cake pop (three motor acts). In addition, two tasks were identified that would allow the target student to direct the action of the partner through partner assisted scanning. These include the initial selection of the flavor of cake and the decorating process. The remaining operational motor acts will be completed by the partner. The partner will also have the critical role of adjusting the switch setting throughout the play activity.

BACK TO CONTENTS

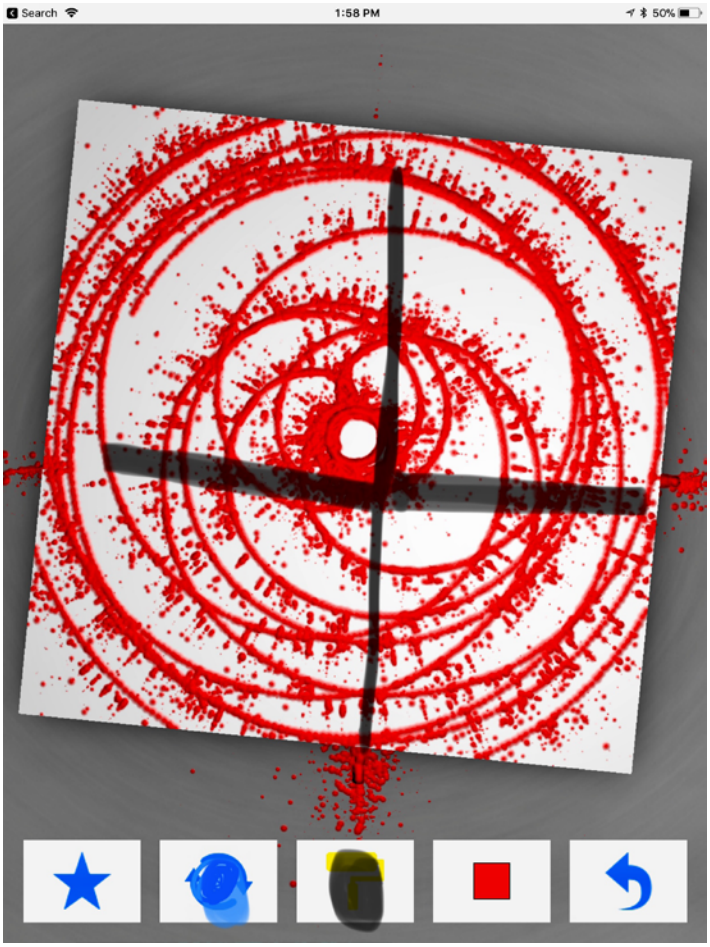

Image 2 - Screenshot with the custom gestures drawn to visualize the two motor acts (blue = spin and black = paint) within the SpinArt app.

Switch	Setting (Port)	Motor Act/Custom Gesture Action
Superman	arrow up	Select and put in item 1
	arrow down	Select and put in item 2
	arrow left	Select and put in item 3
	arrow right	Select and put in item 4
Mustache	space	Select spoon and stir
	enter	Tap to eat 5 bites
	tab	Tap to eat 5 more bites
	shift tab	Tap to eat LAST bite

Table - Two physical switches "Superman" and "Mustache"

THE SWITCH SET-UP

In this example our two physical switches are labeled "Superman" and "Mustache" based on their decorative tape covers. Each switch will be combined with a port on the switch interface. This gives us eight virtual switches: Superman arrow up, Superman arrow down, Superman arrow left, Superman arrow right, Mustache space, Mustache enter, Mustache tab, and Mustache shift tab. When we setup our switches in the switch menu, we must be sure that switch is in the correct port on the Don Johnston switch interface and label each switch carefully. Once each of the switches has been added to the iOS device, we can assign and create a gesture for each one in our new Cake Pops recipe. The table below outlines each switch and their corresponding motor act/custom gesture.

(See image 3, 4 and 5) Once the recipe for using the switches is created it can be launched and tested. You may need to adjust the custom gestures or switch order when you first attempt a more advanced recipe with multiple physical and virtual switches. Also, with more advanced recipes, an instructional play script that includes information about the shared responsibilities of

Image 3 - Screenshot with the custom gestures drawn to visualize for the four motor acts (select and put in items) within the Cake Pop Maker app add ingredients screen.

Image 4 - Screenshot with the custom gestures drawn to visualize for the stir motor act within the Cake Pop Maker app on the stir screen.

Image 5 - Screenshot with the custom gestures drawn to visualize the eat motor act within the Cake Pop Maker app on the eating the treat screen.

the task, the communication expectations, and operation of the switch interface settings is helpful. By providing this play script, the activity can be used not only within a structured therapeutic session but also with other play partners at home or school.

In this example, the play script tool provides a guide for using the cake recipe from the Cake Pop Maker app and the switch access recipe together, in a meaningful interaction. The steps follow the sequence of the tasks within the app and support the process of shared responsibilities for partner assisted scanning, adjusting the settings on the switch interface to support access to different gestures used in play, and completing operational tasks to advance the game.

SAMPLE PLAY SCRIPT FOR CAKE *POP MAKER APP*

Step 1: Picking a Cake Flavor

Partner: Check that the switches are positioned correctly for the student, the Superman switch is in the arrow up port and that the recipe is active. Use partner assisted scanning (or other communication tools) to ask what flavor cake to put in: "Which one should I put in? Yellow, Vanilla, Chocolate, Strawberry, Lemon, Raspberry Swirl"

Target Student: Give directions to play partner by selecting a flavor.

Partner: Tap to add the cake flavor to the bowl allowing the ingredient to reveal themselves.

Step 2: Adding Ingredients

Target Student: Uses the Superman switch to activate a custom gesture to add the first ingredient.

Partner: "Okay, the <label ingredient 1> are in the bowl." Change the Superman switch to the arrow down port and ask, "We are ready for the <ingredient 2>."

Repeat until all four ingredients are in the bowl. Partner should ensure that the switch is in the correct port each time, then switch so the the Mustache switch is in the space port.

Step 3: Mix the Batter

Target Student: Uses the Mustache switch to stir the batter.

BACK TO CONTENTS

In this example, the client can stir "more" if needed or the partner can select "skip" to move along. Please note that using the skip button also skips ahead to the decorating step.

Step 4: Fill the Tin and Put in the Stick

Target Student: Uses partner assisted scanning (or other communication tool) to say "put it in", "do you it", "help please" or use other language targets to direct the action of others.

Partner: Completes motor acts at the direction of the target student by dragging the batter into each hole, then presses next.

- Wait for the baking process (and ad if you haven't purchased the app)

Target Student: Uses partner assisted scanning (or other communication tool) to say "put it in", "do you it", "help please" or use other language targets to direct the action of others.

Partner: Completes motor acts at the direction of the target student by dragging a stick into each cake pop, then pressing next.

- Wait for the cooling process

Step 5: Decorate the cake pop (optional)

If desired, use partner assisted scanning or other communication system talk about the decoration and work together to decorate your cake pop. You can also take a screenshot to talk about, write about, or share later. Partner presses "done" when they are ready to move on.

Step 6: Eat the Cake Pop

Partner: Check to see that the Mustache switch is in enter.

Target Student: Uses the Mustache switch to take five bites of the cake pop.

Partner: Adjusts the switch to tab.

Target Student: Uses the Mustache switch to take five more bites of the cake pop.

Partner: Adjusts the switch to shift tab.

Target Student: Uses the Mustache switch to take the last bite of the cake pop.

** Time between bites provides an opportunity to talk about the pretend treat in between activations or to continue the interaction and eat "more". (See image 6)

Image 6 - Photograph showing the iPad with Cake Pop Maker app, Superman and Mustache switches, Apple Camera connection dongle and Don Johnston switch interface.

TIPS AND TROUBLESHOOTING

Using switch recipes and custom gestures to extend access can range from a simple single switch/motor act to a complex setup that includes many switches/motor acts. Troubleshooting your recipes will be an important part of your process to ensure successful experiences for students. Here are some tips and troubleshooting strategies:

- Turn off switch access while programming recipes.
- Create recipes on the device the client will use; recipes cannot be transferred between devices.
- Utilize the accessibility shortcut feature to quickly turn on/off switch access.
- Turn off the orientation lock.
- Ensure the iOS device is orientated to match the app when creating gestures.
- Draw multiple motor acts for an app on a single sheet protector using different colored markers.
- Label your drawing of motor acts for reuse, especially if you might need to setup multiple iOS devices.
- Check your "launch" settings if the switches are not working

BACK TO CONTENTS

as expected.

With practice, creating iOS switch recipes gets faster. With experience, you will start to look at apps in terms of motor acts and how actions and customs gestures can make an app accessible for individuals for whom direct access is not an efficient method.

PRODUCTS GUIDE--HARDWARE TO USE WITH YOUR IOS DEVICE

Apple Camera Connector Kit, Apple, $29, https://www.apple.com/shop/product/MD821AM/A/lightning-to-usb-camera-adapter

Blue2 Bluetooth Switch, AbleNet, $185, https://www.ablenetinc.com/technology/switches/blue2-bluetooth-switch

Don Johnston Switch Interface 6.0, Inclusive TLC, $95, https://www.inclusivetlc.com/don-johnston-switch-interface-pro-6-0

Jelly Bean Switches, AbleNet, $65, https://www.ablenetinc.com/jelly-bean-twist

Tecla-e, Tecla, $499, https://gettecla.com/products/tecla-e

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Cake Pop Maker, Bake More Cake Maker, Inc, free with ads; offers in-app purchases, https://itunes.apple.com/us/app/cake-pop-maker/id500941697?mt=8

Explain Everything Whiteboard, Explain Everthing sp z o.o., free or paid $9.99; offers in-app purchases, https://itunes.apple.com/us/app/explain-everything-whiteboard/id431493086?mt=8

Spin Art, Pseudo Studios, Inc., free with ads; offers in-app purchases, https://itunes.apple.com/us/app/spinart-free/id390272744?mt=8

How to set up the "Turn Pages" Recipe in Apple's Switch Control, Tecla, https://wvww.youtube.com/watch?v=7jVMmAAPDTY

RESOURCES--PDF GUIDES

iOS 10 Switch Control Simplifying Switch Access with Switch Control Recipes, AbleNet, https://www.ablenetinc.com/downloads/dl/file/id/754/product/178/ios_10_switch_control_simplifying_switch_access_with_recipes.pdf

iOS 11 Accessibility Switch Control - The Missing User Guide, AbleNet, https://www.ablenetinc.com/downloads/dl/file/id/770/product/178/ios_11_user_guide.pdf

Setting up an iPad switch recipe for Drawing with Stars app, SENICT Webinars & Video, https://www.youtube.com/watch?v=bNv_l1AbrVs

RESOURCES--VIDEOS

How to set up the "Turn Pages" Recipe in Apple's Switch Control, Tecla, https://www.youtube.com/watch?v=7jVMmAAPDTY

Setting up an iPad switch recipe for Drawing with Stars app, SENICT Webinars & Video, https://www.youtube.com/watch?v=bNv_l1AbrVs

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BACK TO CONTENTS

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Language Stars: A Pilot Program Aligning AAC and ABA Practices

We work as AAC coaches/SLPs in a special education cooperative district. We support students, typically with complex communication needs, in a variety of educational settings including general education districts, self-contained classrooms/programs in general education buildings, and therapeutic day schools. During the 2016-2017 school year, our department began supporting two programs for students with Autism Spectrum Disorders (ASD). Both of these programs, a therapeutic day school and a program of self-contained classrooms in general education buildings, instruct students using Verbal Behavior (VB) programming and strategies. We started the school year with a crash course in VB practices; it felt like learning a new language! Mand? Tact? Huh? As we started observing in classrooms, we noticed that students' target vocabulary for instruction consisted almost exclusively of fringe vocabulary. In VB lingo, they were being taught "specific vocabulary". See Table 1.

As AAC coaches, we saw an opportunity to incorporate core vocabulary into these already effective teaching practices for students with ASD. When we mentioned this idea to the programs' administration, we were met with some thoughtful questions about how these recommendations would fit within the instructional practices of the programs. For example, program staff would prefer to teach a student a specific word such as "cookie" rather than the core phrase like "I want it" because the

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BACK TO CONTENTS

VB → AAC	
Mand	Request
Generalized Mand	"More", "Help", "Please"
Tact	Label
Intraverbal	Communicating about something not present
Specific Vocabulary	Fringe Vocabulary
• General/Non-Specific	Core Vocabulary

Table 1

Core Tenants of VB and AAC	
VB	AAC
• Intensive teaching	• Language modeling / Aided Language Stimulation (ALS)
• Natural environment teaching (i.e. generalize mastered targets in functional setting)	• Teach individual targets in the natural environment through frequent modeling with no expressive requirements (i.e. noncontingent)
• Start with specific vocabulary based on individual motivation	• Start with core vocabulary
• Build up to core vocabulary	• Build up to fringe vocabulary based on individual motivation

Table 2 - Core Tenants of VB and AAC. (Cress & Marvin, 2003; Romski & Sevcik, 1996; Light & McNaughton, 2012; Bedwani, Bruck, & Costley, 2015; Potts & Satterfield, 2013; Sundberg & Michael, 2001; Granpeesheh, Tarbox, & Dixon; 2009).

referent would be clearer and would mitigate potential challenging behavior due to communicative frustration. The classroom SLP in K-2 classrooms in both programs had experience working in core classrooms and helped bridge the gap between these two schools of thought. From our perspective, based on best practices in AAC, we want to teach language that gives

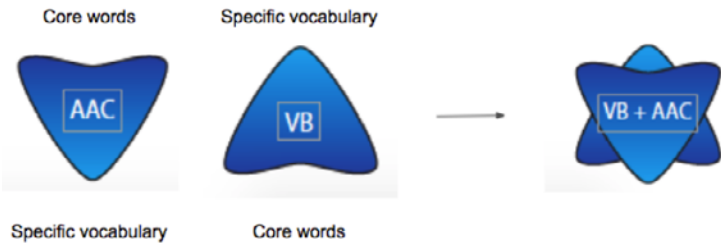


Figure 1: Language Stars. This image depicts how the program aligns language teaching practices from the perspectives of AAC practices and VB practices.

kids the most bang for their buck; target vocabulary should be functional, motivating, and flexible. After discussions about the practices in each field throughout the school year, we agreed to come together during the 2017-2018 school year and share the best teaching practices and language strategies from both VB and AAC instruction in order to capitalize on the strengths of each approach and provide well-rounded language instruction. See Table 2 and Figure 1.

COMPONENTS OF LANGUAGE STARS

Two classrooms participated in the Language Stars Program - a K-2 classroom in the therapeutic day school for students with ASD and a self-contained K-2 classroom for students with ASD in a general education building. Staff in both classrooms included a special education teacher, an SLP (our co-author who worked in both rooms 2.5 days each), several teaching assistants, a BCBA, OTs, and PTs, in addition to the support of the AAC coaches. An overview of the program was presented to all of the program staff. Specific training related to the components of the program and the techniques and expectations for staff were provided to the staff members in each of the two participating classrooms. Additionally, coaching support was provided throughout the school year for the program as well as for individual student support and AAC evaluation/trials/implementation.

We designed the program so that core words would be incorporated into the explicit language instruction already in place in the classrooms. In order to select the core words to be targeted, we rated the 82 core words on the core board on a 1-3 scale (1=rarely, 2=occasionally, 3=frequently) based on the opportunity to model each word in each scheduled activity. The words were then ordered from highest frequency to lowest frequency. Core words were explicitly taught by incorporating VB and AAC practices in the following ways:

- **Introduction of the word via a core language group.** Run by either the classroom SLP, special education teacher, or teaching assistant, each group consisted of a core word book, a song featuring the core word, and a related activity during which the core word could feasibly be modeled frequent-

BACK TO CONTENTS

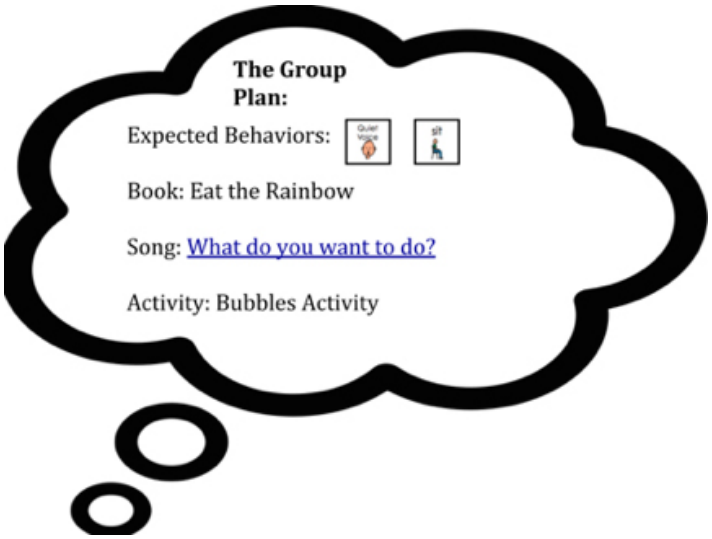
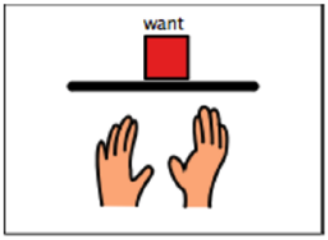


Figure 2: Group Plan Example. This image depicts an example group plan or agenda for core language group.

ly. New core words were introduced every two weeks in the self-contained program and monthly in the therapeutic day school. See Figure 2.

- **Intensive teaching targets.** As part of each students' VB programming, their educational team selects language targets. The student is presented with 80% mastered targets and 20% non-mastered targets in a work session. The targets are divided into language categories (e.g. mand, tact, intraverbal, etc.) in order to describe which function the student will be working to learn. For example, a student who is particularly motivated by vehicles might be working on several common vehicle names as targets. The student is working on tacting (i.e. labeling) "motorcycle" and "car" when showed a photo. The student is working on an intraverbal target, "bus", by filling in the blank in "The Wheels On the _____" or by answering the question, "What did you ride to school in?". The core word symbol of the week/month was added to the students' VB cards as part of their 20% of non-mastered targets. The students were presented with match to sample, tact (i.e. label), or listener response (i.e. receptive identification) tasks. See Figure 3.

- **Pick and Play.** Masked core boards were created for use during play. At the start of the pilot program, each core word of the week/month was paired with an activity and a corresponding lesson plan was created. It included examples of phrases to model that were organized by language function using VB categories/terminology (i.e. mand for item, mand for information, intraverbal and tact). Each of these phrases included the core word plus the associated fringe vocabulary for the activity. The Pick and Plays were used during Natural Environment Teaching (NET), which is a scheduled activity during each student's school day. During NET, students direct



Receptive ID	"Give me the _____."	
Tact (noun/verb)	"What is it?" _____ "What is/are he/she/they doing?" _____	
Receptive **Feature**	"Give me the one that is _____."	
Tact **Feature**		
Intraverbal **Feature**		
Receptive **Function**	"Give me the one that _____."	
Tact **Function**		
Intraverbal **Function**		
Receptive **Class**	"Give me the one that is _____."	
Tact **Class**		
Intraverbal **Class**		

IPSD 204/Cagney/DST/2013

Figure 3: VB Card Example. This figure is an example of a card used to explicitly teach vocabulary during intensive teaching.

the play activities while staff members support generalization of language targets. After creating these pick and plays for several specific activities, we noticed that we were identifying the same 30 or so core words as potential targets for modeling/use. Staff members were also providing feedback that students would often move quickly from activity to activity. This made it difficult to model language as the staff member would need to switch to the new board/lesson plan that was associated with the new activity. Therefore, we created a single general play board with those 30 core words and attached flippable fringe strips with specific vocabulary related to common activities at the top. We also created a single lesson plan for each core word of the week/month, rather than having many lesson plans for specific activities, to be used in conjunction with the general core board. This way, no matter the activity the staff could use one play board for a variety of activities by flipping to the associated fringe and continuing to model the examples phrases from the lesson plan.

By using the VB terminology to describe the widely accepted AAC practice of Aided Language Stimulation (ALS), we bridged the gap between VB and AAC for staff members making the language modeling/support more accessible. Additionally, using the VB terminology led us to think more specifically about the use of the vocabulary and how to explicitly teach students multiple

BACK TO CONTENTS

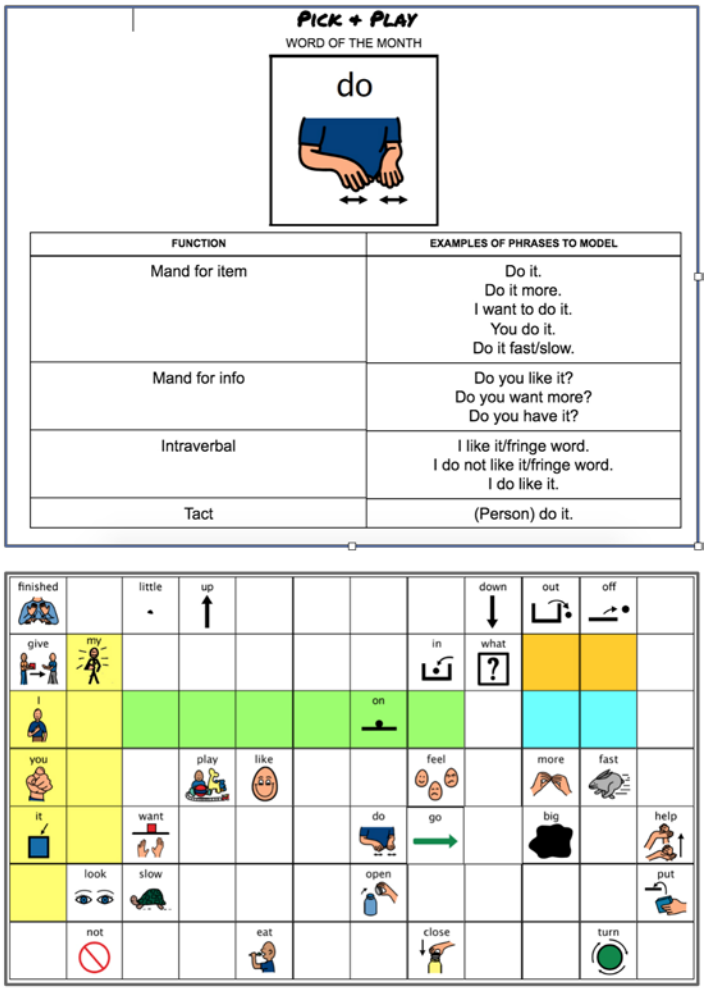


Figure 4: Pick & Play Example. This is an example of a Pick & Play lesson plan and the general play masked core board.

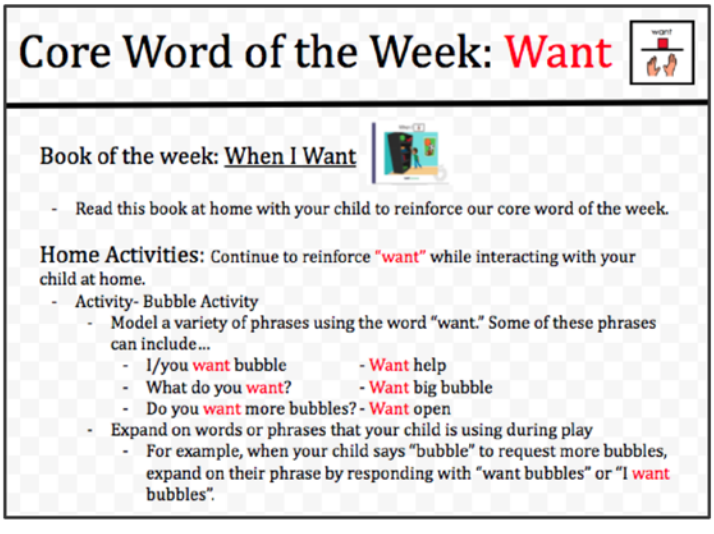


Figure 5: Home Component Example. This is an example of a lesson plan sent home with students to facilitate carryover of skills.

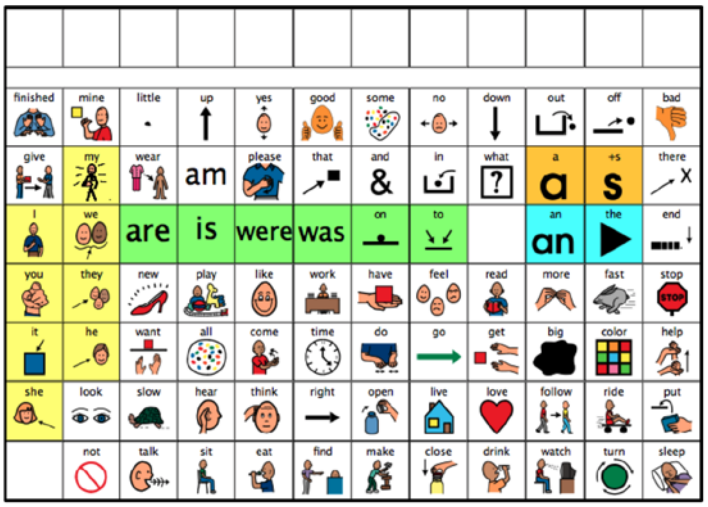


Figure 6: Core Board. This is an image of the core board based on the LAMP Words for Life 84 1-hit vocabulary organization.

ways to use one vocabulary target. See Figure 4.

- **Home component.** For each new core word a parent letter was sent home that included ideas for activities during which the target core word could be modeled frequently, instructions for modeling, and a copy of the core word book. See Figure 5.

Given the evidence base for the use of Language Acquisition through Motor Planning (LAMP) with children with ASD, we based the core boards on the LAMP Words for Life 84 1-hit communication board (Bedwani, et al, 2015; Potts & Satterfield, 2013). However, we included PCS symbols per staff request, which was the standard symbol set in both programs, and replaced several items (e.g. said > open; need > close; me > give). We retained the motor plan as closely as possible when editing the board. The core boards were accessible throughout the classrooms including Big Core boards on the wall in the group area, medium boards throughout instructional areas and traveling with students, and small boards attached to individual student PECS books. The core board was also programmed with voice output on an interactive whiteboard at the therapeutic day school. See Figure 6.

OUTCOMES

We collected data from several sources including the Advancing Social-Communication And Play (ASAP) play rating scale (Watson, et al; 2011), videos of students in group and play/NET, and a social validity survey completed by participating staff members.

The ASAP play rating scale describes specific play skills in four levels of play (i.e. exploratory, relational, functional, and symbolic) that are associated with typical play development for children aged 2-30 months. Exploratory play includes skills like "child picks up a toy and looks at it". An example of a relational play skill is "child takes pieces of a toy apart". Functional play

includes "child plays with toys in functional or simple pretend ways". "Child makes doll or figure move or do things as if it were alive" is an example of symbolic play. A play rating scale was completed for each student at baseline and at the end of the 17-18 school year. Skills were rated either emerging, if the skill had been observed, or mastered, if the child demonstrated 3 different unprompted examples of the skill. In the self-contained program, five out of six students demonstrated at least one new skill. Two students demonstrated skills at new levels of play. In the therapeutic day school, four out of six students demonstrated at least one new skill. Two students demonstrated skills at new levels of play.

Videos were recorded of each student engaging in play/NET for five minutes both at baseline and at the end of the 17-18 school year. Data on the total number of times students used a targeted core word either verbally, using individual AAC systems, or using the core board. In the self-contained program, students used targeted core words 39 times in play at baseline and 63 times at play in the final videos, which corresponds to a 38% increase in use of targeted core words. In the therapeutic day school, students used targeted core words 4 times in play at baseline and 34 times at play in the final videos, which corresponds to a 88% increase in use of targeted core words. See Table 3.

Videos were recorded of group instruction in each classroom at baseline and at the end of the school year. In the self-contained program, group videos were recorded in two small groups of 3-4 students. In the therapeutic day school, one group video was recorded of all six students. Each of the three groups was recorded for 10 minutes at baseline and at the end of the school year. The data for the self-contained program was combined into one set of results for a total of 20 minutes of video. Data was collected on the frequency of staff members pointing to any of the 82 core words on the core board. The frequency with which staff members pointed to any of the 82 core words increased by 92% in the self-contained program and by 100% in the therapeutic day school. Data was collected on the number of times students used any of the 82 core words on the core board. The frequency with which students used any of the 82 core words increased by 82.5% in the self-contained program and by 77% in the therapeutic day school. See Table 4.

We developed a social validity survey to gauge staff members' impression of and reflections on the Language Stars Pilot Program. Responses were gathered from teachers, teaching assistants, and the instructional coach. Staff members commented on several strengths of the program such as the clear path from intensive teaching to NET and the flexibility of core for different VB language functions. Staff members noted drawbacks including that it was difficult to balance play goals from the students' IEPs with the modeling required during play and that students were occasionally distracted by the core boards.

Program	Baseline	Final	Percent Increase
Self-Contained	39	63	38%
Therapeutic Day	4	34	88%

Table 3: Student Use of Targeted Core Words

We also noted some unintended results of the pilot program. Once therapeutic day school staff members observed students learning to use core boards for communication, they initiated several requests for high-tech AAC evaluations and trials for students. In previous school years, high-tech AAC was rarely utilized in this setting. One student in the self-contained program, demonstrated marked progress in self-regulation throughout the school year. Staff used the core board to model self-talk during periods of dysregulation, which resulted in the student returning to a calm state. Essentially, staff members were creating social stories on the fly using the core board. Additionally, the self-contained teacher noted that many of the core words tied to her sight word instruction. She was able to integrate the core boards into literacy instruction for students.

CONCLUSION

The Language Stars Pilot Program was designed to align AAC and VB practices in order to utilize the strengths of each approach to facilitate language development for students with ASD. Throughout the school year, we made adjustments to the components of the program in order to ensure that the materials were easy to incorporate into the classroom environment.

Based on the data collected, students were using more core vocabulary by the end of the 17-18 school year. Overall, staff members shared positive impressions of the program, although we acknowledge that full buy in will take time. Our next steps include expanding the use of the materials across more VB classrooms in the self-contained program and the therapeutic day school. Additionally, we intend to continue collecting data on both staff and student behaviors to examine the effectiveness of the core language instruction. We appreciate the support of the administrator, program supervisor, and classroom staff throughout this program and into the future.

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BACK TO CONTENTS

Program		Staff Point to ANY Core Words		Student Verbally Says ANY Core Word	Student Points to ANT Core Word on Core Boards		Student USES Any Core Word	
	Baseline	Final	v	Basline	Final	Basline	Final	Percent Increase of Combined Use
Self-Contained Program (2 10-minute groups of 3-4 students)	8	101	92%	27	153	0	1	82.5%
Therapeutic Day School (1 10-minute group of 6 students)	0	48	100%	5	10	0	12	77%

Table 4: Staff and Student Use of All 82 Core Words

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By Sarah Moore and Kara Meaux
Thursday, October 11, 2018
3:30 pm – 4:30 pm (CDT)

Some Things ARE Remotely Possible For AT: Part 1 – Overview of Remote Assistive Technology Services

By Gayl Bowser
Wednesday, October 17, 2018
3:30 pm – 5:00 pm (CDT)

Home is Where the Supports Are! Supports in the Home for Those with Autism

By Mo Buti
Thursday, November 1, 2018
3:30 pm – 5:00 pm (CDT)

Early Childhood Assistive Technology

By Ellie Hamilton
Thursday, November 8, 2018
3:30 pm – 5:00 pm (CST)

Some Things ARE Remotely Possible For AT: Part 2 – Practical Considerations for Developing Remote AT Services

By Gayl Bowser
Wednesday, November 14, 2018
3:30 pm – 5:00 pm (CST)

Getting Started: Considerations for Selecting and Customizing AAC Apps

By Lauren Enders
Tuesday, December 4, 2018
3:30 pm – 5:00 pm (CST)

Some Things ARE Remotely Possible For AT: Part 3 – Planning and Implementing Remote AT Services

By Gayl Bowser
Wednesday, December 12, 2018
3:30 pm – 5:00 pm (CST)

Starting a Core Vocabulary Initiative & Tips for Getting District-Wide Buy-In

By Kelly Key
Tuesday, January 15, 2019
3:30 pm – 5:00 pm (CST)

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By Kelly Key
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BACK TO CONTENTS

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Accessing Customized Technology Through Transdisciplinary Intensive Pediatric Intervention to Promote Functional Life Skills

CI Pediatric Therapy Center's Advance program uses a transdisciplinary model of intensive therapy, which can facilitate positive outcomes in children and young adults with multiple neurological conditions through the acquisition of new functional skills using efficient and energy conserving movement patterns. When this model is paired with parent education and access to customized technology throughout the process, outcomes improve and home carryover is optimized.

ANNABETH MARTINO, OTD, OTR/L, is an occupational therapist at CI Pediatric Therapy Centers and the Director of Programming. She earned a Master's degree in Occupational Therapy from the University of Scranton, and her clinical doctorate in Occupational Therapy from Mount Mary University. Her clinical interests in providing collaborative therapy and assistive technology recommendations began while she was working at an approved private school for children with cerebral palsy where she worked to customize access for augmentative communication devices, environmental control units, and power wheelchairs. Annabeth has had training in customized wheelchair seating, neurodevelopment treatment, Every Move Counts, PODD, and sensory-behavioral approaches to therapy. She has presented at state, national, and international conferences about OT's role in creating customized alternative augmentative communication systems, the importance of family-centered transdisciplinary therapy.

MARA JONET, MA, CCC-SLP, is a speech language pathologist at CI Pediatric Therapy Centers in Madison, WI. She received her Master's degree from the University of Massachusetts- Amherst. Her clinical interests include children with complex communication needs, including those who use augmentative and alternative communication (AAC), and pediatric feeding. She is passionate about using family and child centered care and working collaboratively with an interdisciplinary team. Mara has experience in multiple settings including inpatient and outpatient pediatric settings and schools. She is trained in the Get Permission Approach to Sensory Mealtime Challenges and Pragmatic Organization Dynamic Display (PODD). She has presented at national and international conferences on the topic of customized alternative augmentative communication.

TAYLOR DEVALK, PT, DPT, is a physical therapist at CI Pediatric Therapy Centers and the Director of Development. Taylor received his Doctorate of Physical Therapy and Bachelor of Science from the University of Wisconsin-Madison. He is trained in the Intensive Model of Therapy and TheraSuit Method. He has given multiple national presentations at interdisciplinary conferences. Taylor specializes in working with children with neuromuscular disorders, pediatric orthopedic rehabilitation and working with siblings to enhance the overall therapy experience for each child and their family. Taylor's prior work experiences include: working with the Birth to Three Model, school-based physical therapy and outpatient rehabilitation. Taylor is passionate about pediatric therapy because of his two sisters with neuromuscular disabilities who are his inspiration.

BACK TO CONTENTS

Children with complex medical profiles require a multitude of therapy services to meet their various needs, which can facilitate their ability to fully participate in their daily routines. Although the body of research focusing on the low-incidence population is growing, there continues to be debate about the type, frequency and approach to therapy, which is most beneficial. Research has demonstrated that an intensive model of therapy can yield more optimal outcomes compared to a traditional model of therapy for children and young adults with complex medical profiles, (Bailes et al., 2011; Mattern-Baxter, Bellamy, & Mansoor, 2009). Further, research regarding best therapeutic practice for children with multiple neurological conditions indicates that a combination of direct therapy intervention which addresses the acquisition of physical skills must be paired with providing clients and their families with access to resources and assistive technology to optimize outcomes, (Graybill, Self-Brown, Lai, Vinoski, McGill, & Crimmins, 2016). Therefore, incorporation of caregiver education and empowerment, as well as context-driven intervention (therapy which focuses on equipment trialing and training during sessions) can enhance the outcomes of both traditional and intensive therapy models for this population. Research has also indicated that transdisciplinary collaboration can support the needs of these individuals including those with complex communication needs, (Brady et al., 2016; Peabody et al., 2016). A transdisciplinary approach to an intensive model of therapy can facilitate positive client outcomes related to participation in functional life skills across environments, as a result of both an improvement of physical skills as well as access to resources and technology solutions for both the client and caregivers. The Advance Program, an intensive therapy program at CI Pediatric Therapy Centers located in the South Central Wisconsin area, is a unique and customized transdisciplinary approach to intensive therapy, which focuses not only on the physiological benefits of intensive physical and occupational therapy, but also capitalizes on utilizing this model to provide parent education and context-based access solutions by a multidisciplinary team.

INTENSIVE THERAPY

The difference between traditional therapy and intensive therapy is the frequency. In the research, intensive therapy is defined as a high frequency therapy program focused on improving functional skills yield by this increase in frequency as compared to traditional therapy services. Typically, in intensive therapy models, frequency varies between three-to-five times per week for 120-240-minute sessions for two-to-four weeks, compared to traditional therapy that is one-to-two times per week for 30 to 60-minute sessions. Intensive therapy programs that focus on physical therapy and occupational therapy are typically centered around motor learning. Motor learning, by definition is a sub-discipline of motor behavior that examines how people learn a motor skill. Motor learning can be reinforced through two different approaches: blocked practice and random practice. Blocked practice refers to the practice of a single skill repeated over and over again. Random practice refers to a number of skills that are practiced in conjunction with one another within the context of natural daily activities, and is increased during home carryover without the therapist.

Intensive therapy works because of three key factors: supercompensation, recovery and muscle building. First, we overload the body by engaging in high levels of targeted activity (supercompensation), then we allow for approximately 20 hours of rest (recovery) and that cycle leads to muscle building over a period of time. We then use this muscle building for improved functional use in daily activities, including social participation and gross and fine motor development. Regardless of the method of intervention or types of activities a client engages in, increased repetitions lead to an increase in motor learning.

There are many different models of intensive therapy: physical therapy and/or occupational therapy only, group offerings, constraint induced movement therapy, multidisciplinary teams, etc. Research supports the efficacy of specific intensive programs and shows that children who participate in these programs improve their functional skills. This varies between programs that are exclusively physical and occupational therapy, group therapy, and a collaborative method. Intensive therapy often times is a more viable, more successful option compared to traditional therapy, especially for children with multiple neuromuscular conditions.

TRANSDISCIPLINARY CARE

A transdisciplinary approach to facilitating a customized intensive model of therapy is beneficial in fully addressing the comprehensive needs of children with complex medical profiles. Transdisciplinary teams are defined by the high level of collaboration throughout the evaluation and intervention process, in which practitioners with specialized knowledge and skills from various professions work across their respective scopes of practice to meet the immense needs of the client (Peabody et al., 2016). Research across multiple therapeutic disciplines suggests that the transdisciplinary approach is beneficial for children and young adults with multiple disabilities, as the specialized skills of practice experts are required to yield optimal therapeutic outcomes for this population, (Peabody et al., 2016; Robillard, Bélanger, Keating, Mayer-Crittenden, & Minor-Corriveau, 2013). Further, the transdisciplinary model of patient care provides the highest level of satisfaction for both clients and their caregivers in comparison to other models (Robillard et al., 2013). When practicing from a transdisciplinary framework, specialized therapeutic skills are developed in clinicians through practice with a specific population over time through the high level of information that is shared between team members. This team approach enables practitioners to provide more effective treatment by addressing not only the physical needs but also the communica-

Each client at CI receives a medal of achievement at the completion of the Advance intensive program, along with a party they help plan to celebrate their accomplishments while therapists review their home exercise program with caregivers.

tion and assistive technology needs that will allow the individual to participate in meaningful occupations.

CI PEDIATRIC THERAPY CENTERS: ADVANCE PROGRAM

At CI Pediatric Therapy Centers, our Advance Program uses a hybrid approach to intensive therapy in which we customize each program to meet the needs of the individual child, based on their strengths and the goals of the child and the family. We also use a transdisciplinary approach to provide the highest level of customized and holistic family-centered care. Our program is collaborative, innovative and unique. We strive to make every program fun and functional. Each program is individualized to the child's needs and abilities beginning with a consultation, and an initial assessment consisting of a multi-faceted approach to goal setting. A team of physical therapists, occupational therapists and speech-language pathologists develops and initiates the treatment plan in collaboration with the child, family and referring physician. This collaborative approach yields more success both during the program and after discharge. We base our program on the intensive model of therapy, but use numerous different treatment techniques, tools and devices to best meet our goals. We customize our program to meet the needs of individuals with various abilities, and to assess their appropriateness for assistive technology that may optimize their functional participation.

CI's Advance Program serves approximately 50 families per year, not only from within the South Central Wisconsin area, but from across the country. CI Pediatric Therapy Centers offers housing for the clients and families participating in the program to ease the burden of commuting while participating in intensive therapy.

FREQUENCY AND DURATION

Developed based-upon typical models of intensive therapy in the literature, CI Pediatric Therapy Centers utilizes a frequency of four-hours per day, five-days per week, for four weeks for the majority of the intensive clients. Through our own internal data collection, we have found that most clients in our program benefit from a full four weeks of intensive therapy. In fact, we frequently see more functional gains in the fourth week than in any of the previous weeks. Though this is the frequency we strive for, since we do not have exclusionary criteria related to age of the client, therapists determine the frequency for each client based on their individual needs and level of tolerance for therapy. Factors taken into consideration when determining frequency include age, daily routine and schedule (i.e., nap schedule, feeding schedule), and medical fragility.

TEAM MEMBER ROLES

Although we use a transdisciplinary care model, each discipline has a unique role within our Advance program. Each practitioner can provide their unique expertise in both the evaluation and intervention process to ensure a holistic approach to optimizing function and participation in everyday activities. This includes the expertise that each practitioner has related to developing customized access solutions to promote age-appropriate functional participation across environments.

For clients with complex medical profiles and communication needs, developing efficient and energy conserving methods of accessing communication and their world is vital to their participation in desired occupations. Within an intensive program model, the importance of the team's focus on building and reinforcing motor patterns which enhance the client's ability to access program materials and activities is essential to establishing motivation for continued participation throughout the program. Throughout the program, the collaborative therapeutic efforts of the team must take into consideration and reinforce the integration of the child's system of communication across environments, involving all of the client's communication partners, and to support access to ongoing effective and efficient communication. The occupational and physical therapist can provide insight on optimal seating and positioning which promotes access to the client's environment, efficient and energy conserving access methods for communication, access to power mobility and functional participation in functional activities. Further, the promotion of functional ambulation skills and improvement of efficient motor patterns targeted in an intensive program yields ease of access, increased communication opportunities, and motivation to socialize with peers.

The physical therapist has clinical expertise in helping kids

BACK TO CONTENTS

move and interact with their environment. This ranges from ambulation (gait training), working with different assistive devices for mobility, assisting with gross motor development, balance, coordination and helping children meet gross motor milestones. With the intensive model of therapy, a physical therapist has many different unique opportunities to work with the child to develop, enhance or refine skills. Ambulation for example can be addressed with partial body weight treadmill training, use of a gait trainer or another assistive device and also done with therapist assistance. This can all be worked on during an intensive therapy session or program with the goal of functional independent ambulation in mind. For kids who may need help with coordination, a physical therapist can provide blocked and random practice to help with motor learning of a difficult coordination skill that will help the child interact in play with his peers on the playground.

The occupational therapy practitioner has clinical expertise in enabling children to participate in desired functional activities of daily living across environments. Through collaboration with clients, caregivers and team members, the occupational therapy practitioner works to match clients with customized environmental designs, assistive technology and adaptive equipment to optimize their participation in meaningful occupations, while capitalizing and building upon their strengths and existing functional movement patterns. In the intensive model of intervention, the occupational therapist strikes a balance between focus on engaging the client in motivating occupations that facilitate motor learning and strength building, and adapting activities and the environment to assist with functional participation. The occupational therapist determines the area of occupation and specific activities that are most meaningful to the client and their family, and collaborates with the physical therapist to improve the underlying client factors that are impacting participation through intensive therapy. Activities of daily living including dressing, bathing, toileting and self-feeding are addressed by the occupational therapist throughout the intensive program to optimize function and problem solve the need for or adjustment of adaptive equipment. Expertise in activity analysis, activity grading positions the occupational therapist as a key provider of assistive technology, and leader on the transdisciplinary team, whose roles include the coordination of team member's expertise to provide appropriate assistive technology, along with client and family education.

Within this intensive therapy model, the speech-language pathologist has a unique role of pushing in and co-treating alongside an occupational therapist or physical therapist. Since therapeutic goals in a traditional intensive model of therapy are primarily focused within the scopes of practice of physical and occupational therapy, the role of the speech language pathologist (SLP) is centered around advocating for the communication needs of the client. This encompasses the promotion and emphasis of the importance of communication as a priority throughout all treatment activities. If a communication system is already established, the SLP not only models the language and navigation of the communication system, but also models all functions of communication (e.g., social participation, appropriate protesting, requesting and advocating, etc.) and educates the family and other practitioners on the importance of aided language stimulation. If the client does not have an established communication system, the SLP will trial various aided and unaided communication methods to facilitate functional communication throughout the program. If the family has expressed interest in focusing treatment on developing a communication system that meets their child's complex communication needs at any time throughout the Advance process, we can refer them to our specialty AAC program, AACcelerate (program described below).

TRANSDISCIPLINARY EVALUATION & GOAL SETTING

At the point of the initial evaluation, the team works together with the family to develop functional, family-centered goals in collaboration with all members of the team. Taking the time to establish common goals between practitioners and families can lead to improved functional outcomes, participation in functional life skills through improved physical skills and access to appropriate assistive technology and enhanced quality of life. The team works together to identify functional life skill goal areas that can be addressed during intensive therapy including motor, self-care, feeding, alternative access, and communication goals. Physical and occupational therapy practitioners have shared goals in this program, such that each can address every goal area within every treatment session. Practitioners work within their scope of practice to address client goals, with a therapeutic approach that is specific to their profession.

THERAPEUTIC APPROACHES AND TOOLS

The Advance intensive program utilizes a variety of therapeutic approaches and tools as part of its collaborative intervention. The team works to determine the appropriateness of each individual to have these approaches incorporated into their programs. These approaches include but are not limited to neuromuscular re-education, therapeutic exercises and activities, partial weight bearing support gait training, gait training with various assistive devices and dynamic orthoses.

ACCESSING CUSTOMIZED TECHNOLOGY

Specifically, in the realm of accessing customized technology, the PT, OT and SLP will all work closely together with each other and the family in order to recommend or trial various equipment and technology throughout the duration of the program. The purpose of each technology piece should be meaningful to the client, and facilitate participation in a meaningful occupation. We work closely with local durable medical equipment vendors throughout the program to ensure that clients are able to try a

The main therapy gym space at CI Pediatric Therapy Center's Fitchburg location including a variety of equipment utilized throughout the program across disciplines

Motivational canvases with CI's core values hang throughout all of the clinic locations and reflect the mission of the collaborative intensive program.

variety of adaptive equipment including gait trainers, adapted bikes, walkers and adapted bathroom equipment. A variety of self-care adaptive equipment and assistive technology utilized to access games, the computer and environmental controls are also available for use throughout the program.

FUN AND FUNCTIONAL

When treating in an intensive model of therapy in which clients are engaged in therapeutic activities for up to four hours each day, it's important to go above and beyond to be creative and to elicit client motivation through fun and functional activities which target their goal areas. Additionally, engagement in functional activities that promote motor learning can improve carryover at home. No two Advance intensive programs are the same, because every program is developed based on the interests and priorities of the client in order to keep them engaged, motivated and improving.

Play and Leisure:

Incorporating play into all treatment activities is the simplest method of ensuring motivation and engagement throughout a session, while addressing the motor learning and strength-building principles of the intensive model of therapy. Building and completing an obstacle course is a great way to work on strength, endurance, dynamic balance, transitional skills, eccentric muscle control and motor planning. Additionally, this activity lends opportunities to engage socially while building a course with a peer, and to utilize executive functioning skills such as initiation of activity, problem solving and working memory. A scavenger hunt can address a variety of executive functioning skills, and also promote functional ambulation and endurance with a fun and functional goal in mind. It is not unusual to find stuffed animals hidden around the clinic at CI Pediatric Therapy Centers. If a child is motivated by rescuing stuffed animals, you can scatter them all around the clinic in strategic locations to facilitate therapeutic activities such as ascending and descending stairs, navigating curb cuts outside, or hidden in a high place to work on overhead reaching. For older clients who may be motivated by sports, an intensive program can be transformed into sports camp. Clients arrive and go straight to their "locker room" where the therapist could sneak in some self-care goals, and then participate in any sport (basketball, tennis, soccer, etc.) that addresses their goals and facilitates repetition of functional movement patterns. The opportunities for leisure activities are endless. Therapists modify these play activities to isolate specific muscle groups and target functional motor patterns that can improve not only the client's ability to participate in that activity, but promote carryover of skills across various activities of daily living.

Access to customized technology is a huge component of play and leisure for clients with multiple neuromuscular conditions. Therefore, the team works throughout the program to determine the most efficient and energy conserving movement patterns a client can use to access play activities using alternative methods. This may include engaging in adaptive art projects with modified paint brushes, playing board games using a switch adapted spinner or DJing a dance party with peers while trialing a variety of switches to access environmental control of the lights and music. Therapists can incorporate the use of adaptive equipment or the activation of assistive technology into an obstacle course to provide practice opportunities in a natural and playful environment. The possibilities are endless, and therapists are guided in their creative treatment planning by the volition of the client.

Community Mobility

While many intensive programs place a large emphasis on ambulation within the clinic's gym, we love to take the opportunity

BACK TO CONTENTS

An Advance client plays a switch adapted computer game with her physical and occupational therapist while working on dynamic standing balance in a partial weight-bearing support harness in the universal exercise unit.

to work on dynamic movement skills throughout the community. Clients can practice ambulation, stair navigation, transitional movements and wheelchair propulsion both inside and outside of the clinic. We frequently go on community outings to the local park, drug store, grocery store, bakery, etc. Working on these skills in the community is often more meaningful for the client, not to mention motivating. In addition, community outings are a great way to incorporate communication and re-assess access methods and seating and positioning needs while in various settings.

Activities of Daily Living

Therapists collaboratively build functional skills that the client needs to more efficiently and independently engage in daily activities. This is addressed through both the targeting of specific motor skills required to complete an activity, as well as by engaging in the activity during natural opportunities during the program. Self-care skills addressed in the Advance program include self-feeding, dressing, toileting and hygiene skills. The team typically approaches self-care activities with a careful balance between facilitating neuromuscular reeducation to reinforce movement patterns required to more fully participate, and prescribing adaptive equipment or assistive technology to ease access. Clients may also engage in instrumental activities of daily living such as cooking and meal prep, or cleaning and chores as part of the program. By focusing on teaching the optimal ways of engaging in these functional activities during the program, clients and their families are better set up for home carry over.

Social Opportunities

In a collaborative treatment environment in which multiple therapists or peers are working and playing in the same space, many social opportunities are naturally available or can be easily facilitated. Social opportunities are also typically motivating for most. Social opportunities are not only motivating to moving to the space of another individual to gain attention, but also to communicate and join in play with peers. Therefore, social communication opportunities are abundant. The therapist will often help facilitate a conversation depending on the needs of a child.

VIDEO HOME EXERCISE PROGRAM

At the end of the program, our team customizes an individualized video home exercise program which includes videos of exercises and activities that can be done at home to continue progress and motor learning, tips for making modifications to the home environment to make it more accessible, and recommendations for assistive technology and adaptive equipment that has been trialed throughout the program. The home exercise program also includes videos of the children completing functional tasks and activities in a way that they can also complete it at home. Many of these home programs also include recommendations for follow up or consultation with outside providers and community resources such as parent support groups, funding sources, and local vendors.

CAREGIVER EDUCATION AND CONTEXT-THERAPY

Another component of CI's Advance program is caregiver education. In addition to the video home exercise program that is sent home with clients and their families at the end of the program, caregivers are welcome to stay in sessions at the frequency of their choosing and comfort. Our program model lends itself to allowing for more time to naturally incorporate parent education into therapy sessions. An intensive model of therapy in which families are in session with high frequency increases the natural opportunities to incorporate parent education and empowerment into treatment. The ease of this is magnified when using a transdisciplinary approach, as multiple providers are able to collaborate with the family to provide holistic education and resources, which span across the scopes of practice of each team member. Literature supports the fact that there is a positive correlation between education and empowerment of the caregiver and quality of life outcomes. A 2016 study indicated that when parents are provided with resources about their child's diagnosis, typical childhood development, and community resources specific to their child, they felt empowered to be more proactive in improving their child's health, wellness and functional abilities, (Graybill et al., 2016).

The structure of our program enables the team to incorporate education on therapy methods, optimal positioning for functional participation in daily activities, use of assistive technology and adaptive equipment and community resources throughout the duration of the program. Educating parents about the purpose, use and availability of assistive technology and adaptive equipment empowers them to provide their children with appropriate technologies that optimize their functional partici-

pation and quality of life. When this occurs within the therapy session, the approach is referred to as context-based intervention, (Slaman et al., 2015). Utilizing a context-based intervention approach within the intensive model can improve outcomes for clients with multiple neurological conditions, as this holistic approach focuses on both improving client deficits and providing adaptations to the environmental context to solve functional problems. Additionally, research has shown that parents who are supported throughout the process tend to feel more empowered to engage in prescribed carryover activities at home, which lead to improved outcomes for the child with a disability, as well as their parent's perception of their contribution to the child's quality of life, (Slaman et al., 2015). As the parent gains competencies and confidence throughout their involvement in the intervention process, they are better able to provide carryover of therapy techniques at home, as well as obtain appropriate resources and equipment to improve their child's quality of life. When therapists provide a balance of traditional and context-based intervention, families are empowered with tangible resources and client factors are addressed to improve functional participation.

AACCELERATE

As previously mentioned, when families have an interest in focusing specifically on developing a successful communication system for their child with complex communication needs they are referred to our specialized augmentative alternative communication program, AACcelerate. This transdisciplinary program is facilitated by a team of speech language pathologists and occupational therapists, who collaborate to develop a customized and robust communication system for clients without an established system or to boost the access and language skills of a client using their current system. Like Advance, this is a four-week program that runs at a higher frequency than traditional therapy services in order to target the variety of access and language needs of the client. At the time of consultation, the team determines if there is a need to acquire specialized equipment or devices to be trialed throughout the program. The team then works together to feature-match customized components of language design and access methods to set the child up for successful communication throughout the program's duration. Additionally, this program provides families with education and resources throughout the process. Clients and their families leave the program with a home program that includes specific strategies for carrying over communication strategies at home, recommendations for ongoing traditional therapy and a plan for continuing development or pursuit of a robust, customized augmentative alternative communication system. Learn more at www.citherapies.com.

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BACK TO CONTENTS

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BACK TO CONTENTS

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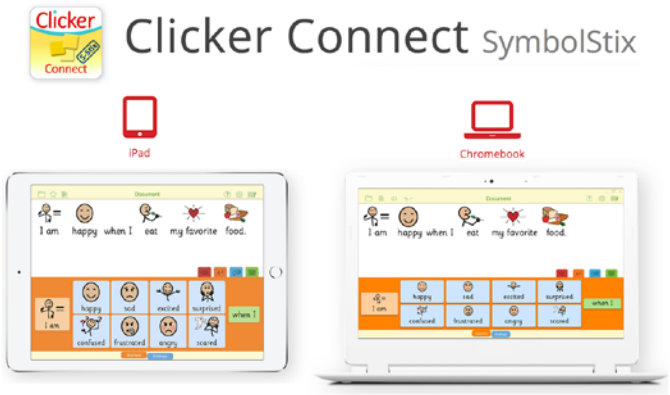

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He's a robot, a teacher and a friend! Milo's role is to help teach proper social responses to situations, including facial expressions and also to teach social cues and emotional responses, whether it be sad, happy, angry, elated, excited, frustrated, surprised, etc. Most importantly, though, is Milo's ability to make a true difference in his friend's lives, and their ability to grow in the world as people, socially and academically.

A NON-THREATENING WAY FOR LEARNERS WITH ASD TO PRACTICE THEIR COMMUNICATION AND SOCIAL SKILLS.

BACK TO CONTENTS

Milo the robot is designed to be interesting and approachable for learners with ASD. He can walk, talk and even model human facial expressions. Milo never gets frustrated or tired. He consistently delivers lessons in a way that learners with ASD respond to. This recurring positive experience creates an environment in which learners can learn and thrive. Robots4Autism helps learners improve their social and behavioral skills and gain the confidence they need to succeed academically and socially.

Using the Robots4Autism program, individuals with ASD learn to:

- Tune in on emotions
- Express empathy
- Act more appropriately in social situations
- Self-motivate
- Generalize in the population

LEARN MORE

COUGHDROP – COMMUNICATION WORKSHOP

AAC Communication Workshop: This is a free online resource for AAC users and supporters to encourage core vocabulary learning and growth. With printables, take homes, linked books, activities and more for nearly 200 core words the Communication Workshop is a quick and easy way to support an AAC learner.

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The Communication Workshop can be a powerful tool for AAC users and the teams supporting them. Activities can be launched full-screen for projectors, or printed off for easier distribution and reuse. Please explore the content and see what all is available — then contribute your own ideas as well!

EVERYVOICE SHOULD BE HEARD

Some people are hard to hear — through no fault of their own. Disabilities like autism, cerebral palsy, Down syndrome, Angelman syndrome and Rett syndrome make it harder for many individuals to communicate on their own. Powerful software called Augmentative and Alternative Communication (AAC) can fill the gaps and make every voice heard.

BACK TO CONTENTS

At CoughDrop we work to help bring out the voices of those with complex communication needs through powerful open-source technology that easily adapts to the individual and supports everyone around them trying to help them succeed.

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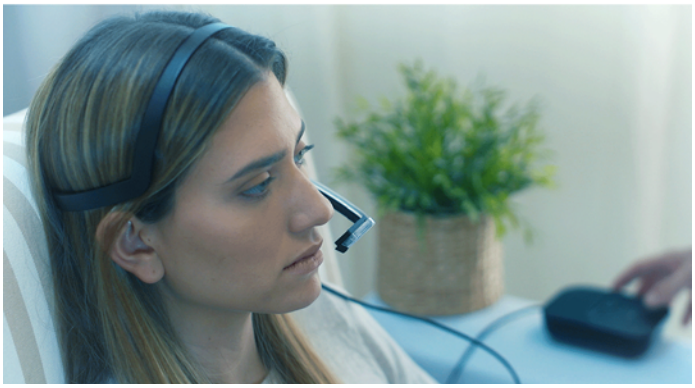
EYECOTROL - COMMUNICATION IS FREEDOM



EAT WITH CONFIDENCE

EyeControl is a wearable personal communication device that gives a voice to locked-in patients. Using audio feedback and eye gestures, the EyeControl is a standalone portable device that allows for immediate and around-the-clock communication.

1-2-3 AND YOU'RE CONNECTED – The short training means you can communicate almost immediately. No long calibration or steep learning curve.

CUSTOMIZATION – Use basic features to communicate or more advanced alphabet and application modes to communicate freely and control connected devices.

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HOW DOES IT WORK?

A head-mounted infrared camera tracks the eye movements and sends the information to a small processing unit which translates the movements into communication.

The bone conduction component provides audio feedback to the user before the communication is transmitted to the output speaker or connected Bluetooth device, all without the need for a screen.

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SignAll is the only technology to successfully translate between signed and spoken languages.

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The system enables better communication between deaf and hearing individuals:

• Makes workplaces more accessible to Deaf employees (collaboration, presentations etc)

BACK TO CONTENTS

• Allows businesses to better serve their Deaf customers
• Will increase accessibility in organizations around the world
• Allows friends and family to communicate without barriers

HOW IT WORKS:

The system translates both ways between sign languages and written / spoken text.

• SignAll has developed an extensive language library based on American Sign Language. It is scalable to accommodate any signed language from around the world.

• The system captures signed languages using a system of four cameras. It detects body movements / position, facial expressions, and finger / hand shapes.

• Hearing users can speak into the system, and voice recognition technology captures their words.

• The translated language from each party is displayed as a chat dialogue.

The SignAll technology easily translates ASL into written English, and displays it as a chat dialogue. There are two monitors. One for the Deaf user, and one for the hearing user.

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SPRINT ACCESSIBILITY FOR ALL

Sprint Accessibility offers communication products and services to eliminate communication barriers for customers who are Deaf, DeafBlind, have a hearing or vision loss, and cognitive, speech or mobility disabilities.

Through innovation and a desire to make communication access available to all people, we have expanded our accessibility solutions to include each of the following and we are not stopping there, we work to anticipate the future needs of our customers and have already begun working on next generation solutions today – Sprint Accessibility has communication solutions for today, tomorrow, and the future

SPRINT'S BROAD PORTFOLIO OF ACCESSIBILITY SERVICES INCLUDE:

- Sprint National Relay Services
- Sprint CapTel®
- Sprint IP Relay
- Sprint Speech-to-Speech
- Relay Conference Captioning
- Federal Relay Service
- Sprint Relay Store
- Sprint Vision® Store
- Mobility Disability
- Cognitive Disability

SPRINT ACCESSIBILITY – SERVICES

- Sprint CapTel
- Sprint WebCapTel
- Sprint IP Relay
- Sprint Teleconference Captioning (STC)
- Sprint National Relay Services
- Federal Relay Service
- State Relay Services
- Speech to Speech Service

BACK TO CONTENTS

SPRINT ACCESSIBILITY – WIRELESS

- Sprint Vision® Store
- Sprint Relay Store
- Sprint Messaging
- TTY Compatible Phones
- Directory Assistance Program
- Hearing Aid Compatible phones
- Alternate format materials
- Mobility Disability
- Cognitive Disability
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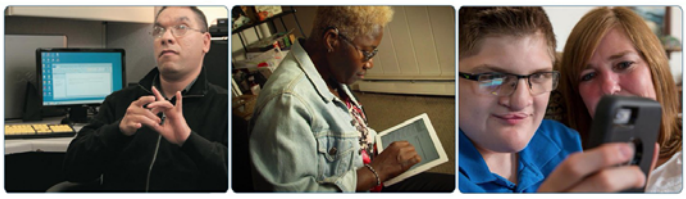
iCanConnect



iCanConnect Helps Pennsylvania College Student Stay in Touch With Family Back Home

Hunter McGowan has been a participant of iCanConnect, the National Deaf-Blind Equipment Distribution Program, since its inception as a pilot program six years ago. The 22-year-old Pennsylvania native was first contacted by an iCanConnect representative in 2013, when he was in high school.

Hunter, who was diagnosed with Usher syndrome type 2 when he was five years old, received an assessment through

iCanConnect and was provided with the equipment and technology that best met his communication needs at the time, which included a desktop computer, screen reader and magnification software.

In 2016, Hunter applied for a reassessment of the equipment and technology he received through iCanConnect when he transferred to Edinburgh University in western Pennsylvania at the start of his sophomore year.

Based on his reassessment, Hunter received updated equipment and training, including an iPad and an iPhone to meet his distance communication needs as he adjusted to life three hours from home.

"It's critically important for me to have a support network I can connect with, especially living away from home for the first time," says Hunter. "I use my iPhone and iPad to make phone calls, FaceTime with my family and friends, and message my classmates."

Hunter also uses his equipment to keep in touch with professional acquaintances he meets through DeafBlind Citizens in Action (DBCA), a disability rights organization where he is a member.

"I've been involved with DeafBlind Citizens in Action for three years and I use diverse methods of communication within the organization," Hunter says. "Thanks to iCanConnect, I have the technology and training to help me dial into conference calls, respond to emails from the executive team, review different documents, and communicate with board members via voice calls and text messages."

"I'm extremely grateful I can stay in touch with my family and friends back home while I'm away at school, as well as communicate with my fellow classmates and professional acquaintances," concludes Hunter. "iCanConnect has supported my distance communication needs from the start."aring user.

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BACK TO CONTENTS

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